Does Examiner Culture Affect Patent Outcomes?

Deepak Hegde, Alexander Ljungqvist, and Manav Raj[1]

Recent studies have documented substantial variation in patent examiners' propensity to approve applications filed with the U.S. patent office: the likelihood that a given patent is granted varies substantially depending on which examiner it is assigned to for review (Cockburn, Kortum, and Stern, 2002; Sampat and Williams, 2015; Farre-Mensa, Hegde and Ljungqvist, 2017). The reasons for this variation have not been systematically investigated. Understanding whether heterogeneity in examiner decisions is due, for example, to the patent office's incentive system (as suggested by Frakes and Wasserman, 2017) or to examiners' backgrounds, beliefs, and values is a necessary first step for designing policies that increase the consistency and efficiency of the patent system.

Our proposal seeks to study whether examiners' cultural origins affect examination outcomes, such as the chances of patent approval, the scope of issued patents, and the speed of examination. While all examiners at the U.S. patent office are required to be U.S. citizens, they differ in their ethnic and religious backgrounds. Customs, beliefs, and values associated with ethnic and religious backgrounds are known to transmit from generation to generation (Guiso, Sapienza, and Zingales 2006). Our aim is to measure the causal effects of examiner culture on patent outcomes (after accounting for other variables that affect patent outcomes, such as examiner experience, seniority, and technology specialization as well as applicant characteristics). To establish causality, we will make use of the fact that the patent office assigns patent applications to examiners randomly with respect to the cultural origins of examiners.

Approach and Data

When an individual or organization applies for a patent, the U.S. Patent and Trademark Office (USPTO) sorts the application into the appropriate technological field (or "art unit") and then assigns it to an examiners in that art unit based on a process that approximates a "first-in-first-out" system. As a result, the assignment of an application to an examiner is conditionally random with respect to examiner characteristics, applicant characteristics, and application quality, once we control for art-unit-by-application-year fixed effects (Lemley and Sampat, 2012; Sampat and Williams, 2015; Farre-Mensa, Hegde and Ljungqvist, 2017).[2]

We use USPTO data on utility patent applications, examiner characteristics, and evaluation outcomes. We remove applications filed before 2001, applications whose decision date occurred after 2015, and applications for which no examiner name is listed. We create a list of all unique names of inventors and examiners and utilize a third-party contractor to classify each name based on its likely ethnic and religious background. Based on preliminary analysis of the data, we have a sample of 3,846,275 patent applications (of which

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[2] Righi and Simcoe (2017) provide evidence for examiner specialization within art-unit years, but conclude that specialization is based on technology rather than applicant characteristics or application quality.

68.5% were approved and the rest rejected or abandoned) filed by 1,086,544 unique primary inventors, and processed by 12,851 unique examiners. This sample is used to estimate empirical models of the following form: $y_{ijkt} = \alpha_1 I_i + \alpha_2 J_{jt} + \alpha_3 IJ_{ij} + \alpha_4 TechnologyYearFE_{kt} + \epsilon_{ijt}$ (1)

where y is some measure of examination outcome, such as examiner leniency, examination effort, and examination speed. To measure leniency, we use patent allowance rates and rates of first-action approval. To measure examination effort, we use final claim, final word count (differenced from application claim count and word count), and the number of examiner-added citations. To measure speed, we examine first-action time and total processing time. In regression (1), i indicates the inventor, j the examiner, k the technology sub-class to which the application is assigned, and t the filing year. I is a vector of inventor characteristics and includes a variable for the inventor's ethnic origin, religious origin, gender, and an indicator variable capturing whether the inventor is located in the U.S. J is a vector of examiner characteristics and includes both time-varying variables (such as experience and seniority) and time-invariant variables (such as ethnic origin, religious origin, and gender). IJ is a binary variable turned on if examiner and applicant share the same ethnic (or religious) origin. This captures the potential effects of cultural homophily on examination outcomes y.

Preliminary Results

Preliminary results show substantial examiner heterogeneity in outcomes, even within narrowly defined technology subclasses within the same year. For example, the interquartile range in examiners' patent allowance rates after purging technology-year effects is 17.8%--a wide range given that assignment to examiners is random within technology-year. Examiner ethnic origin and religious origin have a significant effect on patent outcomes. For example, controlling for observable characteristics and art-unit-by-application-year fixed effects, patents evaluated by examiners of Japanese origin are almost ten percentage points less likely to be approved than patents evaluated by examiners of African-American origin.

