Determinants of unemployment, hourly wage rates and private returns to education in Greece (with emphasis on tertiary education graduates)

Ioannis Cholezas
Centre for Planning and Economic Research

Theodore Mitrakos
Bank of Greece

Panos Tsakloglou
Athens University of Economics and Business and IZA

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YOUTH UNEMPLOYMENT AND JOBLESSNESS: CAUSES, CONSEQUENCES, RESPONSES
Mexico City, 29-30 August 2011
Greece (until the crisis):
(a) Strong demand for tertiary education
(b) Rapid expansion of tertiary education since the early 1990s
(c) Worries about graduate unemployment and low wages

(and, then, the crisis came)
Graph 1. Unemployment rate by sex, Greece: 1977-2008
Graph 2a. Unemployment rate by age group: Greece, 1986-2006 (Males)

Graph 2b. Unemployment rate by age group Greece, 1986-2006 (Females)
Graph 3. Unemployment rate of persons aged below 25 in EU27 (2007)
What do the data show


- Problem of transition to the labour market
  not problem of youth unemployment *per se*
Unemployment rate by educational level

- Postgraduate studies
- Universities
- TEI
- Post secondary non-tertiary
- Upper secondary
- Less than upper secondary
- TOTAL

Legend:
- Blue: Up to five years from graduation
- Red: Six or more years after graduation
What do the data show *(Labour Force Surveys 2004-2007)*:

- Problem of transition to the labour market, not problem of youth unemployment per se
- This is evident in the estimated probability of unemployment after graduation
- But there are large differences between male and female graduates
Two-stage econometric estimation

(with selectivity correction a-la-Heckman)

Separate sets of estimates for males and females

Cross sectional estimation (not panel)

Other explanatory variables, apart from education, years from graduation and multiplicative interaction terms

- Marital status
- Nationality
- Region of residence
- Locality
- Local unemployment rate
- Year
- Quarter
Estimated unemployment rates for broad educational groups: Males

- Less than Lyceum: 10%, 12%, 14%
- Lyceum: 0%, 2%, 4%, 6%, 8%
- Post-sec. non-tertiary: 0%
- TEI: 0%
- Universities: 0%
- Post-graduate studies: 0%
Estimated unemployment rates for broad educational groups: Females

- Less than Lyceum
- Lyceum
- Post-sec. non-tertiary
- TEI
- Universities
- Post-graduate studies

Years from Graduation:

- 0%
- 5%
- 10%
- 15%
- 20%
- 25%
- 30%
What do the data show


- Problem of transition to the labour market
  not problem of youth unemployment per se
- This is evident in the estimated probability of unemployment after graduation
- But there are large differences between male and female graduates
- As well as across graduates of different disciplines
Unemployment rates of University graduates

- Natural Education & Sports
- Other
- Education
- Languages
- Humanities
- Social Sciences
- Horticulture & Forestry
- Business & Economics
- Engineering II (Mechanical etc)
- Natural Sciences
- Mathematics & Statistics
- Medicine, Dentistry & Veterinary
- Engineering I (Structural etc)
- Law
- Informatics
- Universities

- Up to five years from graduation
- Six or more years after graduation
Estimated unemployment rates of male University graduates (example)

- Lyceum (males)
- Engineering I (Structural etc)
- Engineering II (Mechanical, etc)
- Informatics
- Natural Sciences
- Mathematics and Statistics
Estimated unemployment rates of female University graduates (example)
What do the data show (Labour Force Surveys 2004-2007):

- Problem of transition to the labour market not problem of youth unemployment per se
- This is evident in the estimated probability of unemployment after graduation
- But there are large differences between male and female graduates
- As well as across graduates of different disciplines
- Positive relationship between hourly earnings and education level – but large differences across sexes
Estimated hourly earnings of broad educational groups: Males

- Less than Lyceum
- Lyceum
- Post-sec. non-tertiary
- TEI
- Universities
- Post-graduate studies
Estimated hourly earnings of broad educational groups: Females

