Survey of Pre-Doctoral Research Experiences in Economics

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Motivation

- **Pre-doc**: Post-undergraduate (but pre-doctoral) research assistant (RA) position targeted towards college seniors/recent graduates interested in pursuing a PhD

- Anecdotally, popularity of pre-docs have exploded in past decade, particularly for academic pre-docs. In 2013-14, no “star” PhD graduates had academic RA experience; by 2017-18, one fifth did (Bryan 2019)

- Information on pre-docs often passed through informal networks
Survey goals

1. Make more transparent and widely available information on:
   - How to apply for a pre-doc
   - What a pre-doc entails
   - Differences & similarities between positions

2. Provide descriptives on who are getting pre-doc positions
1. Survey distribution & sample
2. Demographics
3. Skills & experiences prior to position
4. Hiring process
5. Day-to-day life
6. Academic vs non-academic positions
7. Advice for future applicants
Full results are available in our data appendix.
Survey Distribution & Sample
Directly contacted current pre-docs at major institutions and advertised survey on #EconTwitter

<table>
<thead>
<tr>
<th>Criterion</th>
<th>N</th>
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<tbody>
<tr>
<td>Clicked on survey distribution link</td>
<td>410</td>
</tr>
<tr>
<td>Consented and finished survey</td>
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<tr>
<td>Valid e-mail</td>
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<tr>
<td>Full-time position</td>
<td>247</td>
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<tr>
<td>Institution in U.S.</td>
<td>226</td>
</tr>
<tr>
<td>Position end date ≥ 2018</td>
<td>222</td>
</tr>
<tr>
<td>Position started ≤ March 2020</td>
<td>203</td>
</tr>
</tbody>
</table>

- **Final sample**: 203 recent full-time pre-docs at 29 U.S. institutions
- Focused analysis on U.S. institutions due to limited number of non-U.S. responses
Sample non-representative but covers 71% of institutions listed on NBER RA job listings and @EconRA Twitter

<table>
<thead>
<tr>
<th>Academic</th>
<th>Count</th>
<th>Non-academic</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanford</td>
<td>27</td>
<td>Fed system</td>
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<tr>
<td>Harvard</td>
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<tr>
<td>UChicago</td>
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<td>IMF</td>
<td>11</td>
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<tr>
<td>Yale</td>
<td>15</td>
<td>CFPB</td>
<td>4</td>
</tr>
<tr>
<td>Princeton</td>
<td>11</td>
<td>Microsoft Research</td>
<td>3</td>
</tr>
<tr>
<td>Northwestern</td>
<td>9</td>
<td>Other non-academic</td>
<td>4</td>
</tr>
<tr>
<td>MIT</td>
<td>6</td>
<td></td>
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<td>NYU</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>Columbia</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPAL / IPA</td>
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<td></td>
<td></td>
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<tr>
<td>NBER</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other academic</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>138</strong></td>
<td></td>
<td><strong>65</strong></td>
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</table>
Demographics
Pre-docs are majority white, U.S. citizens, male, and continuing-generation college graduates.
Parents of pre-docs have higher levels of education than parents of average U.S. undergraduate.

Source: 2016/17 Baccalaureate and Beyond Longitudinal Study.
Large majority of pre-docs hold undergraduate degree from U.S. college or university and majored in economics.
Pre-docs with non-U.S. undergraduate degree usually have a graduate degree (and vice-versa)
Academic pre-docs went to similarly ranked U.S. colleges or universities as recent job market candidates from top PhDs.

