

SAVING SOVIET SCIENCE: THE IMPACT OF GRANTS WHEN GOVERNMENT R&D FUNDING DISAPPEARS American Economic Journal: Applied Economics (2017)

The question: Governments finance most of the basic research that is produced around the world. What is the impact of those public grants on scientific productivity and academic careers? Previous studies (Jacob and Lefgren 2010) have shown that the marginal impact of any one grant, such as an R01 grant from the National Institutes of Health, might be low if there are many alternative funding sources available. But this paper studies the post-Soviet collapse, when funding for Russian scientists dried up completely almost overnight. A program of “emergency” grants was offered to scientists by George Soros through the International Science Foundation. How did these one-time funding grants affect the ability of scientists to publish and sustain academic careers in the absence of many funding options?

The results: One-time scientific grants doubled the publications of grantees in the three years following the program. Award winners were much less likely to drop out of science altogether. Grantees were 0.40 percentage points more likely to still be publishing after 10 years compared to the non-grantees. Grants increased the probability that awarded scientists remained in Russia instead of emigrating.

The lessons: The productivity of grant funding is highest in situations where scientists have very few alternative funding options. The marginal value of the grant funding was high. By spending \$500 on each grantee, the Soros ISF paid about \$100 for each additional publication. These results suggest that scientists benefit from external funding sources. Consistent funding is important to maintain scientific careers, and lapses in funding can cause researchers to leave academic science and pursue alternative careers.

The Research Approach: Estimating the returns to grant funding is difficult because grants are not distributed randomly. Typically, there is a very detailed review process, and the most productive scientists with the best research proposals are more likely to receive funding. Therefore, a simple comparison of successful and unsuccessful applicants will not represent an unbiased causal effect of grants because the best scientists may have been more productive even in the absence of funding. This paper circumvents potential selection bias by using the arbitrary eligibility rules to compare people who barely qualified for ISF grants with those that were barely disqualified. The ISF only offered grants to individuals that had three qualifying publications in the years 1988-1993. Many scientists just missed this threshold because they published what would have been the third qualifying paper in 1987 instead of 1988. Using a regression discontinuity design, this analysis estimates the causal effect of the grant by comparing the outcomes of scientists that published just before or just after the year cutoff. These groups are similar on average except for the approval of the grant, therefore any difference in outcomes can be attributed to the causal effect of receiving a grant.