We are in the process of mapping the different ethnic and religious origins in our sample to measures of their underlying values and beliefs obtained from Geert Hofstede's cultural dimensions and the World Values Survey (Hofstede, Hofstede and Minkov 2010; Inglehart et al., 2014). This will allow us to investigate the effects on patent outcomes of examiners' cultural backgrounds related to views on work, private ownership of business, and property rights.

Implications

Patents are an important asset for organizations, providing them with a means to appropriate gains from their inventions, create jobs and innovate (Cohen, Nelson and Walsh, 2000; Farre-Mensa, Hegde, and Ljungqvist, 2015). At the same time, incorrectly granted patents can stifle follow-on innovation (Galasso and Schankerman, 2015). Our project will reveal whether and how examiners' cultural backgrounds affect patent applicants' "luck of the draw" and their subsequent trajectories. Moreover, our project, when complete, will contribute to the literature on the economic effects of cultural origins by providing causal evidence from an economically important setting and a large sample (e.g., Guiso, Sapienza, and Zingales, 2006; Kerr, 2008; Fisman, Paravisini, and Vig, 2017).

Budget estimate

The grant money will be split evenly to cover (a) the costs of research assistance for one of the authors of this proposal, a PhD student (Manav Raj) over summer, (b) travel costs for the authors, and (c) the cost of purchasing the ethnic and religious correspondence data.

References

Cockburn, I., S. Kortum, and S. Stern. (2002). Are All Patent Examiners Equal? The Impact of Examiner Characteristics on Patent Statistics and Litigation Outcomes. NBER Working Paper No. 8980.

Cohen, W., R.R. Nelson, and J. Walsh. (2000). Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not). NBER Working Paper No. 7552.

Farre-Mensa, J., D. Hegde, and A. Ljungqvist. (2015). The Bright Side of Patents. USPTO Economic Working Paper No. 2015-5.

Farre-Mensa, J., D. Hegde, and A. Ljungqvist. (2017). What is a Patent Worth? Evidence from the U.S. Patent "Lottery". NBER Working Paper No. 23268.

Fisman, R., D. Paravisini, and V. Vig. (2017). Cultural Proximity and Loan Outcomes. *American Economic Review*, 107(2).

Frakes, M.D. and M.F. Wasserman. (2017). Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents? Evidence from Micro-level Application Data. *Review of Economics and Statistics*, 99(3).

Galasso, A. and M. Schankerman. (2015). Patents and Cumulative Innovation: Causal Evidence from the Courts. *Quarterly Journal of Economics*, 130(1).

Guiso, L., P. Sapienza, L. Zingales. (2006). Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives*, 20(2).

Hofstede, G., G.J. Hofstede, and M. Minkov. (2010). Cultures and Organizations: Software of the mind. Revised and Expanded 3rd Edition. New York: McGraw-Hill.

Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin and B. Puranen et al. (eds.). (2014). World Values Survey: All Rounds - Country-Pooled Datafile 1981-2014. Madrid: JD Systems Institute. Version:http://www.worldvaluessurvey.org/WVSDocumentationWVL.

Kerr, W.R. (2008). Ethnic Scientific Communities and International Technology Diffusion. *Review of Economics and Statistics*, 90(3).

Lemley, M.A. and B. Sampat. (2012). Examiner Characteristics and Patent Office Outcomes. *Review of Economics and Statistics*, 94(3).

Righi, C. and T. Simcoe. (2017). Patent Examiner Specialization. Boston University Questrom School of Business Research Paper.

Sampat, B. and H.L. Williams. (2015) How Do Patents Affect Follow-On Innovation? NBER Working Paper No. 21666.

