



Junior S&E's and Academic Research Careers – Insights from the Science and Engineering PhD and Postdoc Survey (SEPPS) 2010/2013

Henry Sauermann

Georgia Institute of Technology

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Focus on the “beginning” of the arc

- Understanding initial decisions to enter academic career (or not).
 - What are PhD students' preferences for various types of careers?
 - How do these preferences change over time?
 - What are postdocs' career preferences? Are they aware of the labor market conditions? Do they regret having done a postdoc?
- How do ex ante preferences and ex post career outcomes match up?

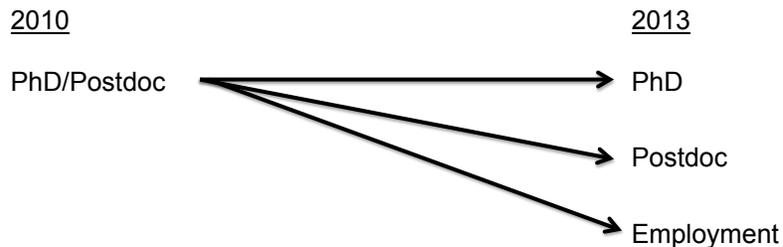
S&E PhD and Postdoc Survey (SEPPS)

- Joint work with Michael Roach, Duke
- First wave in spring 2010, surveying over 30,000 PhDs and Postdocs at US tier one institutions with large doctoral programs
 - Direct contact (adjusted response rate 30%) and via department administrators
 - Publications based on first wave
 - Sauermann, H., & Roach, M. 2012. Science PhD career preferences: Levels, changes, and advisor encouragement. *PLoS ONE*, 7(5): e36307
 - Sauermann, H., & Roach, M. 2013. Not all scientists pay to be scientists: PhDs preferences for publishing in industrial employment. *Research Policy*, forthcoming
 - On the survey methodology (S&R 2013, *Research Policy*, forthcoming)
- Second wave sent to first wave respondents, spring 2013
 - Adjusted response rate 53%

Longitudinal SEPPS data

Combined data provide insights into

- Current career preferences of PhDs and Postdocs
- Changes in career preferences over time for those who were PhDs in both time periods
- Match between ex ante preferences and ex post outcomes for those who entered employment

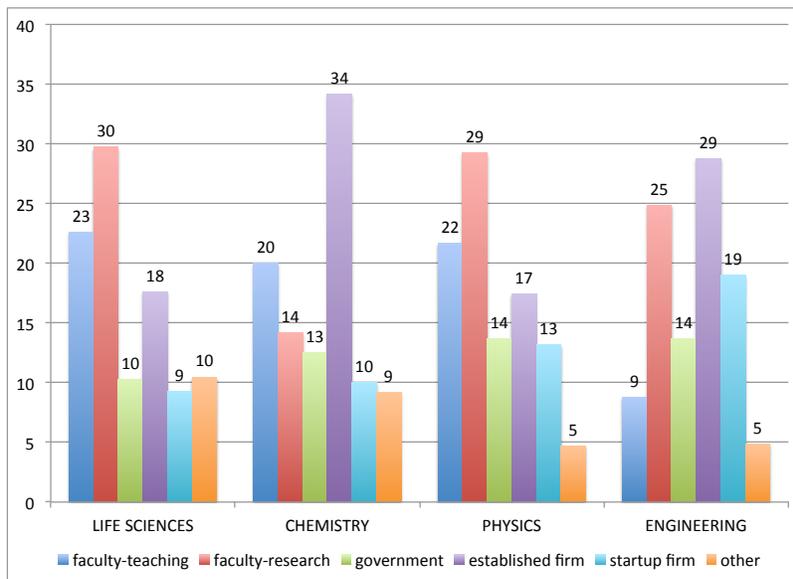


Note: Results are early and preliminary.

Current career preferences

- Focus on current PhDs first, then look at Postdocs
- “Assuming you had the choice, which of the following would be your most preferred career?”
 - University faculty with emphasis on teaching
 - University faculty with emphasis on research and development
 - Government position with focus on R&D
 - Job in established firm with focus on R&D
 - Job in startup firm with focus on R&D
 - Other (please specify)____

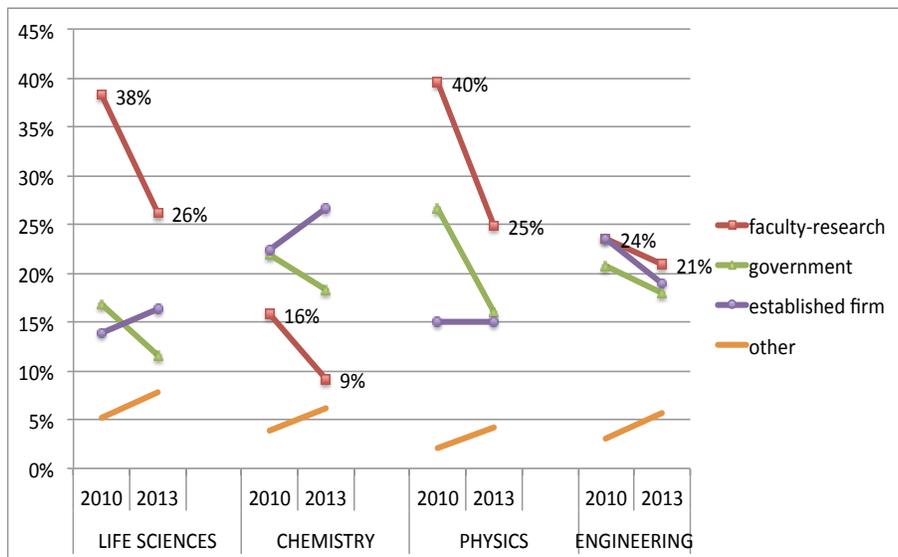
Most preferred career – current PhDs, in %



