The Market for College Education in the United States

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Participation in the College Market

- 17.7 million students enrolled as undergraduates in U.S. colleges for the 2012-2013 academic year.

- In 2013, 5.5 million people bought homes in the U.S.

- 65% of the high school class of 2012 enrolled in college the following fall, up from 49% in 1980.
Expenditure on College Education

- In the 2012-13 academic year, U.S. public and private colleges collected $156 billion in tuition and fees.
  - how much from students?
  - how much from government?

- In 2012, American households owed a total of $966 billion in student debt.

- Since 2010, student debt has surpassed credit card debt to become the second largest source of household debt after mortgages.
  - In 2000, student debt was the smallest household debt category, below credit cards, auto loans, and "other" debt.
Figure: Dillon (2015) "The College Earnings Premium and Changes in College Enrollment". Enrollment is share of 17 to 19 year old men who graduated high school in each year and enrolled in 2-year or 4-year college. Premium plots the ratio of average annual earnings for men with exactly 16 and 12 years of schooling.
Questions for this Evening

- How do the returns to college vary across institutions?
- What are the true individual costs of investing in college?
- How do students decide how to invest in college?
Introducing a Recent Cohort of College Students

- For much of this talk I will use data from the National Longitudinal Survey of Youth 1997 Cohort (NLSY97)


- Panel study: follow students year after year through high school, college, and the workforce (latest survey 2013)

- Detailed information on college enrollment, earnings, high school and college grades, SAT/ACT, and another standardized test (ASVAB) taken by all respondents.
## Outcomes and College Quality

<table>
<thead>
<tr>
<th></th>
<th>Graduate with BA within 5 years</th>
<th>Earnings 10 years starting college</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school only</td>
<td>0%</td>
<td>$18,900</td>
</tr>
<tr>
<td>Any 2-year college</td>
<td>7%</td>
<td>$22,800</td>
</tr>
<tr>
<td>Any 4-year college</td>
<td>48%</td>
<td>$30,600</td>
</tr>
<tr>
<td>Lowest quality quartile</td>
<td>25%</td>
<td>$23,500</td>
</tr>
<tr>
<td>2nd quality quartile</td>
<td>43%</td>
<td>$27,900</td>
</tr>
<tr>
<td>3rd quality quartile</td>
<td>54%</td>
<td>$30,700</td>
</tr>
<tr>
<td>Highest quality quartile</td>
<td>70%</td>
<td>$39,800</td>
</tr>
</tbody>
</table>

Source: NLSY97. Average annual earnings (in 1997 USD) including zeros. For no college, earnings are 10 years after graduating high school. Earnings are not conditional on graduating.
## Sorting into Colleges

<table>
<thead>
<tr>
<th></th>
<th>Average ASVAB Pctile within college starters</th>
<th>Average SAT score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any 4-year college</td>
<td>50%</td>
<td>1061</td>
</tr>
<tr>
<td>Lowest quality quartile</td>
<td>37%</td>
<td>935</td>
</tr>
<tr>
<td>2nd quality quartile</td>
<td>46%</td>
<td>1016</td>
</tr>
<tr>
<td>3rd quality quartile</td>
<td>55%</td>
<td>1086</td>
</tr>
<tr>
<td>Highest quality quartile</td>
<td>66%</td>
<td>1180</td>
</tr>
</tbody>
</table>

Source: NLSY97. Armed Forces Vocational Aptitude Battery was taken by all respondents. Average percentile is where students would fall within distribution of 4-year college starters.
Conditional Returns to College Quality

- Multivariate analysis: Estimate the gains to attending a more selective college holding student ability (and other characteristics) constant.

- Holding student characteristics constant, what is the effect of moving 10 percentiles up the college quality distribution?

- The probability of graduating within 5 years increases by 3.5 percentage points.

- Earnings 10 years after starting college increase by $1,600 on average.
  
  ▶ Dillon and Smith (2015) "Consequences of Academic Match between Students and Colleges"
Do All Students Benefit from College Quality

- Do students of all abilities benefit from attending a higher quality college?

- Perhaps middling students benefit from more resources, but the very best students will succeed at any college.