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ACADEMIC APPOINTMENTS

New York University, Stern School of Business
- Associate Professor of Management and Organizations (with tenure), 2016 – present
- Founding Director, Creative Destruction Lab—New York City, 2017 - present
- Assistant Professor of Management and Organizations, 2010 – 2016

OTHER AFFILIATIONS

New York University School of Law, The Engelberg Center on Innovation Law & Policy
Faculty Affiliate, 2015-Present

United States Patent and Trademark Office
Thomas Alva Edison Research Fellow, 2014-2015; Visiting Scholar, May 2011 – Present

CESifo Research Network, University of Munich
Affiliate, August 2013 – Present

EDUCATION

University of California, Berkeley
Doctor of Philosophy, 2010 (Thesis committee: David Mowery, Bronwyn Hall, Steve Tadelis, Catherine Wolfram and Brian Wright)

University of California, Berkeley
Master of Science in Business Administration, 2008

Georgia Institute of Technology, Atlanta
Master of Science in Public Policy, 2005

The National Institute of Engineering, Mysore, India
Bachelor of Industrial Engineering, 2000 (with Distinction)

AWARDS & HONORS

Faculty Leadership Award (for exceptional leadership through service), NYU—Stern, 2018
Nominated for Professor of the Year, NYU—Stern MBA Program, 2016-2017
Nominated for Professor of the Year, NYU—Stern Langone Program, 2016-2017
The World's Best 40 Under 40 Business School Professors, Poets & Quants, 2015
G-Forum Entrepreneurship Research New Comer Award, 2014 (with coauthor)

Thomas Edison Innovation Fellowship, George Mason University School of Law, 2014-2015
Academy of Management, Technology and Innovation Management Division, Emerging Scholar Award First Runner Up, 2014
Thomas Alva Edison Research Fellow, US Patent and Trademark Office, 2014-2015
Kauffman Foundation Junior Faculty Fellow, 2012-2013
Management Science Meritorious Referee Award, 2013
Finalist, International Society for New Institutional Economics Dissertation Competition, 2010
Kauffman Dissertation Fellow, 2009
Regents Fellow, Sasakawa Young Leader, Bradley Fellow (UC Berkeley), 2005-10
International House Graduate Fellow, 2005-06
Outstanding Student (School of Public Policy, Georgia Tech), 2004
Statistics Guru (The Student Body of Ivan Allen College, Georgia Tech), 2003
1st prize in Technical Quiz (Society of Industrial & Production Engineers), 1998

PUBLICATIONS

SSRN profile: http://ssrn.com/author=1572429
Google Scholar profile: https://scholar.google.com/citations?hl=en&user=4ZvIfUMAAAAJ

[1] Patent publication and the market for ideas (with Hong Luo)
Management Science, published online in Articles in Advance on January 12, 2017

[2] Debtor rights, credit supply, and innovation (with Geraldo Cerqueiro, Fabiana Penas and Robert Seamans)
Management Science, published online in Articles in Advance August 12, 2016

[3] Can private money buy public science? Disease lobbying and federal funding for biomedical research (with Bhaven Sampat)
Management Science, 61(10) p.2281-2298 (Lead Article), Oct 2015
- Featured in *Nature* 515(19), Nov 2014

[4] What is the probability of receiving a US patent? (with Michael Carley and Alan Marco)
Yale Journal of Law & Technology, Volume 17, 203, 2015. pp 204-223

[5] Disclosing patents' secrets (with Stuart Graham)
Science, 347(6219) p.236-237, 16 Jan 2015
- Longer version available as "Who values secrecy in patenting? Evidence from the American Inventor's Protection Act of 1999" at http://ssrn.com/abstract=2170555

[6] An organizational perspective on patenting and open innovation (with Ajay Bhaskarabhatla)
Organization Science, 25(6) p.1744-1763, Nov 2014

[7] Does social proximity enhance business relationships? Theory and evidence from ethnicity's role in US venture capital (with Justin Tumlinson)
Management Science, 60(9) p.2355-2380, Oct 2014

[8] Tacit knowledge and the structure of license contracts: evidence from the biomedical industry
Journal of Economics & Management Strategy, 23(3), Fall 2014

[9] Funding and performance at the US Patent and Trademark Office
Nature Biotechnology, 30(2) p.148–150, Feb 2012

[10] Political influence behind the veil of peer review: an analysis of public biomedical research funding in the U.S.
Journal of Law & Economics, 52(4) p.665-690, Nov 2009

[11] Applicant citations, examiner citations, and the private value of patents (with Bhaven Sampat)
Economics Letters, 5(3) p.287-289, 2009

[12] Pioneering inventors or thicket-builders: which firms use continuations in patenting? (with David Mowery & Stuart Graham)
Management Science, 55(7) p.1214–1226, Jul 2009

[13] Politics and funding in the US public biomedical R&D system (with David Mowery)
Science, 322(5909) p.1797-98, Dec 2008

