Effect of the Business Cycle on Post-Secondary Decision Making

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General Question

How do local labor market conditions affect students’ choice of major?
Introduction

دى We know that some majors lead to higher paying jobs on average compared to other majors (Bureau of Labor Statistics).

دى Additionally, in times of recession, these majors are more robust against unemployment (Altonji, Kahn, Speer 2013).

دى How significant of a role do these incentives have when a student is choosing a major?

دى Which majors do students tend to gravitate towards?
Introduction

- On the aggregate level, since 1970, it is clear that students shift toward degrees such as engineering, economics and computer science.
Brief Literature Review

- Discussion Paper - Investment over the Business Cycle: Insights from College Major Choice
  - Blom, Cadena, Keys 2015

- In recession, “students of both genders pursue more difficult majors, such as STEM fields. These findings imply that the economic environment changes how students select majors, possibly by encouraging them to consider a broader range of possible degree fields.”
Data and Variable Description

- Data on **degrees** is taken from Digest of Education Statistics (from National Center for Education Statistics)
  - Yearly reports between 1999-2012.

- Data on **unemployment** is taken from IPUMS CPS.
  - Originally a sample with over 3.33 million observations, applied with weights, and collapsed to form summaries on each state. The dataset spans from 1995-2012.
Method

- Regressions involving seven categories for degree “Field of Study”:
  - Engineering
  - Humanities
  - Social Sciences
  - Natural Sciences
  - Education
  - Business
  - Other

\[ F_{\text{st}} = \alpha U_{\text{st}} + \beta_1 S_s + \beta_2 T_t + \epsilon_{\text{st}} \]

- Unemployment rates are moving averages with 2-year lag, 3-year lag, and 4-year lag.
## Empirical Results

State-level regression from 1999-2012

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>Unemployment 2 year moving avg.</th>
<th>Unemployment 3 year moving avg.</th>
<th>Unemployment 4 year moving avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>0.083(^1) (0.0470)</td>
<td>0.163(^3) (0.0504)</td>
<td>0.225(^3) (0.0568)</td>
</tr>
<tr>
<td>Humanities</td>
<td>-0.204(^3) (0.0669)</td>
<td>-0.201(^3) (0.0724)</td>
<td>-0.182(^2) (0.0776)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>-0.217(^3) (0.0500)</td>
<td>-0.280(^3) (0.0535)</td>
<td>-0.350(^3) (0.0597)</td>
</tr>
</tbody>
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\(^1\)p < 0.10, \(^2\)p < 0.05, \(^3\)p < 0.01
## Empirical Results

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<td>Natural Sciences</td>
<td>0.048&lt;sup&gt;1&lt;/sup&gt; (0.0246)</td>
<td>0.046&lt;sup&gt;1&lt;/sup&gt; (0.0266)</td>
<td>0.026 (0.0294)</td>
</tr>
<tr>
<td>Education</td>
<td>0.068 (0.0528)</td>
<td>0.068 (0.0571)</td>
<td>0.060 (0.0611)</td>
</tr>
<tr>
<td>Business</td>
<td>0.037 (0.0663)</td>
<td>0.101 (0.0716)</td>
<td>0.178&lt;sup&gt;2&lt;/sup&gt; (0.0792)</td>
</tr>
<tr>
<td>Other</td>
<td>0.184&lt;sup&gt;3&lt;/sup&gt; (0.0587)</td>
<td>0.105 (0.0638)</td>
<td>0.043 (0.0711)</td>
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<sup>1</sup>p < 0.10,  <sup>2</sup>p < 0.05,  <sup>3</sup>p < 0.01
Conclusion

- The **positive** effect for Engineering is much higher in the 4-year moving average than the 2-year moving average.
  - The requirements to earn an engineering degree are very strict, so students cannot switch into the major easily within a two-year timeframe as compared to four years.

- The **negative** effect for Humanities and Social Sciences remains strong regardless of which year the unemployment rate is measured.
Conclusion

◊ The Natural Sciences and Education fields are practically **unaffected** by changes in the local labor market.

◊ When faced with a shorter-term, two-year decision, most students who don’t enter engineering choose to major in something other than the six major categories listed.
  ◊ They may have *wanted* to pursue engineering but could not because they wouldn’t have been able to complete their degree on time.