ECONOMICS OF HIGHER EDUCATION
President Jill Tiefenthaler
OUTLINE

• Overview of industry
• Overview of tuition increases
• Economics of higher education
• The Price vs. Quality Trade-off
• Benefits of higher education
• Costs of higher education
OVERVIEW OF THE INDUSTRY

• 21 million students enrolled
• 3.4 million employees
• 4,314 institutions
• 40% of institutions are public; educate 77% of undergraduates
• 38% of institutions are non-profit private; educate only 15% of all undergraduates
• For-profit privates educate 8% percentage of students
DISTRIBUTION OF FULL-TIME UNDERGRADUATE ENROLLMENT BY SECTOR, FALL 2013

Source: The College Board, Trends in College Pricing 2015, Figure 25
AVERAGE ANNUAL PERCENTAGE INCREASE BEYOND INFLATION, BY DECADE
1985-86 TO 2015-16

Source: The College Board, Trends in College Pricing 2015, Figure 5
INFLATION-ADJUSTED PUBLISHED TUITION AND FEES, 1985-86 TO 2015-16

Source: The College Board, Trends in College Pricing 2015, Figure 6
ANNUAL PERCENTAGE CHANGE IN STATE APPROPRIATIONS PER FTE AND TUITION AT PUBLIC FOUR-YEAR INSTITUTIONS, INFLATION ADJUSTED, 1984-85 TO 2014-15

Source: The College Board, Trends in College Pricing 2015, Figure 16A
STATE SHARE AND RESIDENT STUDENT’S SHARE OF COLLEGE COST AT COLORADO PUBLICS, 2000-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Student Share</th>
<th>State Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>2001-02</td>
<td>34%</td>
<td>66%</td>
</tr>
<tr>
<td>2002-03</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>2003-04</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>2004-05</td>
<td>50%</td>
<td>30%</td>
</tr>
<tr>
<td>2005-06</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2006-07</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2007-08</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2008-09</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2009-10</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2010-11</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2011-12</td>
<td>40%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Average Institutional Tuition Discount Rate: First-Time, Full-Time Freshman and All Undergraduates

Source: 2015 NACUBO Tuition Discounting Study, various years. Data as of the fall of each academic year.
*Preliminary estimate.
COLLEGES MEETING ENROLLMENT AND REVENUE GOALS (CIC INSTITUTIONS)

Source: The Chronicle of Higher Education, *Goals for Enrollment and Tuition Elude Many Colleges*
AFTER SHORTFALLS (ENROLLMENT AND REVENUE), WHAT'S NEXT? (CIC INSTITUTIONS)

Source: The Chronicle of Higher Education, Goals for Enrollment and Tuition Elude Many Colleges
THE HIGHER EDUCATION SUBSIDY

TUITION = COST/Student – SUBSIDY
NET TUITION REVENUES, SUBSIDIES, AND EDUCATION EXPENDITURES PER FTE STUDENT OVER TIME AT PUBLIC INSTITUTIONS IN CONSTANT 2012 DOLLARS

Source: The College Board, Trends in College Pricing 2015, Figure 19B
NET TUITION REVENUES, SUBSIDIES, AND EDUCATION EXPENDITURES PER FTE STUDENT OVER TIME AT PRIVATE NONPROFIT INSTITUTIONS IN CONSTANT 2012 DOLLARS

Source: The College Board, Trends in College Pricing 2015, Figure 19A
## Average Published Undergraduate Charges, by Carnegie Classification

<table>
<thead>
<tr>
<th>Carnegie Classification</th>
<th>2015-16</th>
<th>2014-15</th>
<th>$ Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Doctoral In-State</td>
<td>$10,354</td>
<td>$10,079</td>
<td>$275</td>
<td>2.7%</td>
</tr>
<tr>
<td>Public Master’s In-State</td>
<td>$8,225</td>
<td>$7,964</td>
<td>$261</td>
<td>3.3%</td>
</tr>
<tr>
<td>Public Bachelor’s In-State</td>
<td>$7,350</td>
<td>$7,142</td>
<td>$208</td>
<td>2.9%</td>
</tr>
<tr>
<td>Private Doctoral</td>
<td>$40,519</td>
<td>$39,074</td>
<td>$1,445</td>
<td>3.7%</td>
</tr>
<tr>
<td>Private Master’s</td>
<td>$28,466</td>
<td>$27,495</td>
<td>$971</td>
<td>3.5%</td>
</tr>
<tr>
<td>Private Bachelor’s</td>
<td>$30,521</td>
<td>$29,526</td>
<td>$995</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Source: The College Board, *Trends in College Pricing 2015*, Table 1B
## “CALCULATING THE COST OF COLLEGE”

