Proposal for Science of Science Funding Initiative
Caroline Fry (MIT) & Jeff Furman (BU)

We would like to request funding from the Science of Science Funding initiative to support the development of a project in collaboration with UNESCO's Organization for Women in Science for the Developing World (OWSD). ***This project seeks to investigate the impact of PhD and early career grants provided by OWSD to female scientists in developing countries on (a) the rate and direction of recipients' research, (b) the evolution of grant recipients' scientific networks, and (c) the spillover impact of grant receipt on host and home institutions.***

Who we are:

Caroline Fry[1] is a PhD candidate in Technological Innovation, Entrepreneurship and Strategic Management at the Massachusetts Institute of Technology Sloan School of Management. Her research focuses on the determinants of science and innovation in developing countries. She has experience carrying out impact evaluations of training programs for scientists in developing countries. **Jeffrey Furman**[2] is an Associate Professor of Strategy and Innovation at Boston University Questrom School of Business and Research Associate at the NBER. Furman's research addresses issues at the intersection of strategy and innovation, particularly related to the impact of institutions on knowledge accretion.

Partner organization

The Organization for Women in Science for the Developing World is an international non-profit organization, part of UNESCO. It is an international forum that supports and unites female scientists from developing countries, providing research training, PhD and career development grants and networking opportunities for these scientists.

Project

A number of projects evaluate the impact of funding on science and innovation outcomes, but the nature of the funding process means that we know very little about the impact of funding on those who are more disadvantaged. An emerging body of work studies the impact of programs providing financial support for foreign training on those from less developed countries, and finds that following return home after foreign training, grantees struggle to fully take advantage of their training (Kahn and MacGarvie 2016a[3]), but that the predominant benefits may be felt by others in their country or institution (Kahn and MacGarvie 2016b; Fry 2019[4]). These studies explore the impact of scientists returning after training in more developed countries, but we have little understanding of what happens when exchanges happen within developing countries. On the one hand, returning scientists and their countries would not be able to benefit from central connections made in more developed countries (which may facilitate further access to resources and knowledge), but on the other hand, proximity in geographic and social network (and subsequent power) space amongst new connections may result in outcomes that are different to those observed in the traditional developed-developing country exchange.

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[1] http://carolinefry.mit.edu/

[2] http://questromworld.bu.edu/jefffurman/

[3] Kahn, S., MacGarvie, M.J., 2016a *How Important is U.S. Location for Research in Science?* Review of Economics and Statistics 98(2): 397-414

[4] Kahn, S., MacGarvie, M., 2016b *Do Return Requirements Increase International Knowledge Diffusion? Evidence from the Fulbright Program* Research Policy 45(6): 1304-1322; Fry, C.V., 2019 *Building Bridges: The impact of return migration by African scientists* Working Paper

We propose to evaluate the impact of PhD and early career fellowships that support scientists to spend time in another developing country institution and return home afterwards. Around 20-40 PhD and early career scientists are awarded the grant every year. We are in the final stages of gaining access to application data (awardees as well as non-successful applicants, and application scores) from OWSD, and plan to match these individuals with their publication and career outcomes using data we will gather ourselves. We plan to use a regression discontinuity method to evaluate the impact of the program on the rate and direction of science in developing countries, as well as on the global scientific network.

Use of Funds

We request support to travel to Seattle in February in 2020 to meet with OWSD staff for a project kick-off. At this meeting there will also be an awards ceremony for new fellows whom we can interact with. We also request support to travel to the OWSD 6th General Assembly in Trieste, Italy (HQ) in November 2020. Over 200 alumni of the OSWD fellowship will attend this event and we plan to carry out a number of interviews with alumni to gather qualitative data and likely carry out a survey on the alumni as well. Finally, we also request support to outsource data collection using an online service (upwork) to match the data provided by OWSD with other data including career history data (from university websites) and publication data.

Budget

	Unit	Cost per unit	Number of units	Total
Flight to Seattle, USA	Return flight	250	2	500
Accommodation and on the ground travel in Seattle, Italy	Day/per person	250	4	1000
Flight to Trieste, Italy	Return flight	1000	2	2000
Accommodation and on the ground travel in Trieste, Italy	Day/per person	250	8	2000
Data collection support	Per hour	35	100	3500
Total				**9,000**

United Nations
Educational, Scientific and
Cultural Organization

Organization for Women in Science for the Developing World (OWSD)

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Phone: (+39 040) 2240210 - E-Mail: owsd@owsd.net - Web: www.owsd.net

3rd October 2019

To whom it may concern,

I am writing regarding the proposal presented to you by PhD candidates Caroline Fry (MIT Sloan School of Management) and Jeffrey Furman (Boston University Questrom School of Business) to use our Organization's data to investigate the impact of grant receipt on the rate and direction of recipients' research, their scientific networks, and the impact on host and home institutions.

Caroline and Jeffrey have discussed their proposal in detail with us and we are delighted to approve their proposal. We believe the collection, analysis and presentation of this data will also be of great interest and benefit to OWSD.

This letter is to assure that OWSD Secretariat fully endorse their proposal.

Please do contact me (tblowers@owsd.net) should you require any further information,

Best wishes,

T Blowers

Tonya Blowers,
OWSD Coordinator

MIT MANAGEMENT SLOAN SCHOOL

Pierre Azoulay

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September 27, 2019

Dear Review Committee,

I would like to provide an enthusiastic endorsement for Caroline Fry, a doctoral student I advise and whom I expect to graduate in June with a Ph.D. from MIT, in her application for funding from the Science of Science Funding Initiative.

Her project (with Jeff Furman) on the evaluation of the UNESCO Organization for Women in Science in the Developing World (OSWD) fellowship program complements the rest of her dissertation work on African science. She has two working papers in the area of African science, and particularly the impact of international collaboration on rate and direction of African science, and this proposed project would fit in very well to this research agenda.

She has employed methods similar to those that she plans to use in this study, and makes good use of small amounts of funding for travel and data collection.

Sincerely,

Pierre Azoulay

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