

# How to Get National Science Foundation (NSF) Funding in Economics

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(The National Science Foundation has no responsibility for these recommendation and suggestions)

The National Science Foundation supports basic and applied research to strengthen the nation's research potential and education programs in the natural and social sciences and all scientific and engineering disciplines. The Foundation is very hierarchical, which often leads to confusion when thinking about how and where to apply. First, comes the directorate —Economics is contained in the Social, Behavioral and Economic Sciences Directorate (SBE). Next comes the division —Economics is contained in the Division of Social and Economic Sciences (SES). Finally, comes the actual program. Economics is the one of most interest to this audience, and will be the focus of this article. Decision Risk Management Science (DRMS) is also of interest to some researchers. The Economics Program has a budget of a little over \$22 million, while DRMS of approximately \$5 million.

The Economic program generally receives about 300 to 400 proposals a year and between a quarter and a third of these proposals are funded. Most proposals request funding for \$100,000 - \$300,000, generally summer salary for one or more researchers for a period of two or three years plus overhead for the submitting institution plus some funds for acquiring datasets, running experiments, or other expenses incurred with research. However, some are much smaller (for instance, for funding of a one-time conference or a doctoral dissertation or a specific experiment), and a very few others are much larger (for the support of a large data center or long-run program involving many researchers). If you are considering submitting a proposal for the first time, you may want to identify others who have received funding in your field and ask for a copy of their submission. Having an example of a successful proposal can provide guidance as to how to structure your own and what to ask for.

Proposals come in two cycles due either on January 15th or August 15th. In addition to the standard funding avenues, there are special initiatives that may have temporary (or in some cases permanent) funding. The SES homepage (<http://www.nsf.gov/sbe/ses>) has a list of special funding opportunities, and additional programs are listed under the Cross-Directorate activities link. For instance, currently two regular competitions that cut across the entire NSF are the ADVANCE Program and the EPSCoR Program. ADVANCE is aimed at increasing the participation and advancing women in academic and engineering careers. The ADVANCE program offers funding to individuals (both women and men) and to institutions. It is designed to support new approaches to improve the climate for women in academic institutions and to facilitate their advancement. EPSCoR (Experimental Program to Stimulate Competitive Research) is designed to increase the geographical diversity of NSF awards. Proposals coming from an EPSCoR state (identified as one where few awards have been made) are reviewed exactly as the other proposals. However, when funding decisions are made, these proposals have an advantage since they may be partially funded from a special pot of EPSCoR (non Economics) money. We also receive some CAREER proposals. CAREER is a once-a-year competition to award large grants (minimum of \$400,000) to young outstanding scholars for a five-year research agenda, with an associated innovative educational plan. The Principal Investigator (PI) must be an

untenured assistant professor to be eligible.

The purpose of this short article is to describe the proposal review process and to offer some basic advice for prospective PIs in the writing of proposals.

## What Happens to a Proposal when it reaches NSF?

Proposals are submitted electronically to the Economics program at NSF via Fast Lane, the NSF website (<http://www.fastlane.nsf.gov>). If you have not been to the site, log on well before the deadline for proposals. You will need to get a password from your university's research office and this may take a week or so. I recommend first-time applicants "go through" the site, and look at the different components of a proposal and how one submits them. For example, references need to be submitted in a separate document from the research proposal itself. Knowing this will affect how you write the document.

Proposals are then sorted by field and distributed among the three program officers in Economics. Each proposal is first sent to about six external reviewers for written reviews. Each PI is encouraged to send a list of potential reviewers for his/her proposal, and some of the outside reviewers are then selected from such list. Each proposal is also assigned to two panelists (there are fourteen in the Economics Advisory Panel) whose research interests are close to the proposal topic. The reviewers and the panelists send their reviews of the proposal back to the program officer.

The Panel then meets (about three months after the proposal deadline) to discuss and rank all the proposals. The reviews of the outside reviewers as well as the reviews of the assigned panel members are discussed and considered. Soon after the Panel meeting, the program officers meet to survey all the proposals, consider the recommendations of the panel, the external reviews, and the amount of available funds in Economics. The final funding decision made by the program officers usually tracks the ranking suggested by the Panel, although there may be a boost for young investigators, institutions that have not been funded in the past, minorities, or proposals that might be co-funded by some other program at NSF (like EPSCoR as described above).