[14] Maturation of global corporate R&D: evidence from the activity of U.S. foreign subsidiaries (with Diana Hicks)
Research Policy, 37(3) p.390-406, Apr 2008

[15] Knowledge, technology trajectories and innovation in a developing country context: evidence from a survey of Malaysian firms (with Philip Shapira)
International Journal of Technology Management, 40(4) p.349-370, Dec 2007

[16] Public and private universities: Unequal sources of regional innovation?
Economic Development Quarterly, 19(4) p.373-386, Nov 2005

[17] Highly innovative small firms in the markets for technology (with Diana Hicks)
Research Policy, 34(5) p.703-716, Jun 2005

OTHER ARTICLES

[18] Reply to "A Replication of 'Political influence behind the veil of peer review' (Journal of Law & Economics, 2009)"
Public Finance Review, September 29, 2015

WORKING PAPERS

[19] What is a patent worth? Evidence from the U.S. patent 'lottery' (with Joan Farré Mensa and

Alexander Ljungqvist), latest version: http://ssrn.com/abstract=2704028
R&R at *Journal of Finance*

[20] Asymmetric information and entrepreneurship (with Justin Tumlinson), latest version: http://ssrn.com/abstract=2596846
R&R *at Management Science*

[21] Human Capital, Firm Capabilities and Innovation (with Ajay Bhaskarabhatla and Thomas Peeters) Latest version: http://ssrn.com/abstract=3084638
R&R *at Management Science*

[22] Patent disclosure (with Kyle Herkenhoff and Chenqi Zhu)
Latest version: https://ssrn.com/abstract=3158031

[23] What determines US patent allowance? (with Alan Marco), Available on request

WORK IN PROGRESS

[24] Patent disclosure and market reaction (with Chenqi Zhu)

[25] Market reaction to pharma product announcements (with Patrick Augustin, Gunnar Grass and Marti Subrahmanyam)

[26] Scientific inference in organizational research (with Zur Shapira)

[27] Patents: Speed v/s Scope (with Alexander Ljungqvist and Chenqi Zhu)

[28] Examiner culture and patent outcomes (with Alexander Ljungqvist and Manav Raj)

PRESENTATIONS

2018 (includes planned): Washington University—Olin Business School, NYU-Stern Management Department brownbag, Federal Reserve Bank of Dallas, Bocconi University, Academy of Management Meetings

2017: Antonin Scalia Law School (George Mason University), New York University—Stern School of Business (Finance Research Day), University of California, San Diego (School of Global Policy and Strategy), Empirical Patent Law Conference (Duke University), Searle Center Research Roundtable on Patents and Technology Standards (Northwestern Law), New York University—Langone Medical Center, Technical University of Munich, New York University School of Law, Purdue University (Krannert School of Management) , NYU-Stern Undergraduate Honors Seminar

2016: Ivey Business School—University of Western Ontario, Center for the Protection of Intellectual Property Thomas Edison Meeting (Florida), University of Colorado, Boulder, Columbia Business School, NYU—Stern Management Department Brownbag, London Business School, Wisconsin School of Business (Madison), Hoover IP2 conference (Stanford University), US Patent and Trademark Office (Alexandria), 2016 Wharton Technology Conference, Workshop on Innovation in a Global Economy (Harvard Business School), National Bureau of Economics Research Summer Meeting (Intellectual Property and Innovation Group), Congressional Inventions Caucus Briefing (Washington, DC), Conference on Intellectual Property & Global Prosperity (George Mason University), NYU-Stern Management Department brownbag, University of Michigan (Ann Arbor), Harvard Business School (Entrepreneurship Unit)

2015: Tata Consultancy Services (Bangalore), University of Maryland—Smith School of Business, Universidad de Piura—Economics Department (Lima), Hoover IP2 Conference (Stanford University), Hebrew University of Jerusalem (EMBA students on tour at New York), Center for Protection of Intellectual Property Meetings (San Diego), NYU Stern Faculty Lunch Seminar Series (New York), Sumantra Ghoshal Conference on Managerially-Relevant Research (London Business School), Innovation and International Business Conference (George Washington University), Hoover-United States Patent and Trademark Office Conference (Washington DC), US Patent and Trademark Office (Chief Economist's Office), University of California, Berkeley (via Skype), University of Chicago—Booth School of Business, Harvard Business School (Strategy unit)

