The Importance of Colleges and Universities in Building Local Human Capital

Richard Deitz, Officer and Senior Economist

Colleges and Universities As Economic Drivers
Buffalo, New York September 26, 2011

The views expressed here are those of the presenter and do not necessarily represent those of the Federal Reserve Bank of New York or the Federal Reserve System.
Human Capital and Economic Activity

Correlation Between Education and GDP Per Capita

Human Capital Stock (Share of Population 25+ With a College Degree), 2006

Source: U.S. Bureau of Economic Analysis, U.S. Bureau of the Census and Moody’s Economy.com
Two Ways Colleges and Universities Can Help to Raise Local Human Capital Levels

1. **Degree Production:** increasing the *supply* of human capital
   - Educate the local population and draw students into the region, some of whom stay after graduation
     → Limited ability to keep local graduates not tied to region

2. **Academic Research:** raising the *demand* for human capital
   - Local businesses can utilize the skills, knowledge, and technology developed at academic institutions, which attracts start ups and expands high human capital economic activities
     → Importance of physical proximity provides anchor to the region
Higher Education Degrees Produced

Number of Degrees Produced, 2006

3,000 or Less
3,000 to 7,500
7,500 to 12,000
12,000 to 30,000
30,000 or More

Source: Integrated Postsecondary Education Data System (IPEDS)
The Supply Side

Correlation Between Degree Production and Human Capital

Doubling of degree production associated with 3 to 7 percent increase in human capital
Most Metros are Net Exporters

Regional Flow of Human Capital, 2000-2006

Source: IPEDS, U.S. Bureau of the Census

Change in Human Capital Stock Rate vs. Human Capital Production Rate
Academic Research
the demand side
Academic R&D Expenditures

Research & Development Expenditures, 2006

Source: National Science Foundation (NSF)
The Demand Side
Correlation Between Research Intensity and Human Capital

Doubling of research intensity associated with 4 to 9 percent increase in human capital

Source: IPEDS, NSF, U.S. Bureau of the Census
## Type of Human Capital

How Do Colleges and Universities Affect a Region’s Mix of Economic Activities?

### Occupational Structure of the Labor Force

<table>
<thead>
<tr>
<th>High Human Capital</th>
<th>% with BA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life, Physical, and Social Science</td>
<td>76.3</td>
</tr>
<tr>
<td>Legal</td>
<td>76.1</td>
</tr>
<tr>
<td>Education, Training and Library</td>
<td>73.5</td>
</tr>
<tr>
<td>Community and Social Services</td>
<td>66.9</td>
</tr>
<tr>
<td>Computer and Mathematical</td>
<td>63.2</td>
</tr>
<tr>
<td>Architecture and Engineering</td>
<td>60.2</td>
</tr>
<tr>
<td>Business and Financial Operations</td>
<td>58.8</td>
</tr>
<tr>
<td>Healthcare Practitioners and Technicians</td>
<td>54.4</td>
</tr>
<tr>
<td>Arts, Design, Entertainment, Sports, &amp; Media</td>
<td>51.3</td>
</tr>
<tr>
<td>Management</td>
<td>48.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low Human Capital</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales and Related</td>
<td>23.6</td>
</tr>
<tr>
<td>Protective Service</td>
<td>19.4</td>
</tr>
<tr>
<td>Office and Administrative Support</td>
<td>15.5</td>
</tr>
<tr>
<td>Personal Care and Service</td>
<td>12.3</td>
</tr>
<tr>
<td>Healthcare Support</td>
<td>8.8</td>
</tr>
<tr>
<td>Installation, Maintenance, and Repair</td>
<td>6.8</td>
</tr>
<tr>
<td>Production</td>
<td>6.2</td>
</tr>
<tr>
<td>Transportation and Material Moving</td>
<td>6.1</td>
</tr>
<tr>
<td>Food Preparation and Serving Related</td>
<td>5.9</td>
</tr>
<tr>
<td>Construction and Extraction</td>
<td>5.4</td>
</tr>
<tr>
<td>Building &amp; Grounds Cleaning, Maintenance</td>
<td>5.1</td>
</tr>
</tbody>
</table>

### TOTAL AMONG ALL OCCUPATIONS 26.4

Source: U.S. Bureau of the Census
High vs. Low Human Capital Occupations

Change in Composition of Local Labor Market

High Human Capital
27.1

Low Human Capital
72.9

Average Metro Area
High vs. Low Human Capital Occupations

Change in Composition of Local Labor Market

Low Human Capital: 72.2%
High Human Capital: 27.8%

2.4% Increase in High Human Capital Occupations

One Standard Deviation Increase in Degree Production
High vs. Low Human Capital Occupations

Change in Composition of Local Labor Market

Low Human Capital: 71.5%
High Human Capital: 28.5%

5.3% Increase in High Human Capital Occupations

One Standard Deviation Increase in Research Intensity
High vs. Low Human Capital Occupations

Change in Composition of Local Labor Market

One Standard Deviation Increase in Degree Production and Research Intensity
Summary

- Colleges and universities increase both the supply of and demand for skill
  - Metros that produce more graduates have more human capital, although migration mitigates effect
  - Metros with more research intensive colleges and universities tend to have higher levels of human capital
  - Higher education activity tilts the occupational structure of local labor markets toward high human capital jobs