Empirical Analysis of Career Transitions of Sciences and Engineering Doctorates in the US[*]

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Abstract

This paper studies career mobility of doctoral natural scientists and engineers using a Survey of Doctorate Recipients conducted by the National Science Foundation (1973-2001). The paper addresses two issues. The first one concerns attrition rates of scientists and engineers out of R&D-related occupations and factors affecting the timing and destinations of the transitions. The second issue is concerned with the out-of-S&E mobility. I evaluate a claim expressed in several studies that scientists are poorly suited for employment outside S&E. In order to do that, I estimate a competing risks transition model to examine the reasons and timing of mobility within- and out of S&E. I find that R&D occupations exhibit higher retention rates compared to other S&E occupations, and that major fraction of exits happens to occupations oriented on application rather than creation of new knowledge and technology such as teaching, professional services or software development. My second finding is that late entries into research-oriented jobs are possible but within a short period of time and are conditional on demonstrating active publishing or patenting activity. I also find that contrary to the expectations, non-S&E employment is not uncommon among S&E doctorates, and involves about 8% of all PhDs in the sample. It is low early in a career but grows as the career develops and accounts for 21% of all out-of-research transitions. Various factors affecting this type of transitions are then analyzed.