2014: Indian Institute of Management (Bangalore), Georgia Institute of Technology (Scheller School of Business), 10th Smith Entrepreneurship Research Conference (University of Maryland), Entrepreneurship and Innovation Research Workshop (NYU-Stern) SRF Conference (Santa Fe), Academy of Management (Philadelphia), US Patent and Trademark Office (Chief Economist's Office), University of California, Berkeley (Fall Innovation Seminar), Kauffman Emerging Scholars Conference (Kansas City), University of California, Los Angeles (Anderson School of Management), National Bureau of Economics Research Winter Meeting (Entrepreneurship Group), U.S. Patent and Trademark Office (Webinar)

2013: University of California, Berkeley (Spring Innovation Seminar), Utah-BYU Winter Strategy Conference, 2013 Wharton Technology and Innovation Conference, Atlanta Competitive Advantage Conference, University of Oregon (Causal Inference Seminar, via Skype), Sixth Annual Conference on Innovation and Entrepreneurship, Northwestern University School of Law, 10th Annual International Industrial Organization Conference (Boston), Ludwig Maximilian University of Munich, 5th ZEW/MaCCI Conference on the Economics of Innovation and Patenting (Mannheim), Fourth Workshop for Junior Researchers on the Law & Economics of Intellectual Property and Competition Law (Munich), Ludwig Maximilians Universität—Microeconomics and Management Seminar (Munich), Erasmus School of Economics (Rotterdam), National Bureau of Economics Research Summer Meeting (Intellectual Property and Innovation Group), Academy of Management Meetings (Orlando, Florida), UK Intellectual Property Office—Patent Use Conference (London), Rutgers Business School (Newark, NJ), 4th HEC Workshop on Entrepreneurship (Paris), New York University (Stern Management Department Seminar, Fall)

2012: Duke University (Economics of Innovation Seminar), Ohio State University (Glen School of Public Affairs), Georgia Tech (School of Public Policy), New York University (Stern Management Department Seminar, Spring), Indian Institute of Management (Ahmedabad), Indian Institute of Management (Bangalore), New York University (Stern Economics of Strategy workshop), Academy of Management meetings (Boston), New York University (Wagner School of Public Affairs), Harvard Business School (Strategy Unit), University of Michigan, Ann Arbor (Ross School of Business), Roundtable on Engineering Entrepreneurship Research (Georgia Tech), The 5th Israel Strategy Conference (Tel Aviv), Columbia Business School 3rd Annual Strategy Conference (New York)

2011: University of California, Berkeley (Spring and Fall Innovation Seminars), NYU-Stern Management Department Seminar (Spring, Summer and Fall) NYU-Poly, National Bureau of Economics Research Summer Institute (IPE Group), The Strategy Research Initiative Workshop (Annapolis), Columbia University (Mailman School of Public Health), NYU(Department of Politics), Harvard University (Science-Based Business Initiative Seminar Series), Duke University (Fuqua Strategy Seminar), Harvard Business School (Institutions and Innovation Conference), National Bureau of Economics Research Winter Meeting (Entrepreneurship Group)

2010: Stern School of Business (New York University), Wharton School (University of Pennsylvania), Goizueta School of Management (Emory University), Rotman School of Management(University of Toronto), Sauder School of Business(University of British Columbia), School of Public Policy (George Mason University)

2009: Carey School (Johns Hopkins University), Copenhagen Business School, School of Management (Boston University), National Bureau of Economics Research (Productivity Seminar Series)

2008: Roundtable on Engineering Entrepreneurship Research (Georgia Tech)

2005: American Association for the Advancement of Science: Conference-3 (Washington D.C.)

SELECTED WORKSHOPS

- Roundtable on Empirical Methods in Intellectual Property, Cardozo Law School (May 2017)
- Strategy Junior Faculty Summer Camp, Tuck School of Business at Dartmouth (July 2013)
- Workshop for Junior Researchers on the Law & Economics of Intellectual Property and Competition Law, International Max Planck Research School for Competition and Innovation and the Center for Law & Economics at ETH Zurich (June 2013)
- Commercializing Technology through the Power of IP. Licensing Executives Society (October 2009)
- Entrepreneurship Research Boot Camp. National Bureau of Economics Research (July 2009)
- PhD Seminar in Entrepreneurship. Ewing Marion Kauffman Foundation, (June 2008) Cleveland, OH

