NBER Entrepreneurship Research Bootcamp Application

Dafna Bearson
Strategy Unit, Harvard Business School
February 15, 2024

Dear NBER Entrepreneurship Research Bootcamp Selection Committee,

Please find my application for the 2024 NBER Entrepreneurship Research Bootcamp attached. I have included a one-page essay describing my current and future research and reasons for wanting to attend the bootcamp. Additionally, you will find my curriculum vitae with complete contact information and a list of all current and completed PhD courses. I will gladly provide supporting materials upon request.

Professor Shane Greenstein has submitted my letter of recommendation to Mr. Brett Maranjian.

I look forward to hearing from you. Thank you very much for your consideration!

Sincerely,

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My current research examines commercialization strategies for entrepreneurs, including technology development and deployment processes. Entrepreneurs who develop intellectual property (IP) face an important strategic decision. They can commercialize IP internally, sell IP to another company, or license IP for a fixed amount of time. My first paper (with Professor Maria Roche) examines entrepreneur inventors' decision to license IP to other companies. Building upon existing theory (Arora et al., 2001; Gans & Stern, 2000, 2003), we develop a conceptual framework that shows the decision to license depends on the relevance of the IP to the core activities of the inventor and the transferability of the IP itself. Two key dimensions of transferability are the codifiability of the invention (Arora et al., 2022) and location (Lerner et al., 2024; Roche, 2020). We then exploit novel data on U.S. patent licensing agreements from 1994 to 2015 to empirically test our predictions. We find that inventors are more likely to license their inventions with high scientific value. Additionally, firms are more likely to license their "somewhat" economically valuable inventions, but less likely to license their least or most economically valuable inventions. These findings shed light on which inventions are available in the market for technology (MFT), and which inventions may be systematically unavailable in MFTs.

My second paper (with Professor Nataliya Langburd Wright) shifts focus from the *whether* IP is available in the MFT to *where* available technology is deployed. Specifically, we document the relationship between AI adoption and firm performance, initially in the retail sector and are expanding our analysis to half a million entrepreneurial and established firms across geographies and industries between 2001 to 2023. Consistent with existing literature on the diffusion of new technology (Bloom et al., 2020; Tambe, 2014), we find that AI adoption is highly concentrated in geographies with high levels of ICT talent and larger market sizes. Associated performance gains are primarily driven by established companies, not entrepreneurial startups, which may not have the complementary managerial practices (Bertrand & Schoar, 2003; Bloom et al., 2012), knowledge, or assets (Brynjolfsson et al., 2021; Teece, 1986) required to productively utilize and commercialize the tools. Among companies that adopt AI, we observe an "S-Curve" when estimating the relationship between time since AI adoption and performance: there are no pre- or post-trends until 8 months after adoption when performance increases discretely and then levels off after about a year. These findings contribute to our understanding of how and where companies effectively deploy AI and other novel technologies.

In the future, I intend to continue to research topics related to the economics of innovation and entrepreneurship, specifically entrepreneurs' IP and technology commercialization strategy. This research topic is important for entrepreneurial firms whose strategies rely on *developing* technology that is valuable to other companies and to entrepreneurial firms whose strategies depend on *access* to technology that is developed outside of their boundaries. Several other related projects in progress are on my CV.

There are three primary reasons that I am motivated to attend the NBER Entrepreneurship Research Bootcamp this summer. First, the intensive workshop will expose me to frontier literature and methods in entrepreneurship research. The opportunity to directly engage in discourse on this topic with preeminent scholars and peers will provide insight beyond what is possible from reading papers on my own. Second, the bootcamp will open the door to a community of scholars and peers with shared interests. I hope to remain connected, provide and receive feedback, share resources, and build from each other's work. Third, this is a critical time for feedback on my projects. The ideas, methods, and discussions in the bootcamp will go directly into shaping and improving my dissertation. Because I have two and a half years of the program remaining, and my projects are relatively early-stage, I have sufficient time to integrate learnings from the bootcamp and make substantial progress on my work.

Thank you very much for your consideration.

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References

Arora, A., Belenzon, S., & Suh, J. (2022). Science and the Market for Technology. *Management Science*, *68*(10), 7176–7201. https://doi.org/10.1287/mnsc.2021.4268

Arora, A., Fosfuri, A., & Gambardella, A. (2001). *Markets for technology: The economics of innovation and corporate strategy*. MIT Press.

Bertrand, M., & Schoar, A. (2003). Managing with Style: The Effect of Managers on Firm Policies*. *The Quarterly Journal of Economics*, *118*(4), 1169–1208. https://doi.org/10.1162/003355303322552775

Bloom, N., Hassan, T. A., Kalyani, A., Lerner, J., & Tahoun, A. (2020). The Geography of New Technologies. *Institute for New Economic Thinking Working Paper Series*, 1–45. https://doi.org/10.36687/inetwp126

Bloom, N., Sadun, R., & Reenen, J. V. (2012). Americans Do IT Better: US Multinationals and the Productivity Miracle. *American Economic Review*, *102*(1), 167–201. https://doi.org/10.1257/aer.102.1.167

Brynjolfsson, E., Jin, W., & McElheran, K. (2021). The power of prediction: Predictive analytics, workplace complements, and business performance. *Business Economics*, *56*(4), 217–239. https://doi.org/10.1057/s11369-021-00224-5

Gans, J. S., & Stern, S. (2000). Incumbency and R&D Incentives: Licensing the Gale of Creative Destruction. *Journal of Economics & Management Strategy*, *9*(4), 485–511. https://doi.org/10.1111/j.1430-9134.2000.00485.x

Gans, J. S., & Stern, S. (2003). The product market and the market for "ideas": Commercialization strategies for technology entrepreneurs. *Research Policy*.

