Scholars teaming up with funding agencies

Activating a partnership with the Alfred P. Sloan Foundation for evaluating Research Fellowships

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1. Alfred P. Sloan Foundation as a partner

Despite a growing pressure for an evaluation of returns of financially supported scientific research, funding agencies often do not have in-house resources to implement an advanced quantitative analysis establishing the exact causal effects of the money distributed on recipients' outcomes. Scholars, on their side, have developed sophisticated econometric tools that often remain underused due to the limited access to suitable fine-grained databases needed for their implementation. In this context, incentivizing scholars to team up with funding agencies to build a rigorous funding evaluation policy is a win-win strategy. Not only data could meet the appropriate evaluation tools, but funders and scholars together can identify the ideal evaluation framework and the key questions to target. As stated by Jaffe (2002), when measuring the impact of scientific grants, it is important to identify the 'true reason for these programs' and to look at the corresponding outcome measures. Funders and scholars can identify these relevant issues by working hand in hand since funders have a deep insider knowledge of the programs, while scholars can work on the development of reliable proxy measures.

We would like to take the occasion of the NBER call 'Advancing the Science of Science Funding' to propose a collaboration with the Alfred P. Sloan Foundation to evaluate the Sloan Research Fellowships, a flagship in their funding schema portfolio. The Foundation awards yearly about a total of 80 million dollars to STEM and economics, ten percent of which are dedicated to fellowships. The prestige of the fellowship, with no less than 44 former fellows are also Nobel Prize recipients, made it a particularly attractive target for our evaluation exercise.

2. Our research ideas: Research questions, data and methodologies

We propose to develop two general research questions: (1) Given the high requirements of the program and the low probability of success, what is the incentive to apply? And then, do participants find any benefit in merely applying? (2) Among the applicants, does being awarded have a significant impact on the recipients' outcomes and careers?

In investigating the first research question, we build up on our work recently appeared in Research Policy (Ayoubi, Pezzoni and Visentin, 2018). To precisely evaluate the effect of applying, we intend to compare two groups of researchers with the same characteristics, differing only in their decision to participate in the grant competition. Adopting a difference-in-differences approach (Angrist & Pischke, 2008), we will assess whether or not scientists who decided to apply perform differently from a control sample of scientists who did not apply. The main challenge will be to select a control sample of researchers with observable characteristics as close as possible to the applicants in our sample. To do so, we use a propensity score matching approach. The outcomes we want to analyze are: standard bibliometric outcomes such as publication quantity and quality (number of publications, journal impact factor of the journals where these publications appear and citation received), novel

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content of the research published (Wang, Veugelers and Stephan, 2017), dimension of the co-authors' network. An analysis on career perspectives will complement these publication record related measures.

In investigating the second research question, we intend to consider the same outcomes comparing awarded to non-awarded researchers. One of the main challenges of this analysis is to overcome the estimation biases resulting from the fact that funds are not randomly allocated: the most productive scientists are also the ones having a higher probability to be funded. If this is the case, awarded scientists would have achieved better outcomes even without the additional money. On this regard, the collaboration with Alfred P. Sloan foundation would be crucial in guarantying the access to the information about all the applicants. Doing that we will have the possibility to implement an appropriate difference-in-differences analysis or, if fine-grained information on the ranking of the proposal during the selection process is available, a Regression Discontinuity Design (Angrist & Pischke, 2008).

The above general research questions are an opening for a program evaluation. Our plan is to have a continuous constructive discussion with the Alfred P. Sloan Foundation to understand if the specificities of the program deserve additional outcome measures to complement the analysis.

We intend to proceed step-by-step. The first step will be to construct an appropriate data structure framework with the collaboration of the Alfred P. Sloan Foundation. Then, we will go on with the analysis, the report and scientific paper writing. We expect that activities such as the database construction will extend their benefit beyond the evaluation of the Sloan Research Fellowships. In fact, one of our goals is to implement routines that could be used as benchmarks for the evaluation of some other programs in the Alfred P. Sloan Foundation portfolio.

3. Our funding needs

We would need a contribution of 10,000 $. We intend to use this amount for a one-week visit at Sloan. The visit will give to us the opportunity to interact face-to-face with the Sloan team to set the dataset and to activate a fruitful discussion of the results.

4. Our team

On the academic side, our team includes three experts in the field of economics of science with excellent data analysis skills and consolidated experience in working with funding agencies to advise them on the effectiveness of their programs. Please refer to the following links for our CVs: Charles Ayoubi (https://people.epfl.ch/charles.ayoubi), Michele Pezzoni (http://www.economiadellaricerca.info/), and

Fabiana Visentin (https://www.merit.unu.edu/about-us/profile/?staff_id=3489). An example of our policy consulting activity is the recent opportunity we had to work closely with the main funding agency of the Swiss national academic system, the Swiss National Science Foundation (SNSF). In that occasion, we provided advice and briefings to the SNSF senior management on the impact of their funding instruments on Swiss academics' productivity. Our team formulated policy recommendations on how the SNSF could more efficiently distribute their funds to promote scientific research and innovation in Switzerland. Please refer to the following link for a copy of the resulting policy brief: https://issuu.com/epflcdm/docs/policy_brief-itpp-2016-01-april2016

On the funding agency side, Daniel L. Goroff, the Sloan Vice President and Program Director, has indicated in an email his potential willingness to work with us. We are confident that the eventual approval of the current proposal would be an important incentive for the establishment of the perspective collaboration with the Alfred P. Sloan Foundation.