Changes in career preferences

- There is the notion that PhDs may become “disillusioned” with academia during their training. How do career preferences change during the program?
- Same question asked in 2010 and 2013. Now compare the ratings to see changes over time.
- “Putting job availability aside, how attractive do you personally find each of the following careers?”
 - Independently rated on 5-point scales

Career rated “extremely attractive” (5/5) in ‘10 vs. ‘13



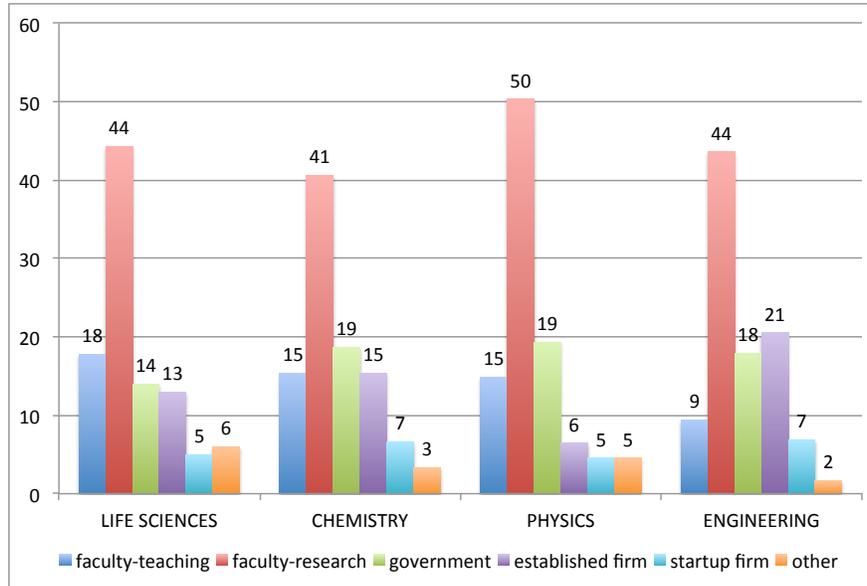
Why did academic career become less attractive?

Some open ended responses from those who stopped having academic research as their most preferred career:

- “Realizing that University Faculty usually spend most of their time on activities supporting the research but not the research itself.”
- “I got tired of doing work that only matters to a handful of people, has no impact on society, and pays poorly.”
- “I don't want to be my advisor. Ever.”
- “I've discovered that I'm a mediocre scientist but a really good teacher, and teaching makes me happy.”
- “The realization that very few tenure track positions actually exist, the lack of research funding, and too many qualified applicants.”

Postdocs

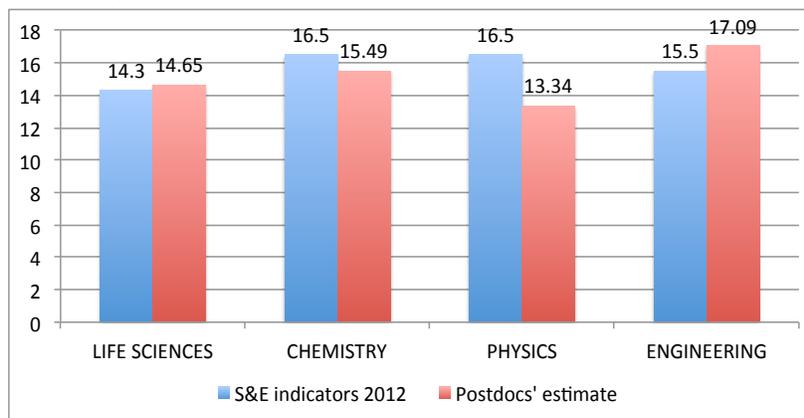
Most preferred career – current Postdocs, in %



Are they aware of labor market conditions?

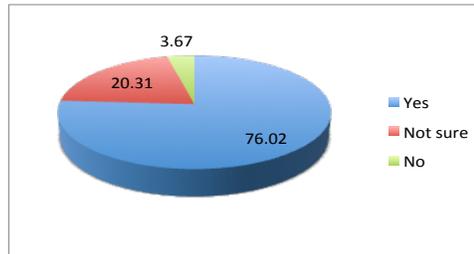
“What do you think is the percentage of PhDs in your field holding a tenure-track faculty position five years after graduation?”