Lerner, J., Manley, H. J., Stein, C., & Williams, H. L. (2024). *The Wandering Scholars: Understanding the Heterogeneity of University Commercialization* (Working Paper 32069). National Bureau of Economic Research. https://doi.org/10.3386/w32069

Roche, M. P. (2020). Taking Innovation to the Streets: Microgeography, Physical Structure, and Innovation. *The Review of Economics and Statistics*, *102*(5), 912–928. https://doi.org/10.1162/rest_a_00866

Tambe, P. (2014). Big Data Investment, Skills, and Firm Value. *Management Science*, *60*(6), 1452–1469. https://doi.org/10.1287/mnsc.2014.1899

Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, *15*(6), 285–305. https://doi.org/10.1016/0048-7333(86)90027-2

DAFNA F. BEARSON
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EDUCATION

Ph.D. Harvard Business School — Expected May 2026
Strategy Unit, advised by Professors Juan Alcacer, Shane Greenstein, and Maria Roche

B.A. Economics, University of California, Berkeley — May 2018
Distinction in General Scholarship
Honors in Economics
Economics Honors Thesis, advised by Professor Laura D'Andrea Tyson

RESEARCH INTERESTS

- Commercialization strategies for start-ups, specifically intellectual property and technology strategy.
- Markets for technology (MFT), including the diffusion and deployment of new technologies.
- Economics of entrepreneurship and innovation.

RESEARCH IN PROGRESS

Bearson, D. "From Invention to Innovation: A Theoretical and Empirical Examination of Strategic Intellectual Property Transfer."

Bearson, D. & Roche, M. "When to Lend? Strategic Licensing of Intellectual Property."

Bearson, D. & Roche, M. "Innovating at Scale: Tracking Internal Invention Processes within Companies."

Bearson, D. & Wright, N. "Charting Terrain: The Diffusion and Deployment of Technologies Across Entrepreneurial Start-ups and Established Companies."

RESEARCH PUBLICATIONS

Bearson, D., Kenney, M., & Zysman, J. (2021). "Measuring the Impacts of Labor in the Platform Economy: New Work Created, Old Work Reorganized, and Value Creation Reconfigured." *Industrial and Corporate Change, 30*(3), 536-563.

Bearson, D. & Sunstein, C. (2023). "Take-up." *Behavioral Public Policy,* 1-16.

Kenney, M., **Bearson, D.,** & Zysman, J. (2021). "The Platform Economy Matures: Exploring and Measuring Pervasiveness and Power." *Socio-Economic Review*, *19*(4), 1451-1483.

Kenney, M., Zysman, J., **Bearson, D.,** & Eldred, C. (2020). "Work in an Era of Intelligent Tools and Systems: Finding the Path to an Equitable Economy." In *Our Social Europe – Strong Together, Global Supply Chains – Global Responsibility, New Work – Human-centric Work*, edited by A. M. Deutsch, A. Görne-Zagel, F. Kopowski, P. Ständer, and M. Thies. Berlin, Germany: Federal Ministry of Labour and Social Affairs Directorate-General European and International Employment and Social Policy, ESF.

PHD COURSEWORK

Economics: Microeconomic Theory I (Arda Gitmez) and Microeconomic Theory II (Giuseppe Lopomo); Empirical Studies of Innovation and Digitization (Shane Greenstein); Economics of International Business (Laura Alfaro); Labor Market Analysis (Lawrence Katz); Behavioral Economics, Law and Public Policy (Cass Sunstein)

Methods: Econometrics I (Gregory Bruich) and Econometrics II (Timothy Layton); Analytical Methods for Strategy Research (Eric Van den Steen); Advanced Data Science (Professor Pavlos Protopapas); Field Experiments (Michael Luca).

Strategy: Foundations of Strategy (Dennis Yao); Advanced Topics in Strategy Research (Juan Alcacer); Research Development Course in Strategy (Hong Luo and Andy Wu, 3 semesters completed to-date)

CONFERENCES & SEMINARS

Presenter, "Commercializing Deep Technology: Managing The Road from The Lab to The Market," Academy of Management, Summer 2024
Presenter, "When to Lend Intellectual Property," HBS Internal Strategy Unit Seminar, Fall 2023.
Participant, NBER Digital Economics and AI Tutorial, Fall 2023

PROFESSIONAL EXPERIENCE

Teaching Fellow, Harvard Business School, Harvard University, Boston, Massachusetts
January 2024-present

- Run review sessions for MBA required curriculum Strategy course, specializing in quantitative analysis.

