THE IMPACT OF THE ESTABLISHMENT OF A UNIVERSITY ON THE REGIONAL LABOUR MARKET FOR GRADUATES

Friday February 2\textsuperscript{nd} 2018

GEO-INNO Conference Barcelona

Gerwin Evers
IKE-group at Aalborg University

RUNIN project
CONTEXT

• Universities role in a knowledge based economy
• Universities in peripheral regions
• Peripheral regions
  ➢ Organizational thinness
  ➢ Small and non-knowledge intensive companies
  ➢ Low availability of high skilled workers…
    …..but also limited demand
• University as fast growing supplier of graduates
What impact does the establishment of a peripheral university have on the regional graduate labour market?
THEORY

• Labour market
  ➢ Not a perfect market: Low elasticity of supply and demand

• Early cohorts
  ➢ Low supply and initial demand
  ➢ Strong labour market position

Hypotheses 1: The early graduate cohorts earn relative high wages

• Over time
  ➢ New universities tend to experience a rapid growth
  ➢ Increasing the knowledge intensity of the local economy is a more gradual process

Hypotheses 2: Wage premium is weakening over time
Hypotheses 3: Mobility is increasing over time
EMPIRICAL CONTEXT

• The North Denmark region
  ➢ Population wise smallest of Denmark
  ➢ Main city Aalborg
  ➢ Traditional industry structure…
    …but also development of some knowledge intensive sectors

• Aalborg university
  ➢ Founded in 1974 as successor of existing higher education institutions
  ➢ Last region to receive its first university
  ➢ Technical oriented university, but with a large social sciences faculty
METHODS

• Register data
  ➢ Micro-level data of all Danes
  ➢ Wide variety of variables

• Data availability restricts analyses to 1987-2007
DATA ANALYSES WAGES (1)

- Controlling for
  - Degree
  - Labour market experience
  - Cost of living
- Calculate weighted average per year
- Comparing to control group
## DATA ANALYSES WAGES (2)

- Wages for a group of graduates from Aalborg University living in North Denmark

<table>
<thead>
<tr>
<th>Degree</th>
<th>Experience</th>
<th>Number of people</th>
<th>Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Psychology</td>
<td>2 year</td>
<td>10</td>
<td>200kr</td>
</tr>
<tr>
<td>Bachelor Astronomy</td>
<td>5 year</td>
<td>5</td>
<td>300kr</td>
</tr>
<tr>
<td>Master Computer Science</td>
<td>25 year</td>
<td>5</td>
<td>500kr</td>
</tr>
<tr>
<td>Master Biotechnology</td>
<td>9 year</td>
<td>20</td>
<td>400kr</td>
</tr>
<tr>
<td><strong>Weighted average wage</strong></td>
<td></td>
<td></td>
<td>350kr</td>
</tr>
</tbody>
</table>

\[
\text{Weighted average wage} = \frac{(2000+1500+2500+8000)}{40}
\]

\[
\text{Weighted average wage} = 350\text{kr}
\]
### DATA ANALYSES WAGES(3)

- Wages for the control group from other universities living in other regions

<table>
<thead>
<tr>
<th>Degree</th>
<th>Experience</th>
<th>Number of people(in NDK)</th>
<th>Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Psychology</td>
<td>2 year</td>
<td>10</td>
<td>300kr</td>
</tr>
<tr>
<td>Bachelor Astronomy</td>
<td>5 year</td>
<td>5</td>
<td>400kr</td>
</tr>
<tr>
<td>Master Computer Science</td>
<td>25 year</td>
<td>5</td>
<td>600kr</td>
</tr>
<tr>
<td>Master Biotechnology</td>
<td>9 year</td>
<td>20</td>
<td>500kr</td>
</tr>
<tr>
<td>Weighted average wage</td>
<td>(3000+2000+3000+10000)/40</td>
<td>450kr</td>
<td></td>
</tr>
</tbody>
</table>
**DATA ANALYSES WAGES(4)**

- Calculate cost of living index based on average wage of people in North Denmark and...