- Perhaps more able students thrive with more resources, but students who begin college with less preparation get overwhelmed by the increases rigor and competition that accompany those resources.
Effect of College Quality by Student Ability: Graduation

Figure: Dillon and Smith (2015) Plots the effect of college quality on the probability of graduating within 5 years for students at different points in the ability distribution.
Effect of College Quality by Student Ability: Earnings

Figure: Dillon and Smith (2015) Plots the effect of college quality on earnings 10 years after beginning college for students at different points in the ability distribution.
To understand the returns to college quality we also need to know the difference in price between more and less selective colleges.

In general, we would expect that colleges with more resource-intensive instruction would have to charge more.

This pattern is true for the "sticker price" cost of college, but not always for the net price paid by students after financial aid.

- Government financial aid increases some with the cost of students’ selected college.
- Colleges with the most resources for instruction also have the most resources for institutional financial aid.
## The Price of College Quality

<table>
<thead>
<tr>
<th>Tuition and Fees by Quality Quartile</th>
<th>Bottom</th>
<th>2nd</th>
<th>3rd</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posted Price</td>
<td>$21</td>
<td>$24</td>
<td>$27</td>
<td>$36</td>
</tr>
<tr>
<td>Net Price</td>
<td>$15</td>
<td>$16</td>
<td>$17</td>
<td>$20</td>
</tr>
</tbody>
</table>

Net Price by Family Income:

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Bottom</th>
<th>2nd</th>
<th>3rd</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $30,000</td>
<td>$13</td>
<td>$13</td>
<td>$13</td>
<td>$12</td>
</tr>
<tr>
<td>$30,000-48,000</td>
<td>$14</td>
<td>$14</td>
<td>$14</td>
<td>$14</td>
</tr>
<tr>
<td>$48,000-75,000</td>
<td>$16</td>
<td>$17</td>
<td>$18</td>
<td>$18</td>
</tr>
<tr>
<td>$75,000-110,000</td>
<td>$18</td>
<td>$19</td>
<td>$21</td>
<td>$23</td>
</tr>
<tr>
<td>More than $110,000</td>
<td>$18</td>
<td>$20</td>
<td>$22</td>
<td>$28</td>
</tr>
</tbody>
</table>

Source: The College Scorecard and author’s calculations.
The Choice of Where to Enroll

- Attending a higher-quality college leads to substantial gains in both the probability of graduating and future earnings.
  - All students benefit from higher college quality regardless of ability

- For many students, costs do not rise substantially with returns to college.

- Why don’t all students attend the top colleges?
College as a Consumption Good

“My first choice college should have lots of closet space.”
Admission Constraints

- Even if all students would benefit from a top college, that doesn't mean the college would admit them.

- Consider students who "undermatch" by attending a college substantially below the quality level they could attend given their ability.

- Only 6% of these students apply to a "well-matched" college and are rejected. 72% never apply to a well-matched college and the rest are accepted but enroll in a lower quality college.

  - Dillon and Smith (2015) "Determinants of the Match between Student Ability and College Quality"
Financial and Information Constraints

- Students from the top 25% of households by wealth are 6 percentage points less likely to undermatch than students from the bottom 25% of households.
  - Overall, 25% of students undermatch

- The offspring of college graduates are 5 percentage points less likely to undermatch than the offspring of high school graduates.
  - They are also 5 percentage points more likely to "overmatch" by attending a higher quality college.

- Students who from high schools where most students go on to 4 year college (70% instead of 40%) are 3 percentage points less likely to undermatch and 3 percentage points more likely to overmatch.
Experimental Evidence on Information

- Hoxby and Turner (2013) randomly target some high achieving (top 10% of SAT scores) low income students and send them a detailed package of information on the net cost of selective colleges and the process for applying for admissions.

- Students who received the packets were substantially more likely to apply to and enroll in highly selective colleges.
What We Know about College Choice

- All students experience substantially better outcomes when they attend higher quality colleges.

- After financial aid, the net cost of higher quality colleges is not always higher than the net cost of less selective colleges, particularly for lower income students.

- Nonetheless, lower income students are substantially less likely to attend top colleges, even after conditioning on academic preparation.

- Growing consensus that lack of information about college is a key constraint.
Recent Policy Developments

- **October 2011**: All colleges are required to post a net cost calculator on their website.
  - Any student can enter her family’s financial information and see an estimate of her individualized expected cost.

- **September 2015**: Department of Education publishes The College Scorecard online.
  - Easy to use and compare information on net cost, graduation rates, post-college average earnings, admission rates and requirements for all colleges in U.S.