NYU STERN

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Research Proposal: NBER Science of Science Funding Initiative

To Whom It May Concern:

I write to apply for funding to support my research on the relationship between research outputs and funding sources at universities. The research will be joint with Tania Babina (Columbia), Alex He (Maryland), Elizabeth Perlman (U.S. Census), and Joseph Staudt (U.S. Census). We are partnering with and depend upon a "user" organization: The University of Michigan's Institute for Research on Innovation and Science (IRIS). The project is tentatively titled "Funding Source Matters: Government vs. Industry Grants to University R&D."

Our specific research question is as follows: What is the effect of switching from federal to industry funding on university lab research output and outcomes? We observe comprehensive grant data for 29 universities at the individual level, including all PhD students, staff, and faculty employed on every grant for every university-year covered.[1] We connect this information to data on individual patenting activity and career histories, making use of the IRS W-2, LEHD, and LBD datasets at the U.S. Census Bureau. We use an instrumental variables strategy to address endogeneity in an individual's shift from federal to private funding. We consider a wide variety of outcomes but are especially interested in patenting and high-growth entrepreneurship, which are known to have large positive externalities. We are currently in the early stages of analysis but have access to all necessary data.

Our work addresses a core objective of the IRIS data project: Rigorous research about the economic and innovation outcomes of university R&D investment. We hope that our findings will contribute to the academic literatures on innovation, science policy, and entrepreneurship. There is existing work documenting the role of university research in national innovation systems, and some work addressing collaboration between universities and industry. However, there has been little study about the tradeoff in outputs across funding types, and to our knowledge none with causal interpretation. Our results may also be relevant for policy. Federal sources have declined significantly in the past few decades as a share of university R&D funding.

Please find a letter of support from the IRIS director and my CV attached.

I would like to request $10,000, with a budget as follows:
Travel to collaborate with colleagues and present findings: $6,000
Research assistance: $4,000

Thank you for your consideration.
Sincerely,
Sabrina Howell

[1] For more information, see: https://iris.isr.umich.edu/research-data/

INSTITUTE FOR RESEARCH ON INNOVATION & SCIENCE

October 14, 2019

Dear Colleagues,

I write this letter in support of Dr. Sabrina Howell's proposal for the NBER Science of Science Initiative. Dr. Howell's work proposes to use data that IRIS collects and curates to examine the effects of faculty switches across research funding sources. She and her team already have access to the data and we will continue to work with her and her team to support their work with the UMETRICS data.

Please don't hesitate to reach out to me if you have any questions (jdos@umich.edu, 734-936-0463.)

Sincerely Yours,



Jason Owen-Smith
Professor of Sociology
Research Professor, Institute for Social Research
Executive Director, Institute for Research on Innovation & Science (IRIS)
University of Michigan

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EDUCATION

PhD, Harvard University, 2015
Economics Track, Political Economy & Government Program
Advisors: Professors Josh Lerner (Chair), David S. Scharfstein, Raj Chetty, and Joseph E. Aldy

BA, Yale University, 2008
Majors: Economics, East Asian Studies
Summa cum laude, Phi Beta Kappa Junior Year (top 1% of class)

RESEARCH INTERESTS

Entrepreneurial finance; Innovation, Private Equity, Energy, China

PEER-REVIEWED PUBLICATIONS

Howell, Sabrina T. 2017. "Financing Innovation: Evidence from R&D Grants." *The American Economic Review* 107(4).

Howell, Sabrina T., with Charlie Eaton and Constantine Yannelis. Forthcoming. "When Investor Incentives and Customer Interests Diverge: Private Equity in Higher Education." *The Review of Financial Studies*.
Best Paper Prize at the 2018 UNC Private Equity Research Council Annual Symposium.

Howell, Sabrina T. Forthcoming. "Reducing Information Frictions in Venture Capital: The Role of New Venture Competitions." *The Journal of Financial Economics*.

Howell, Sabrina T., with Marina Niessner and David Yermack. Forthcoming. "Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales." *The Review of Financial Studies*.

Howell, Sabrina T. 2018. "Joint Ventures and Technology Adoption: A Chinese Industrial Policy that Backfired." *Research Policy* 47(8).

Minsk, Ronald E., Sam P. Ori, and Sabrina Howell. 2009. "Plugging Cars into the Grid: Why the Government Should Make a Choice." *Energy Law Journal* 30(2).

WORKING PAPERS

Howell, Sabrina T. and J. David Brown. 2019. "Do Cash Windfalls Affect Wages? Evidence from R&D Grants to Small Firms."

