University Quality and the Labour Market Outcomes of Canadian Youth

Joniada Milla
Motivation

Why are returns to university quality important?

- Screening instrument for employers
- The right career choice: student-university match
- Resource allocation for Universities
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- Screening instrument for employers
- The right career choice: student-university match
- Resource allocation for Universities
• EU universities: tuition-free & mainly public

• US universities: high tuition & mainly private

• EU and US study findings may not be generalized for CA
Introduction

Mincer (1958) Earnings Regression:

$$\ln(w_i) = \alpha_0 + \alpha_1 S_i + X\beta + u_i$$  \hspace{1cm} (1)

Card (1999) for a review of the literature

1. $u_i = \gamma A_i + \epsilon_i$ leads to $\text{Cov}(S_i, u_i) \neq 0$

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1. \( u_i = \gamma A_i + \epsilon_i \) leads to \( \text{Cov}(S_i, u_i) \neq 0 \)
2. Nonlinearities in the 8\textsuperscript{th}, 12\textsuperscript{th}, 16\textsuperscript{th} year of education:

- "Sheepskin effect"

⇒ New dimension additional to quantity - Quality of Education

\[ \ln(w_i) = \alpha_0 + \alpha_1 S_i + \alpha_2 Q^*_i + \gamma A^*_i + X \beta + \epsilon_i \] (2)
Introduction

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$\Rightarrow$ New dimension additional to quantity - **Quality of Education**

$$\ln(w_i) = \alpha_0 + \alpha_1 S_i + \alpha_2 Q_i^\ast + \gamma A_i^\ast + X \beta + \epsilon_i \quad (2)$$

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Returns to university quality:

- 10.3% for women
- 13.4% for men
Preview of findings

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Literature on University Quality

- Black, Smith and Daniel (2005)
- Holmlund (2009) and Sumohen (2011)
Literature on University Quality

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Canadian Literature on University Quality

Betts, Ferrall and Finnie (2007)

- University fixed effects model
- “partially causal" returns to university attributes
Data Sources

- Youth in Transition Survey - Cohort B for years 1998-2008
- *Maclean’s Magazine* University Ranking Issue of November 2002
Maclean’s magazine data

Reputation Ranking of 45 universities

- Highest quality
- Leaders of tomorrow
- Most innovative

University quality ranking using PCA of:

- Average GPA of entering cohort
- Proportion who graduate
- Classes taught by tenured faculty
- Faculty with PhD’s
- Faculty and Student awards
- Faculty-Student ratio
- Faculty SSHRC and Medical/Science grants
- Student Services, Operating budget, Scholarships and bursaries
- Library holdings per student, Acquisitions, Expenses
- Number of full-time and part-time students

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Treatment Variable

Figure: Visual representation of the ranking indicator variables

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Main Specification

\[
\ln(w_i) = \alpha_0 + \alpha_1 S_i + \alpha_2 Q_i^* + \gamma A_i^* + X\beta + \epsilon_i \quad (3)
\]

where \( X \) is

- Own characteristics: major dummies, rural and residence province dummy, number of dependent children, citizen dummy, marital status, full-time worker dummy.

- Parental education

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Methodology

- Propensity Score Matching Estimator
- Dose-response and treatment effect functions
Descriptive Statistics

Figure: Empirical distribution of log hourly wages by gender & rankings

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## Descriptive Statistics

### Sorting in universities by ability

<table>
<thead>
<tr>
<th>High School Grade(%)</th>
<th>First Quartile</th>
<th>Second Quartile</th>
<th>Third Quartile</th>
<th>Fourth Quartile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-79</td>
<td>8.39</td>
<td>5.93</td>
<td>3.85</td>
<td>13.75</td>
<td>31.87</td>
</tr>
<tr>
<td>80-89</td>
<td>8.35</td>
<td>11.21</td>
<td>9.56</td>
<td>20.22</td>
<td>49.34</td>
</tr>
<tr>
<td>90-100</td>
<td>2.31</td>
<td>5.16</td>
<td>3.74</td>
<td>7.58</td>
<td>18.79</td>
</tr>
<tr>
<td>Total</td>
<td>19.01</td>
<td>22.31</td>
<td>17.14</td>
<td>41.45</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: The numbers in each cell are the cell percentage determined by the university reputation ranking and ability. The total number of observations is 910.
Table: Return to Reputation Rankings of BA’s: Top vs. Bottom 25%