<table>
<thead>
<tr>
<th>Degree</th>
<th>Experience</th>
<th>Number of people (in NDK)</th>
<th>Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>10 year</td>
<td>500</td>
<td>100kr</td>
</tr>
<tr>
<td>Carpenter</td>
<td>25 year</td>
<td>100</td>
<td>200kr</td>
</tr>
<tr>
<td>Bachelor communication</td>
<td>10 year</td>
<td>20</td>
<td>300kr</td>
</tr>
<tr>
<td>Master Criminology</td>
<td>15 year</td>
<td>10</td>
<td>300kr</td>
</tr>
<tr>
<td><strong>Weighted average wage</strong></td>
<td></td>
<td><strong>(50000+20000+6000+3000)/630</strong></td>
<td><strong>125kr</strong></td>
</tr>
</tbody>
</table>
DATA ANALYSES WAGES(5)

- average wage for control group of people living in other regions

<table>
<thead>
<tr>
<th>Degree</th>
<th>Experience</th>
<th>Number of people (in NDK)</th>
<th>Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>10 year</td>
<td>500</td>
<td>150kr</td>
</tr>
<tr>
<td>Carpenter</td>
<td>25 year</td>
<td>100</td>
<td>250kr</td>
</tr>
<tr>
<td>Bachelor communication</td>
<td>10 year</td>
<td>20</td>
<td>350kr</td>
</tr>
<tr>
<td>Master Criminology</td>
<td>15 year</td>
<td>10</td>
<td>350kr</td>
</tr>
<tr>
<td><strong>Weighted average wage</strong></td>
<td></td>
<td>(75000+25000+7000+3500)/630</td>
<td>175kr</td>
</tr>
</tbody>
</table>
DATA ANALYSES WAGES(6)

- Average wage North Denmark: 125kr
- Average wage control group: 175kr
- Cost of living index: $175/125=1.4$
- Wages of control group will be divided by the cost of living index, before comparing
DATA ANALYSES MOBILITY

• Mobility
  ➢ Grouping based on place of residence prior and after studying:

<table>
<thead>
<tr>
<th>Residence prior to study</th>
<th>Residence after graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Denmark</td>
<td>North Denmark</td>
</tr>
<tr>
<td>Outside</td>
<td>Outside</td>
</tr>
<tr>
<td>North Denmark</td>
<td>Locals</td>
</tr>
<tr>
<td>Outside</td>
<td>Leavers</td>
</tr>
<tr>
<td>Outside</td>
<td>Stayers</td>
</tr>
<tr>
<td></td>
<td>Visitors</td>
</tr>
</tbody>
</table>

➢ Development of the (relative) size of groups over time
PRELIMINARY RESULTS WAGES (1)

Figure 1: Development of wages between 1987-2007

Figure 1: Development of wages between 1987-2007

Average wage controlled for cost of living


100 kr. 150 kr. 200 kr. 250 kr. 300 kr.

AAU group  Control group (controlled for price-level index)
PRELIMINARY RESULTS WAGES(2)

Figure 2: Development of wages between 1987-2007 (Index=Control group)
PRELIMINARY RESULTS WAGES(2)

Figure 2: Development of wages between 1987-2007
(Index=Control group)
PRELIMINARY RESULTS WAGES(2)

Figure 2: Development of wages between 1987-2007 (Index=Control group)
Figure 3: Mobility AAU graduates between 1987-2007
Figure 4: Net outward mobility 1987-2007
Figure 5: Net mobility as share of graduates originally from the region 1987-2010
Figure 6: Likelihood staying in the region, by origin, 1987-2007
RESEARCH AGENDA

• Look at other Danish universities
• Look at yearly cohorts
• Look at differences between degrees (engineers vs social sciences)
• Look at gender differences
• Calculate cost-of-living index on municipality level
WRAP UP

• Above average labour market position….
  …but wage premium disappears over time

• Net mobility is constant…. 
  ….but relative mobility is declining
**TAKEAWAYS**

- Peripheral universities can play an important role in increasing the human capital in the region....
  
  ...but the regional economy does not develop in the same pace

- Mobility is not the norm for graduates.....
  
  ....and peripheral universities have the potential to develop into an important educational institution at the national level
Thank you for your attention!
Questions?

Gerwin Evers
Aalborg University

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Maria Skłodowska-Curie grant agreement No. 722295
Thank you for your attention! Questions?

Gerwin Evers
Aalborg University

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Maria Skłodowska-Curie grant agreement No. 722295