## The Assessment of a Proposal

By policy of the NSF, two criteria guide the assessment and judging of any proposal: 1) intellectual merit of the proposal and 2) its potential broader impacts.

As of October 2002, NSF requires the specification of the broader impacts of a project. That is, all proposals must clearly describe some broader impacts of the research, otherwise the proposal will not be considered eligible. However, identifying these impacts is often a difficult task for the PI. Having a broad impact is neither necessary nor sufficient to receive funding, but is certainly a good thing and a broader potential impact leads to a higher rating of a proposal, all else held equal. In the evaluation of the broader impacts we look at the potential impact of the proposed research beyond the immediate contributions to the field. This includes how the proposed research is applicable to society, or how the project might promote teaching, training, and learning,

or broaden the participation of underrepresented groups, or enhance the infrastructure for research and education.

Having strong intellectual merit is a critical condition for a proposal to be funded, even though not sufficient on its own, as funding will also depend on broader impacts and more generally how a proposal compares to other submitted proposals. In evaluating a proposal's intellectual merit, reviewers, panelists and program officers consider whether the proposal addresses an important issue, tries to answer questions that push knowledge significantly beyond the existing literature, and uses methods that are appropriate for answering these questions. A final consideration regards whether the proposal has some likelihood of success based on the training or past record of the PI.

## Writing a Proposal

In preparing a successful proposal, the first thing to consider is the maturity of a project. You should be far enough along to provide a healthy view of the methods and questions, but not so far along that the project is already largely completed. Once a good project has been identified, the proposal should describe the big picture and explain why this is an important topic. At the same time, you should make clear the likely contribution from this proposal (as opposed to the previous research) and why this contribution is of interest and/or useful. The proposal needs to identify what is new about the research; what are the specific questions addressed, what are the techniques, data sources, models, and any preliminary results.

The quality of writing is of fundamental importance. The proposal will be read by experts in the field, but also by economists of all descriptions (micro, macro, econometrics; theorists, empirical researchers and experimentalists). It should be targeted at a reasonably general audience of researchers and needs to put the project in perspective relative to the previous literature, but at the same time should not read like a literature survey. The discussion of methodology needs to be sufficiently detailed so that the reviewers can understand how this will be approached, but the proposal should not have the same level of derivation that would appear in a research paper. The proposal should contain some preview of the types of new insights that might be gained, such as a preliminary result or conjectures, or a detailed statement of the hypotheses to be examined. This will help to clarify the specific questions to be addressed and also tie it together with the methodology to be used. Finally, the proposal must specifically address the two NSF review criteria—intellectual merits and broader impacts—in separate statements in the Project Summary.

This is a tall order, and no proposal can do all of these things equally well. But the strongest proposals we see have at least reasonable levels of accomplishment on these various dimensions: why is the topic important, what has previously been done, what this research proposes to do, why this particular proposal is important and interesting, and a demonstration of what is likely to emerge from this proposal (and what as already emerged).

Finally, one common question has to do with the rank of one's institution when applying for an NSF grant. While a quick look at the

awards suggests that top departments have a higher than proportional percentage of researchers funded, the funding rates, as a percentage of proposals submitted, are surprisingly comparable across submitting institutions. Lower-ranked departments submit fewer proposals and therefore have fewer awards, but on average they experience a similar success rate as higher-ranked departments.

A similar observation is often made regarding the submission of proposals by women. The overwhelming majority of award recipients from the Economics program at NSF are white male. This is mostly the case because the overwhelming majority of applicants are white male! If we are to change the profile of funded researchers, the first step is for more women to submit proposals to the NSF. The first step to receive an award, regardless of a researcher's affiliation or gender, is to submit a proposal.

In summary, my time at the NSF has convinced me that the chances for funding of strong research proposals are quite good. The likelihood of women and researchers from non-top-twenty-institutions being funded is the same as all other applicants. To create a strong research proposal you should identify a question of interest and write a proposal which communicates that interest to the readers. Looking at examples of others' proposals can be useful for structuring your own. Finally, don't be shy about contacting the program officer(s) directly with questions or to run your ideas and concerns by them. Their goal is to make sure good research is considered for funding and they will be happy to talk about how to make that happen for you.

## References

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