The impact of mobility on productivity and career path (WP7)

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Content

• Job changes and individual scientific productivity [*Almost final draft*]
  ◦ Original UK data
  ◦ UK BBSRC sample
  ◦ US assessment of data access (Paula Stephan)

• Mobility and academic career [*Started working but not yet a formal model*]
  ◦ UK BBSRC sample
  ◦ Japanese sample
Job changes and scientific productivity

The UK case
A theoretical framework 1

- Lot’s of policy action supporting mobility …… is it good?

- What is the impact of a job change on the short to mid term productivity of a researcher?
A theoretical framework 2

We test the following hypotheses:

1. A move to higher quality/reputation institution is associated to increase in productivity; (WEAK EVIDENCE)
   - Short term decrease due to adjustment costs

2. A move to a lower quality/reputation institution is associated to lower productivity due to adjustment costs; (VERIFIED)
   - This effect can be mitigated depending on contracts with lower teaching workload (I am considered a star in the new institution)
A theoretical framework 3

3. We expect different impact of mobility depending on the association to career development steps:
   ◦ 3.1 Positive impact for mobility with promotion to associate prof. in higher ranked institutions (VERIFIED)
   ◦ 3.2 positive impact for promotion to prof also for mobility to same or lower rank institution (access to better resources – NOT VERIFIED)
A theoretical framework 4

- We also analyze the mobility from business (week negative effect).
The econometric analysis

- **Endogeneity problem (reverse causality)!**
  - SUR (in our model the two are not simultaneous)
  - GMM (we need larger dataset to do this)
  - INSTRUMENTS (the solution, we need better data)
  - REGRESSION DISCONTINUITY DESIGN (we need larger dataset)
UK BBSRC sample

- BBSRC (Biotechnology and Biological Sciences Research Council) grants database covers all funding awarded by the BBSRC from 1994 to 2010.
- 3615 researchers that received more than one grant, 711 of which have been affiliated to more than one institution, hence are mobile.

<table>
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<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
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<tbody>
<tr>
<td>University</td>
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<tr>
<td>PROs</td>
<td>569</td>
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<tr>
<td>Industry</td>
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<td>Abroad</td>
<td>70</td>
<td>1.94%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>4</td>
<td>0.11%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>3615</td>
<td></td>
</tr>
</tbody>
</table>
UK BBSRC sample

- Surveyed to ask their CV.
- Use this to validate (50) the GATE work and as a feed for info.

<table>
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<tr>
<th></th>
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<tr>
<td>Delivered - Not responded</td>
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<td>Sent – Not Responded</td>
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<tr>
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<tr>
<td>Retired</td>
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<td>0.22%</td>
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<tr>
<td>Dead</td>
<td>9</td>
<td>0.25%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>3615</td>
<td></td>
</tr>
</tbody>
</table>
UK BBSRC sample

**Validation:**

- **Demographic data (1st table):** ID, Gender, Nationality, Region of birth, City of birth, Year of birth, Married, N of children;
- **Educational background (1st Table):**
  - City of high school degree;
  - First Degree: Year of achievement, Country, Institution, Type, Department, City, Supervisor;
  - Second Degree: Year of Achievement, Country, Institution, Type, Department, City, Supervisor;
  - PhD: Year of Achievement, Country, Institution, Type, Department, City, Supervisor;
UK BBSRC sample

- **Career (2\(^{nd}\) Table):** ID, Position, Position type (research / management/Teaching), Start year, End year, Department, School, University, (Institution, Institution Type), Country, Dedication (part/full), Type of work (research, private);

- **Research stay (3\(^{rd}\) Table):** ID, Position, Position type (postdoc/invited), Start date, End date, Department, School, University, Country, Dedication (part/full), Type of work (research, private), Financing institution, Mentor ID.
UK BBSRC sample

- **Two type of Validation:**
  - Crawling
  - GATE pdf/word text coding
Japanese Sample

- Survey of biology Grant-in-Aid researchers (900 in the top 56 universities);
- 400 responses – 370 full CVs.
- Japanese CV are much more standardized and easier to codify.
ACADEMIC CAREER

- Characteristics of the labor market
- Determinants of career promotion
- Data analysis: Japan and UK
The main characteristics of the academic labor market

- *Flat structure*: few career steps, similar across countries;
- *Different Appointments*: at least teaching, research and administration + writing and networking;
- *Multiple career paths*: being academic as a second/temporary job or for prestige reasons;
- *Knowledge management*: academic institutions often rely on tacit rather than explicit knowledge;
- *Career practises*: Mentoring and tutoring are practises born in universities (BUT not applied everywhere any longer);
- *Promotion System based on Individual Quality*: in theory more based on merit rather than on time spent in the same institution.
The determinants of career advancement in the classical view

According to the classical view of the «new economics of science» the main determinants for promotion in the academia are:

- **Individual variables:** Productivity (+), Seniority (+), Gender (- if Female);
- **Institutional and Relational Variables:** affiliation to an important PRO institute (+), social ties with discipline members (+).

In this perspective researchers are promoted to higher appointments on the basis of the peer evaluation of their research output (published in scientific journals).
The production of studies on academic promotion has been inhibited by two main factors:

1) Data Constraints;
2) The assumption that productivity and career are strictly correlated.

Limitations of the studies conducted on the topic:
- They focused only on one academic step;
- They seldom tackled more than one academic field;
- The different national university settings make it difficult to develop cross-country studies;
- Difficulty to standardize a great amount of raw data.
Main findings of the promotion literature

- **Gender:** *ceteris paribus* women are promoted less often than men;
- **Departmental Prestige:** very important at doctoral level as predictor of career success;
- **Inbreeding:** an important factor affecting promotion decision made by committees;
- **Mentoring and Social Connections:** Both are important in their role of access to knowledge and influence in the scientific community.