<table>
<thead>
<tr>
<th></th>
<th>Family A</th>
<th>Family B</th>
<th>Family C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2011 Combined Income</strong></td>
<td>$50,000</td>
<td>$100,000</td>
<td>$150,000</td>
</tr>
<tr>
<td><strong>Home Equity</strong></td>
<td>75,000</td>
<td>150,000</td>
<td>225,000</td>
</tr>
<tr>
<td><strong>Savings/Investments</strong></td>
<td>5,000</td>
<td>10,000</td>
<td>25,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2012-13 Total Price</strong></th>
<th><strong>Family and Student Burden</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colorado College</strong></td>
<td></td>
</tr>
<tr>
<td>$54,200</td>
<td>9,300</td>
</tr>
<tr>
<td><strong>U.C. Berkeley</strong></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>$32,706</td>
</tr>
<tr>
<td>Out-of-State</td>
<td>$55,584</td>
</tr>
<tr>
<td><strong>U. of Illinois, Urbana</strong></td>
<td>$33,922</td>
</tr>
<tr>
<td>Resident</td>
<td>$48,064</td>
</tr>
<tr>
<td>Out-of-State</td>
<td></td>
</tr>
</tbody>
</table>

Average Subsidy Per Student (in $2007)*, by Colleges' Selectivity in 1962

*Subsidy per student = student-oriented expenditures per student - tuition paid per student

Student-oriented expenditures are instruction, student services, academic & institutional support, operation & maintenance of plant. NOT included are expenditures on research, public service, hospitals, and various other categories.
TOTAL WEALTH*

“Top 10” = 1/3+

“Top 40” = 2/3

*503 private and public universities rated by Moody’s

Source: Moody’s Investors Service

Source: The College Board, Trends in College Pricing 2015, Figure 22A
THE FACTS: SUMMARY

• Majority of college students attend publics (77%)

• Majority (60%) spend < $15,000 on T&F per year

• 22% of undergraduates attend schools with tuition & fees listed at $30,000 or more

• Tuition & Fees have increased beyond
THE FACTS: SUMMARY

• Private tuition has increased 2.4 times over the last 30 years in real terms

• Public tuition has increased 3.2 times over the last 30 years in real terms

• Despite large increases, students are subsidized in all sectors

• Family income has not kept pace with increases
THE ECONOMICS OF HIGHER EDUCATION

Universities are non-profits. Don’t max TR-TC

What do universities maximize?
QUALITY – Difficult to measure

How do you produce quality?
Inputs?
• Faculty
• Students
• Customer-input technology. Peer effects.
• Facilities
• Programs
• Staff
• Athletics
• Other
THE ECONOMICS OF HIGHER EDUCATION

• How do we increase quality? Need REVENUE!

• Unlike for-profits, which benefit from decreasing costs, cutting costs lowers Q.

• How do universities generate revenue?

• Donative revenues – endowment, annual giving, appropriations (publics). Allows Price < Cost!

• Commercial revenues – tuition, R&B

• Higher education is a very competitive market and QUALITY is the driver. Increasing QUALITY is dependent on increasing revenue. Donative revenue (endowment/appropriations) is key!
WHY THE INCREASE IN PRICE OF HIGHER EDUCATION?

• Market price is determined by demand and supply
• Demand is increasing
• Demographic bulge
• Increase in value of college degree
• Drive for quality combined with increasing information and national market for higher ed has increased relative demand for most selective institutions. (Hoxby 2009)
The Widening Earnings Gap of Young Adults by Educational Attainment

The difference in median annual earnings of college and high school graduates when members of each generation were ages 25 to 32.