Includes U.S. undergraduates without graduate degrees prior to their PhD program or pre-doc. Economics PhD programs include MIT, Harvard, Stanford, Princeton, Yale, UC Berkeley, and UChicago. Source: 2020 U.S. News Best Colleges.
Skills & Experiences Prior to Position
Common for pre-docs to have taken advanced economics and math courses prior to position

Undergraduate core includes intermediate microeconomics, intermediate macroeconomics, and econometrics. Taking undergraduate core or PhD core refers to taking any course included in the core.
Pre-docs have prior research and programming experience; many have prior full-time experience

- Full−time professional
- Full−time RA
- Part−time/summer RA
- Independent research
- Professional experience
  - R
  - Python
  - Stata
- Coding experience

Prior experiences

- 0% 25% 50% 75% 100%

Professional experience

- Independent research
- Part−time/summer RA
- Full−time RA
- Full−time professional
Hiring Process
Late fall/winter most common time for recruitment, though hiring occurs year-round

- Pre-docs generally received their offer for position within two months of starting application process
Recruitment centralized around RA job listings (e.g., NBER) for academic pre-docs; heterogeneous for non-academic.
Pre-docs usually last two years.
Visa support more common for academic positions than non-academic positions.
References and writing/coding samples often requested; interviews focused on research and programming skills.
Coding challenges typical for academic pre-docs and primarily in Stata

**Coding challenge characteristics**

- **Interview required challenge**
  - Yes

- **Software used**
  - Stata

- **Challenge length (hours)**
  - 0−4: 25%
  - 5−9: 50%
  - 10−14: 25%
  - 15−19: 0%
  - 20+: 0%

- Academic vs. Non-academic
Day-to-Day Life
Self-reported median working hours: 40 hours per week

Error bars present the 25th, 50th, and 75th percentile.
Pre-docs spend most of their time on data work

Error bars present the 25th, 50th, and 75th percentile.
Frequency of interaction with principal investigator (PI) can vary widely.

**Frequency message**
- Daily: 50%
- Every 2–3 days: 25%
- Weekly: 25%
- Less than weekly: 0%

**Frequency talk**
- Daily: 25%
- Every 2–3 days: 25%
- Weekly: 25%
- Every 2–3 weeks: 25%
- Monthly or less: 0%
Common software used and development opportunities during position

**Position characteristics**

**Software used**
- Stata: 75%
- LaTeX: 50%
- R: 75%
- Python: 50%
- Git: 25%

**Development**
- Seminars/conferences: 100%
- Free classes: 50%
- Subsidized classes: 50%
Majority of pre-docs find that position increases their interest in pursuing PhD

Effect of position on interest in PhD

- Greatly increased
- Increased
- Did not change
- Decreased
- Greatly decreased

Bars show percentages of respondents who experienced each effect of position on their interest in pursuing a PhD.
Academic vs Non-Academic Positions
Wage gap between academic and non-academic pre-docs

Annual salary (US dollars)
Non-academic institutions tend to have larger pre-doc programs/cohorts

RA cohort size

Only one
2−5
6−10
10+

0% 25% 50% 75% 100%

Academic Non−academic

 Academic
 Non−academic
Coauthorship opportunities idiosyncratic to institution and PI

Coauthor with PI

- **Yes**
  - Academic: 25%
  - Non-academic: 50%

- **No**
  - Academic: 50%
  - Non-academic: 25%

- **Not sure**
  - Academic: 0%
  - Non-academic: 0%
Academic pre-docs more likely to apply to PhD programs

PhD application status

- Applying in future
- Applied and attending
- Not applying
- Applied, not attending

0% 25% 50% 75% 100%

Academic Non-academic
Academic pre-docs more likely to attend PhD programs at “top” schools

Given the difficulty of aggregating program selectivity across disciplines, we use multidisciplinary ranking, recognizing that such a measure is highly imperfect. Source: 2020 US News Best Global Universities for Economics & Business.
Advice for Future Applicants
Takeaways from survey participants’ free responses

- **Applying to a position**
  - Seek prior research experience and connections with professors
  - Apply widely
  - Develop prior coding experience

- **Selecting the “right” position**
  - Talk to previous RAs and others about your potential supervisors
  - Seek programs with RA “cohorts”
  - Take into account the reputation of researchers and past placements of RAs
  - Choose diverse working environments

- **Succeeding during the position**
  - Be self-sufficient
  - Work to develop a relationship with your supervisor
  - Don’t be afraid to prioritize your own research or classes
References
References