TEACHING

Competitive Strategy. Langone MBA program. NYU-Stern; August 2010–present
Corporate Strategy. Langone MBA program. NYU-Stern; September 2011-present
Strategy. MBA program. NYU-Stern; August 2014 –present
Doctoral Course on Innovation. Spring 2016
Session on Innovation and Public Policy (2013, 2014, 2015)
Session on Entrepreneurial Strategy (2017)

GRANTS

National Bureau of Economics Research, Innovation Policy Grant, 2015-2016, $20,000
United States Patent and Trademark Office, 2014-2015, $108,503.7
United States Patent and Trademark Office, 2012-2013, $58,000
United States Patent and Trademark Office, 2011, $15,000
Kauffman Foundation Junior Faculty Fellow Award, 2012-2013, $40,000
Kauffman Foundation Grant #20110112, 2011, $8,145
National Bureau of Economic Research, Entrepreneurship Working Group Travel Grant, Summer 2008, $1,000
Institute of Business and Economic Research dissertation grant, 2009, $1,500

ACADEMIC SERVICE

Editorial and Refereeing

- Senior Editor, *Organization Science* (2015-)
- Guest Associate Editor, *Management Science* (2014, 2015, 2016)
- Refereed manuscripts for *Science*, *Management Science, Review of Economic Studies, Rand Journal of Economics, Review of Economics & Statistics, Journal of Law & Economics, Organization Science, Strategic Management Journal, Journal of Economics & Management Strategy, Research Policy, Industrial & Corporate Change, Journal of Technology Transfer, Minerva, Journal of Law, Economics & Organization, International Journal of Industrial Organization, IEEE Transactions on Engineering Management, Journal of the European Economic Association, Scientometrics, Labour Economics, California Management Review, Public Finance Review, Public Choice, Technovation, International Journal of Technology Management, Economic Inquiry, Economics & Politics*
- Invited to referee grant proposals for *National Science Foundation* and *Kauffman Foundation*
- Invited to referee book proposals for *Stanford University Press, Oxford University Press* and *Palgrave Macmillan*

Student Mentorship and Supervision

- PhD Supervision: Jin-Hyun Bae, Junghyun Suh, Daniel Keum, Francis Park, Chenqi Zhu, Wendy Bradley (HEC—Paris)
- Undergraduate Supervision: Khushali Upadhyay (Advisor, Honors Thesis)
- Mentor for Kauffman dissertation award recipients at the Kauffman Entrepreneurship Mentoring Workshop, January 6-7, 2013. San Diego, CA

Conference and Seminar Organization

- Co-chair, 22nd Annual Organization Science Winter Conference (2016)
- Organizer, NYU-Stern Economics of Strategy Conference (2012, 2015)
- Faculty Discussant, Columbia-Stern PhD Student Conference (2013, 2014)
- Organized presenters' session on intellectual property at AOM (2014)
- Organizer, Professional Development Workshop on Patents at AOM (2015)
- Organizer, NYU-Stern Creativity & Innovation Research Initiative (2014-)

External and Internal Committees

- Academy of Management—Technology, Innovation and Management Best Student Paper Awards Committee (2014)
- NYU-Stern Management Department Research Committee (2014-2015)
- NYU-Stern Management Department Annual Merit Review Committee (2014-2015)
- NYU-Stern Management Department Doctoral Program Committee (2016-)

Memberships

American Economic Association, Academy of Management, The Econometric Society, Strategic Management Society, Strategy Research Forum

MEDIA COVERAGE

Research featured in outlets such as *Nature*, *NPR Marketplace, Wall Street Journal, Chronicle of Higher Education, USNews, Inc. Magazine, ArsTechnica, Outlook India, Dawn, Harvard Business Review, Frankfurter Allgemeine Zeitung, Engineering.com,* and others

INDUSTRY EXPERIENCE

Abt Associates, Cambridge, MA. Intern, 2004
Robert Bosch, Stuttgart and Bangalore. Software Engineer, 1999 – 2002

PERSONAL

Born: November 05, 1977
U.S. Citizen
Married to Aparna Hegde née Padmanabhan with one child (Amogh, born on August 29, 2015)
Languages: English, Kannada (Native), Hindi (Conversational), Sanskrit (Basic), German (Basic)