Silents in 1965: $7,499
Early Boomers in 1979: $9,690
Late Boomers in 1986: $14,245
Gen Xers in 1995: $15,780
Millennials in 2013: $17,500

Notes: Median annual earnings are based on earnings and work status during the calendar year prior to interview and limited to 25- to 32-year-olds who worked full time during the previous calendar year and reported positive earnings. “Full time” refers to those who usually worked at least 35 hours a week last year. “College graduates” are those with a bachelor’s degree or more.


Rising Earnings Disparity Between Young Adults with And Without a College Degree

Median annual earnings among full-time workers ages 25 to 32, in 2012 dollars.

Notes: Median annual earnings are based on earnings and work status during the calendar year prior to interview and limited to 25- to 32-year-olds who worked full time during the previous calendar year and reported positive earnings. “Full time” refers to those who usually worked at least 35 hours a week last year.


PEW RESEARCH CENTER
Education Pays

Unemployment rate in 2014 (%)

- 2.1 for Doctoral degree
- 1.9 for Professional degree
- 2.8 for Master’s degree
- 3.5 for Bachelor’s degree
- 4.5 for Associate’s degree
- 6.0 for Some college, no degree
- 6.0 for High school diploma
- 9.0 for Less than a high school diploma

Median weekly earnings in 2014 ($) for different education levels:

- Doctoral degree: $1,591
- Professional degree: $1,639
- Master’s degree: $1,326
- Bachelor’s degree: $1,101
- Associate’s degree: $792
- Some college, no degree: $741
- High school diploma: $668
- Less than a high school diploma: $488

All workers: 5%

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.

*The shaded areas indicate periods designated recessions by the National Bureau of Economic Research.

BENEFITS OF HIGHER EDUCATION

Source: The College Board, Education Pays 2013, Figure 1.9B
UNEMPLOYMENT/UNDEREMPLOYMENT FOR RECENT COLLEGE GRADUATES, 1994-2015*

*Data for 2015 represent 12-month average from April 2014-March 2015.

Source: Economic Policy Institute, "The Class of 2015: Despite an Improving Economy, Young Grads Still Face an Uphill Climb," Figure G
UNEMPLOYMENT/UNDEREMPLOYMENT RATE FOR RECENT HIGH SCHOOL GRADUATES, 1994-2015*

Source: Economic Policy Institute, “The Class of 2015: Despite an Improving Economy, Young Grads Still Face an Uphill Climb,” Figure D.

*Data for 2015 represent 12-month average from April 2014-March 2015.
WHY THE INCREASE IN PRICE OF HIGHER EDUCATION?

• Supply/cost increases
• Cost disease
• Increase in cost of highly skilled labor
• Technology/No productivity improvements
• Financial aid
• Regulation
<table>
<thead>
<tr>
<th>Industry</th>
<th>Percent of Highly Educated Workers</th>
<th>Highly Educated Workers’ Percentage of Wage Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Care Services</td>
<td>1.87</td>
<td>4.28</td>
</tr>
<tr>
<td>Dry Cleaning and Laundry Services</td>
<td>2.24</td>
<td>7.25</td>
</tr>
<tr>
<td>Offices of Dentists</td>
<td>33.65</td>
<td>59.75</td>
</tr>
<tr>
<td>Offices of Physicians</td>
<td>45.89</td>
<td>73.79</td>
</tr>
<tr>
<td>Legal Services</td>
<td>55.49</td>
<td>76.53</td>
</tr>
<tr>
<td>Colleges, Universities, and Professional Schools</td>
<td>67.87</td>
<td>81.18</td>
</tr>
</tbody>
</table>

CONCLUDING POINTS

• Students/families want quality. As a result, universities compete on quality as well as NET price. The size of the subsidy influences demand.

• Therefore, lowering sticker price is risky – may not increase demand. Price is seen as an indicator of quality. If your price is lower, you have less revenue and can’t increase quality as much as competitors.

• Students who can pay have inelastic demand (quality driven). Others are elastic but get financial aid and not sticker price sensitive.

• Because students are also “inputs” and universities have a social mission, they price below cost and subsidize students to increase Q.

• Price has increased because of shifts in both demand and supply.