Howell, Sabrina T. and Filippo Mezzanotti. 2019. "Financing Entrepreneurship through the Tax Code: Angel Investor Tax Credits."

Howell, Sabrina T. and Ramana Nanda. 2019. "Networking Frictions in Venture Capital, and the Gender Gap in Entrepreneurship."

Howell, Sabrina T., with Tania Babina. 2019. "Innovation Investment and Labor Mobility: Employee Entrepreneurship from Corporate R&D."

Howell, Sabrina T., with Lin William Cong. 2019. "IPO Intervention and Innovation: Evidence from China."

OTHER PUBLICATIONS

Howell, Sabrina. 2014. "Financing Innovation in the Private Sector: The Small Business Innovation Research Program." Case in Tsinghua-Harvard Workshop on Market Mechanisms to Achieve a Low-Carbon Future for China Casebook, p. 30.

Howell, Sabrina, Lee, Henry, and Heal, Adam. 2014. "Leapfrogging or Stalling Out? Electric Vehicles in China." Discussion Paper, Belfer Center for Science and International Affairs, Harvard Kennedy School.

Howell, Sabrina. 2013. "Pathways for Reducing Oil Consumption in the U.S." Carbon War Room & Fuel Freedom Foundation Research Report.

Howell, Sabrina. 2009. "Jia You! (Add Oil!): Chinese Energy Security Strategy." In Luft, Gal and Anne Korin, eds. *Energy Security Challenges for the 21 Century*. California: Praeger Publishing.

TEACHING

2017-18	Applications in Entrepreneurial Finance: Fintech, NYU Stern (new course)
2016	Topics in Entrepreneurial Finance, NYU Stern (created all course materials)
2013	Energy Industry Economics & Policy Sophomore Tutorial, Harvard University Economics Department (created course, solo teaching)
2012-13	Energy Policy Analysis, Harvard Kennedy School - doctoral-level course of the Harvard Graduate Consortium on Energy and the Environment (teaching fellow for Professor Joseph E. Aldy)
2008	Sustainability Economics, Hong Kong University and Zhejiang University. Harvard Graduate School of Education Crimson Fellow

PREVIOUS EMPLOYMENT

2013-14	U.S. Department of Energy, Intern in the Office of Strategic Programs in the Office of Energy Efficiency and Renewable Energy
2012	Georgetown Economics Department, Research Assistant to Arik Levinson
2011	Harvard Center for the Environment, Research Assistant to Joseph E. Aldy
2011	National Economic Council, White House Intern for Nathaniel Keohane, the Special Assistant to the President for Energy and the Environment

2009-10 Securing America's Future Energy (SAFE), Senior Policy Analyst

2008-09 Charles River Associates, Analyst

2007 Hess Corporation, Summer Analyst

2005-06 Yale University Economics Department, Research Assistant to George Hall

HONORS, GRANTS, AND FELLOWSHIPS

2018 Private Equity Research Consortium Small Grant Program ($10,000)
Stern Center for Global Economy and Business Research Grant ($6,000)

2017 Kauffman Foundation Junior Faculty Research Fellowship ($35,000)
Kauffman Foundation Research Grant ($150,000)

2015 Kauffman Foundation Research Grant ($24,500)
Stern Center for Global Economy and Business Research Grant ($7,000)
Top Finance Graduate Award 2015 (Copenhagen Business School-AQR)

2014 Kauffman Best Student Paper Award Session, Roundtable for Engineering Entrepreneurship Research (REER)

2010-13 National Science Foundation Graduate Research Fellow

2013 Derek Bok Center for Teaching and Learning Certificate of Distinction in Teaching (reflects very high student ratings)

2011 Mossavar-Rahmani Center for Business and Government Summer Fellowship

2011-15 Harvard Environmental Economics Program Pre-Doctoral Fellow

2008 Emerson Tuttle Cup Winner (most distinguished student in Yale's Davenport College)

PAPER PRESENTATIONS

2019 LBS, Imperial, Northwestern Kellogg, Texas Finance Festival, Rome Junior Finance Conference, Financial Research Association Las Vegas, GSU CEAR Financing Tangible and Intangible Capital Conference, Columbia, PCRI-Tsinghua PBCSF Workshop on the Chinese Market, USC, UCLA, Carnegie Mellon (planned), University of Pittsburgh (planned), Temple, Cornell Johnson (planned), Wharton (planned), Western Finance Association, Kenan Institute Frontiers of Entrepreneurship Conference, AFA Annual Meeting (5 sessions)