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Hourly Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than Lyceum</td>
<td>3,0</td>
</tr>
<tr>
<td>Lyceum</td>
<td>4,0</td>
</tr>
<tr>
<td>Post-sec. non-tertiary</td>
<td>5,0</td>
</tr>
<tr>
<td>TEI</td>
<td>6,0</td>
</tr>
<tr>
<td>Universities</td>
<td>7,0</td>
</tr>
<tr>
<td>Post-graduate studies</td>
<td>8,0</td>
</tr>
</tbody>
</table>
What do the data show

- Problem of transition to the labour market
  not problem of youth unemployment per se
- This is evident in the estimated probability of
  unemployment after graduation
- But there are large differences between male and female
  graduates
- As well as across graduates of different disciplines
- Positive relationship between hourly earnings and
  education level – but large differences across sexes
- And, particularly, across graduates of different disciplines
Estimated hourly earnings for particular groups of male graduates (example)
What do the data show (Labour Force Surveys 2004-2007):

- Problem of transition to the labour market not problem of youth unemployment per se
- This is evident in the estimated probability of unemployment after graduation
- But there are large differences between male and female graduates
- As well as across graduates of different disciplines
- Positive relationship between hourly earnings and education level – but large differences across sexes
- And, particularly, across graduates of different disciplines
- With large differentials in favour of the public sector (esp. for females)
Estimated hourly earnings for University graduates by sector of employment: Males
Estimated hourly earnings for University graduates by sector of employment: Females
What do the data show


- Problem of transition to the labour market not problem of youth unemployment per se
- This is evident in the estimated probability of unemployment after graduation
- But there are large differences between male and female graduates
- As well as across graduates of different disciplines
- Positive relationship between hourly earnings and education level – but large differences across sexes
- And, particularly, across graduates of different disciplines
- With large differentials in favour of the public sector (esp. for females)
- High(?) but very differentiated private returns to education
Private rates of return to an additional year of education

<table>
<thead>
<tr>
<th>Educational Group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering &amp; Electronics</td>
<td>7.0</td>
<td>8.4</td>
</tr>
<tr>
<td>Agricultural and Food Technologies</td>
<td>3.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Business &amp; Economics</td>
<td>5.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Nursing &amp; Paramedical</td>
<td>5.8</td>
<td>7.8</td>
</tr>
<tr>
<td>Other</td>
<td>3.7</td>
<td>9.2</td>
</tr>
<tr>
<td><strong>Universities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering I (Structural, Architecture, etc)</td>
<td>5.5</td>
<td>7.9</td>
</tr>
<tr>
<td>Engineering II (Mechanical, Electrical, etc)</td>
<td>7.1</td>
<td>6.9</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>7.4</td>
<td>7.3</td>
</tr>
<tr>
<td>Mathematics &amp; Statistics</td>
<td>5.3</td>
<td>7.0</td>
</tr>
<tr>
<td>Medicine, Dentistry &amp; Veterinary</td>
<td>7.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Horticulture &amp; Forestry</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Law</td>
<td>6.2</td>
<td>8.1</td>
</tr>
<tr>
<td>Business &amp; Economics</td>
<td>6.5</td>
<td>6.9</td>
</tr>
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<td>8.3</td>
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<td>9.9</td>
<td>9.8</td>
</tr>
<tr>
<td>Natural Education &amp; Sports</td>
<td>4.8</td>
<td>6.8</td>
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<tr>
<td>Education</td>
<td>8.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Other</td>
<td>7.9</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Postgraduate Studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA/MSc</td>
<td>9.3</td>
<td>11.5</td>
</tr>
<tr>
<td>PhD</td>
<td>8.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>
Therefore,

- Strong private demand for tertiary education perfectly rational
  - Lower unemployment
  - Higher wage rates
  - High private rates of return

- Could these results be projected to the future even before the crisis?
  - Probably not – very large increases in supply. Demand?

- Do high private rates of return of tertiary education imply high social benefits?
  - Not necessarily. Social rates of return?
And, then, the crisis came

- Declining GDP for four years in a row
- Drastic wage cuts in the public sector
- Unemployment shot up in the private sector
  - Currently 16%
  - Over 40% for those below 25
  - Large “Brain drain”
- Do the results of the paper hold?
  - First indications: Yes
  - Unemployment hit almost proportionately all education groups
  - Wages declined more in the public sector (but the combined effect still there)
  - Men hit more than women