

The Impact of NSF Support for Basic Research in Economics: *Annales d'Économie et de Statistique* (2005)

The Question: What is the impact of public grant funding on the productivity of academic economists? Does the marginal effect of research funding change with the seniority of the applicant? The authors of this paper seek to answer these questions using data from 1,473 applications to the National Science Foundation for economics research between 1985 and 1990.

The Results: A successful NSF award is associated with slightly higher impact-weighted publications for the average economist. But the effect is strongest for novice economists and declines with seniority. A successful \$70,000 award to a junior investigator leads to a 52% increase in publications in the next five years, which is equivalent to one additional paper in a high-profile field journal (such as the *Rand Journal*). The productivity effects of an award to veteran economists is statistically indistinguishable from zero.

The Lessons: This paper suggests that the marginal social benefit of NSF funding is small on average. This might suggest that public research dollars are crowding out other sources of funding available elsewhere. But NSF funding is positively associated with productivity of novice researchers. Assistant professors likely have fewer opportunities for funding and only a short time to prove themselves in the eyes of reviewers and funding organizations. Therefore the marginal value of receiving a grant is much higher for them than for veterans that have an established profile and access to a variety of funding sources.

This paper also reveals the role of selection in funding processes. The NSF can either deduce potential productivity from the peer review scores or by the pre-existing profile of the applicants. It appears that application success is strongly correlated with the review scores for novices, but more correlated with pre-existing profile for veterans. This suggests that past success is a noisy or inaccurate predictor of future success for novices, but is more useful for senior economists that have a track record of productivity.

The Research Approach: This paper uses data from the NSF application and peer review system, which contains applicant details, review scores for each proposal, the success and size of the grant, and the publication outcomes of each economist. The outcome measure of success is the number of publications in the subsequent five years weighted by journal impact factor and divided among the number of paper authors. A potential threat to the validity of the causal estimates is that the NSF grants are not assigned at random, and may be systematically awarded to researchers that would have been more productive even in the absence of funding. Since the counterfactual productivity cannot be observed, the authors rely on matching and regression techniques to account for potential bias from observable control variables. It is likely that there are other unobservable characteristics that they cannot control for and may bias the estimated effects. Since successful applicants are positively selected from the population, the difference in their productivity from the unsuccessful applicants represents an upper bound of the effect. Since the estimated funding effect is very small, the true causal effect is probably very small as well.