2018 Stanford Financing of Innovation Summit, NBER Corporate Finance Meeting, Stanford MS&E, Olin Corporate Finance Conference, UW Summer Finance Conference; IMF; LBS Private Equity Symposium; Finance UC Santiago Chile International Conference; Toulouse School of Economics; Minnesota Corporate Finance Conference; Napa Corporate Finance Conference. Berkeley Haas Finance; UBC Sauder; HBS Finance; Yale SOM Finance; AFA Annual Meeting (2 sessions); Kenan Institute Frontiers of Entrepreneurship Conference

2017 MIT Sloan; NBER China Economy Working Group; NBER Entrepreneurship Working Group; HEC Paris; Duke; MIT Sloan Junior Faculty Conference; Yale Junior Finance Conference; Hong Kong University; Hong Kong University of Science and Technology; National University of Singapore; NYU Shanghai, UC Berkeley Innovation and Finance

Conference; Columbia Junior Innovation Finance Workshop, WFA Early Career Women in Finance Mini-Conference; Queens Economics of Entrepreneurship and Innovation Conference; Econometric Society Asian Meeting; IDC Herzliya Conference in Financial Economics Research; Georgia Tech Scheller; Stern Changing Role of Stock Markets in Capital Formation Conference; Bergen Innovation Workshop; University of Washington Foster School of Business; AEA Entrepreneurship Session.

2016 NBER Entrepreneurship Working Group, Boston; NBER Entrepreneurship and Economic Growth Conference, Durham; Western Finance Association, Park City; GSE Summer Forum, Barcelona; Hebrew University Economics Department, Jerusalem; IDC Herzliya Conference in Financial Economics Research, Tel Aviv; GSU CEAR Corporate Finance and Asset Management Conference; NBER Corporate Finance and Insurance Working Groups Joint Session, Chicago; NYU Stern Research Day Conference, New York; NBER Productivity Seminar, Cambridge; NBER Entrepreneurship and Economic Growth Pre-Conference, Durham; Brigham Young University Finance Department.

2015 University of Michigan Ross Finance Department; Salomon Center Five Star Conference, New York; Dartmouth Economics Department, Hanover; NYU Stern Seminar; UC Berkeley Haas Innovation Seminar; 4th International Conference on Global Prosperity, UNSW Business School Institute of Global Finance, Sydney; University of Melbourne Finance Department; Entrepreneurial Finance Around the World Conference, Tsinghua PBC School of Finance, Beijing; National Science Foundation, Division of Industrial Innovation and Partnerships, Washington DC; CBS-AQR Top Finance Graduate Award Meeting, Copenhagen; POWER Conference on Energy Research and Policy, UC Berkeley. Job market presentations at: Stanford GSB Finance, Yale SOM Finance, Cornell Johnson Finance, NYU Stern Finance, Columbia SIPA, Berkeley Haas Finance, U Penn Wharton Management, Columbia Business School Finance & Economics (joint), U Maryland Smith Finance, LSE Finance, Yale SOM Economics, HBS Entrepreneurial, Georgetown McDonough, Duke Fuqua Strategy, U Chicago Booth Finance, Northwestern Kellogg Finance.

2014 Roundtable for Engineering Entrepreneurship Research (REER), Atlanta; Centre for Economic Policy Research (CEPR) and Bank of Finland Entrepreneurial Finance, Innovation and Growth Conference, Helsinki; Georgetown University McDonough; Tsinghua-Harvard Workshop on Market Mechanisms to Achieve a Low-Carbon Future for China, Beijing.

2011+ Harvard Business School Finance Lunch (4x), Harvard Economics Department Industrial Organization Lunch (4x), Labor and Public Finance Lunch (2x), International Lunch (1x)

SERVICE

I founded and co-organize the Women Assistant Professors of Finance Conference at NYU Stern (WAPFIN@Stern), which has been held every fall since 2015.

I co-organized the 2018, 2019 and 2020 NBER Productivity, Innovation and Entrepreneurship meetings. I have also served on numerous program committees, including the AFA, FIRS, EFA, MFA, and the Washington University Annual Conference on Corporate Finance. In 2019 I am currently serving on the Nominating Committee of the AFA.

I serve as a referee for the American Economic Review, the Journal of Finance, Econometrica, Management Science, the Review of Financial Studies, the Journal of Financial Economics, and other journals. I also serve as an external reviewer for the National Academies of Science.