Research Analyst, Professor Laura D'Andrea Tyson, University of California, Berkeley, Haas School of Business, Berkeley, California
September 2017-June 2021

- Primary analyst on empirical research in labor, industrial, and public economics, as well as firm strategy and public policy.

Research Analyst, Professors Martin Kenney and John Zysman, Berkeley Roundtable on the International Economy (BRIE) and Center for Information Technology Research in the Interest of Society (CITRIS), Berkeley, California
May 2018-June 2021

- Primary analyst on empirical research in business strategy, in particular digital platform firms' expansion strategy.

Research Fellow, German Federal Ministry of Labour and Social Affairs (BMAS), Berlin, Germany
August 2019-January 2020

- Analyzed German datasets, including classified German Federal Social Security LIAB and SIAB data, to investigate the relationship between technological change and the labor market in Germany vs. the US.

Visiting Scholar, Alexander von Humboldt Institute for Internet and Society (HIIG), Berlin, Germany
August 2019-January 2020

- Collaborated with German scholars to conduct qualitative research on digital platform in Germany.

Researcher and Writer, Dr. Olli Rehn, Governor of the Central Bank of Finland, Virtual
August 2018-December 2018

- Regularly met with Governor Rehn to conceptualize content, and outline and draft chapters for his book: Rehn, O. (2020). *Walking the Highwire: Rebalancing the European Economy in Crisis*. London, UK: Palgrave Macmillan.

AWARDS

PhD Research Scholarship, Harvard Business School	2021-present
Research Scholarship, German Federal Ministry of Labour and Social Affairs	2019-2020
Regents' and Chancellor's Scholarship, University of California, Berkeley	2013-2018
Stamps Leadership Scholarship, Stamps Family Charitable Foundation	2013-2018
Gail Karp Orgell Scholarship, Jewish Community Federation, San Francisco	2013-2018
Arts and Social Change Prize, Big Ideas Competition	2017
Critical Language Scholarship in Mandarin Chinese, US Department of State	2016
Robert Bates College Scholarship, Berkeley High School	2013

OTHER

English (native), Mandarin Chinese (advanced), Hebrew and Arabic (basic)
Stata, Python, SQL, Scheme, Microsoft Office Suite (e.g. Excel, PowerPoint, Word), Google Workspace Suite

Harvard Business School

Shane M. Greenstein
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Dafna Bearson

February 15, 2024

I heartily recommend Ms. Dafna Bearson for the NBER Entrepreneurship Book Camp. Ms. Bearson is completing her third year of graduate training at the Harvard Business School as part of the Strategy unit. She is firmly committed to pursuing a research agenda in innovation strategy and technology commercialization. Her courses and qualifying exams led her to research interests at the intersection of innovation and entrepreneurship, making her particularly well-suited for greater exposure to these topics at the entrepreneurship boot camp.

I first met Ms. Bearson during the process of selecting graduate students. I was assigned to interview her and enthusiastically recommended her. After she graduated from UC Berkeley with a degree in economics, she served as a research assistant for Martin Kenny and Laura Tyson for two years, largely supporting research in political economy and technology policy. She possesses that rare combination of skills in big-data assembly, statistical analysis, and exceptional writing that tends to predict success in frontier strategic research.

Since then, I have gotten to know her well as a PhD student, and she has met expectations. She took my empirical studies of innovation course in Spring 2022. She then took a qualifying exam in technology strategy, which I had the privilege to administer. She performed excellent work in both written and oral exams. We have since begun an extensive conversation about her research projects. I am on her committee with faculty from the Strategy unit, Juan Alcacer, and Maria Roche.

Ms. Bearson writes exceptionally well and with rare clarity. She makes thoughtful and creative remarks. She listens well and speaks clearly. She is a great presenter. She is determined and enthusiastic about studying innovation economics. You cannot help but notice the enthusiasm and passion. It is infectious. She is an absolute delight to advise.

Harvard Business School

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In the late summer of last year, she began what will surely be the first of several projects on an agenda examining licensing by large and entrepreneurial firms. She identified a novel data set about intellectual property licensing. She acquired, cleaned, and matched it with other files. She began performing empirical analyses (approaching identification), culminating in a presentation for about 30 HBS Strategy Unit faculty in November 2023. It is an impressive achievement in only four months and particularly unusual compared to most graduate students, who are often just finding their feet at a similar stage. The Strategy Unit liked her presentation.

Specifically, she examines entrepreneur inventors' decision to license their intellectual property. Her research (so far) shows that there is an inverted U-shaped relationship between an invention's market value and licensing but a positive linear relationship between scientific value and licensing. At this point, she is grappling with some of the measurement issues associated with "transferability," looking for ways to measure features of a patent that make it more likely to transact. In short, we are well beyond the early stages but not out of the woods yet.

The boot camp provides greater exposure to scholars—both faculty and students—who are also studying entrepreneurship. For Ms. Bearson, it can provide productive feedback at this important stage of her research development. It can help her envision broader agendas for the next phases in her research.

I cannot say enough wonderful things about Ms. Bearson. She is great to have around and will be a terrific participant in your boot camp.

Sincerely,