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>NNM</th>
<th>NNM BCE</th>
<th>PSM</th>
<th>Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>0.171*** (0.053)</td>
<td>0.215*** (0.057)</td>
<td>0.152** (0.061)</td>
<td>0.157** (0.068)</td>
<td>322</td>
</tr>
<tr>
<td>Men</td>
<td>0.191*** (0.063)</td>
<td>0.227*** (0.076)</td>
<td>0.299*** (0.084)</td>
<td>0.254*** (0.102)</td>
<td>214</td>
</tr>
</tbody>
</table>

Standard errors in parenthesis. ***Significance at 1%, **Significance at 5%, *Significance at 10%.
## Table: Return to Reputation Rankings of BA’s, NNM BCE

<table>
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<tr>
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<th>Y=log(hourly wage)</th>
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<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.152**</td>
<td>0.103**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.061)</td>
<td>(0.045)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>322</td>
<td>620</td>
<td></td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0.134***</td>
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<td></td>
<td>214</td>
<td>400</td>
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<td></td>
<td>332</td>
<td>620</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>-0.031</td>
<td></td>
<td>0.115**</td>
</tr>
<tr>
<td></td>
<td>(0.081)</td>
<td></td>
<td>(0.053)</td>
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<td></td>
<td>193</td>
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University Reputation

Figure: Dose-response and treatment effect functions

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Dose-response Functions

University Quality

Figure: Dose-response and treatment effect functions

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Returns to ranking are non-linear, higher for men than women.

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Employers distinguish even a 1 rank difference for lower-ranked university graduates
Conclusion

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Future Research

- Wage profiles and university quality
- Other pecuniary and non-pecuniary outcomes
- A better university quality index?
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- Other pecuniary and non-pecuniary outcomes
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Thank you!

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EDUCATION VS. THE LABOUR MARKET
FUTURISM IN HIGHER EDUCATION

PAUL JARVEY
HIGHER EDUCATION STRATEGY ASSOCIATES

HEQCO
Fredericton, New Brunswick – October 24, 2011
Competing visions

- **Paradigm one:**
  - Outcomes-oriented, labour supply & demand, technical appropriateness

- **Paradigm two:**
  - Experience-oriented, long-term adaptability, generalist skillset
Youth unemployment rates and unemployment durations

Average unemployment duration: 15-24

Unemployment rate: 20-24
The Student Perspective

- MyCanEd monthly panel
- Mixed quantitative and qualitative instrument
- Roughly 2,000 students across Canada

Work-In-Learning

Why do students value postsecondary?
What do students perceive as valuable skills?
Where students expect to work

- Public sector: 36%
- Private sector: 27%
- Not-for-profit sector: 33%
- Not sure/don’t know: 4%
Relation of future job to study

- My program is best: 40%
- My program is useful but others are good too: 2%
- PSE required, program of study irrelevant: 10%
- PSE not required: 38%
- Not sure/don't know: 10%
Perceived importance to getting a job
Skills students think they lack for getting a permanent job
What could your institution have done to better prepare you?
Applied education: Why it’s important

Work improved knowledge and technical skills in areas related to field of study

![Bar chart showing percentages of students who agree or strongly agree with the statement that work improved their knowledge and technical skills in their field of study. The chart details the percentages for co-op, internship, research assistant, teaching assistant, volunteer, in-school work, and summer work.]
Work Provided a Better Understanding of General Workplace Culture, Norms and Behavior
Work Gave Me A Better Understanding of What I Want to Do With My Life
Resolving the paradigm conflict

- Student perspective integrates elements from both rhetorics