- Compare their estimates with actual numbers from S&E indicators (Table 3-20)

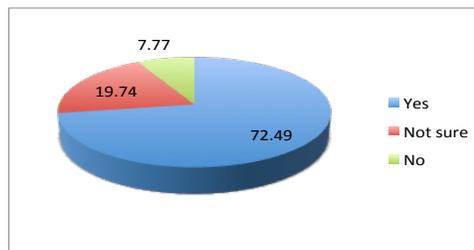


“If you could go back to the time when you finished your PhD, would you choose to pursue a postdoc again?”

- Respondents with 1 or 2 years of Postdoc

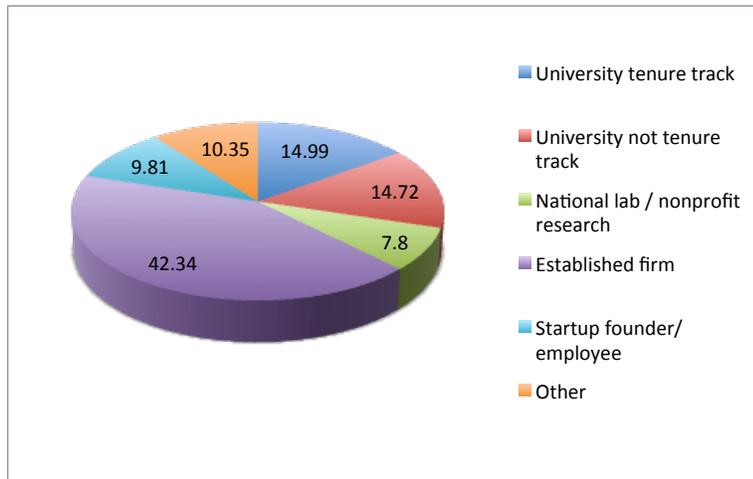


- 3+ years of postdoc



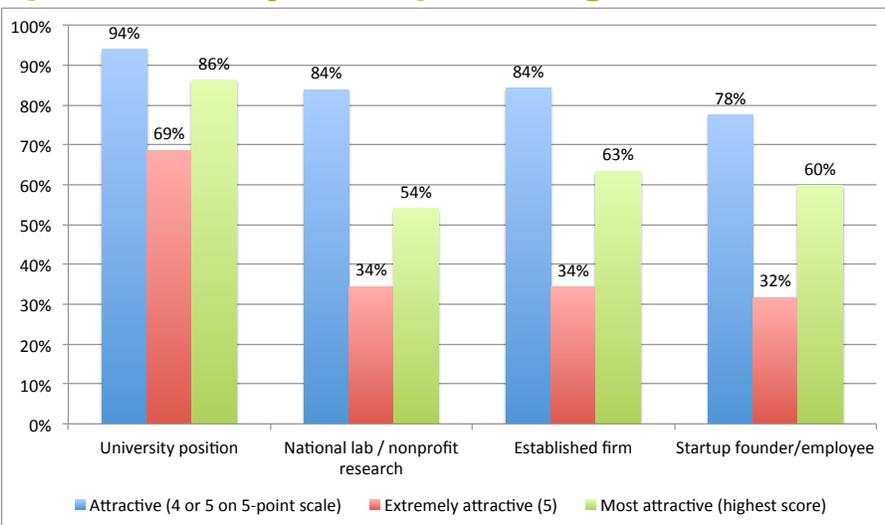
Ex ante preferences vs. ex post outcomes

Current positions (if employed)



Note: all fields, N=1488, excludes current postdocs; not representative of overall career patterns in the population (due to different time lags between PhD and first position in different career paths).

In 2010, how attractive did they find the position they end up holding in 2013?



Note: 2010 survey did not distinguish preferences for TT vs. non-TT positions; "university position" captures both.

Summary and future research

- PhDs have a broad range career interests
 - Many prefer non-academic careers
 - Need to look at differences by gender, citizenship etc.
- Significant differences in career preferences across fields
 - Often ignored in public discussion
- Interest in academic positions declines over time, for a variety of reasons
 - E.g., learning about job options, learning about own abilities and preferences, market conditions, etc.
 - Need to quantify the role of these and other factors
 - What is the role of advisors in the process? What other sources of information can/should PhDs draw on?

Summary and future research

- Postdocs are more focused on academic research careers than PhDs, but roughly 50% still prefer non-academic careers
- Postdocs' knowledge of the labor market appears to be quite well calibrated
 - Many who do Postdoc know the odds are not great.
 - Future research: Why do they still do it? Overconfidence in own (vs. average) chance of finding position? Decision to pursue Postdoc for reasons other than academic career?
- Most (but not all) employed S&E's work in positions that they found at least "attractive" in 2010.
 - Which students are (not) able to enter their most preferred careers?
 - How are career transitions influenced by ability, job market conditions, advisor support, etc.?
 - What are the individual and societal "welfare" effects of a (mis-) match between career preferences and actual career outcomes?

Questions, comments?

henry.sauermann@scheller.gatech.edu