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ACADEMIC APPOINTMENTS

2018–present	STOCKHOLM SCHOOL OF ECONOMICS Stefan Persson Family Chair in Entrepreneurial Finance (since 2018) Professor in Financial Economics (since 2018)
2000–2018	STERN SCHOOL OF BUSINESS, NEW YORK UNIVERSITY (ON LEAVE) Ira Rennert Chair in Finance and Entrepreneurship (2009–2018) Professor of Finance (2008–2018) Sidney Homer Director, NYU Salomon Center (2015–2018) Director of Research, NYU Berkley Center for Entrepreneurship & Innovation (2005–2014) Research Professor of Finance (2007–2009) Associate Professor (with tenure, 2005–2008) Charles Schaefer Faculty Fellow (2003–2006) Assistant Professor (2000–2005)
1995–2000	SAÏD BUSINESS SCHOOL, OXFORD UNIVERSITY University Lecturer in Finance Bankers Trust Fellow, Merton College, Oxford
2011–present	NATIONAL BUREAU OF ECONOMIC RESEARCH, BOSTON Research Associate
1995–present	CENTRE FOR ECONOMIC POLICY RESEARCH, LONDON Research Fellow (since 2005) Research Affiliate (1995–2004)
2013–present	ASIAN BUREAU OF FINANCE AND ECONOMIC RESEARCH, SINGAPORE Founding Senior Academic Fellow
2012–present	RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS, STOCKHOLM Research Fellow

VISITING POSITIONS

2015–2018	Swedish House of Finance & Stockholm School of Economics
2015–2016	Sveriges Riksbank
2014–2016	Jockey Club Institute for Advanced Study, Hong Kong University of Science and Technology
2013	Harvard Business School
2010–2013	National University of Singapore, Business School
2010–2012	Federal Reserve Bank of New York, Research Department
2010	Tokyo University, Department of Economics
2009–2012	Cambridge University, Judge Business School
2007	Northwestern University, Kellogg School of Management London Business School, Entrepreneurship Department University of Sydney, Finance Department
2000	London Business School, Finance Department
1999	New York University, Stern School of Business

EDITORIAL BOARDS

2008–2014	Editor, Review of Financial Studies
2017–	Associate Editor, Journal of Corporate Finance
2016–	Associate Editor, Review of Finance
2013–	Associate Editor, Journal of Financial Intermediation
2007–2008	Associate Editor, Review of Financial Studies

EDUCATION

1994–1995	D.Phil. in Economics, Nuffield College, Oxford University (awarded in 1996)
1992–1994	M.Phil. in Economics, Nuffield College, Oxford University
1989–1992	M.Sc. in Economics and Business, Lund University, Sweden
1989	Abitur, Wilhelm-Gymnasium, Hamburg, Germany

HONORS AND AWARDS

2018	Stefan Persson Family Chair in Entrepreneurial Finance Distinguished Visiting Scholar in Finance, University of Oklahoma
2016	Nominated for "Professor of the Year" Award, NYU Award for the Best Paper in Accounting, MIT Asia Conference
2015	Mitsui Distinguished Visiting Scholar, University of Michigan Johan & Jakob Söderberg Visiting Professor, Swedish House of Finance & Stockholm School of Economics
2014	Emerald Citations of Excellence Award 27th AFBC BlackRock Prize Award for the Best Paper in Asset Pricing, SFS Cavalcade Charles River Associates Award for the Best Paper on Corporate Finance, WFA Fung Visiting Professor, Hong Kong University of Science and Technology IAS Visiting Professor, Jockey Club Institute for Advanced Study, Hong Kong
2013	Founding Senior Academic Fellow, Asian Bureau of Finance and Economic Research Rising Star of Finance Award Glucksman Award, NYU
2012	Honorary Conference Chair, Asian Finance Association meetings, Taipei
2011	Ewing Marion Kauffman Prize Medal for Distinguished Research in Entrepreneurship Research Associate, NBER Emerald Citations of Excellence Award Sir Evelyn de Rothschild Fellow, Cambridge University
2010	Sir Evelyn de Rothschild Fellow, Cambridge University
2009	Ira Rennert Endowed Chair in Finance and Entrepreneurship, NYU Argentum Best Paper Prize, European Finance Association meetings, Bergen Teaching Excellence Award, NYU Sir Evelyn de Rothschild Fellow, Cambridge University
2008	Glucksman Award, NYU Best Paper Award in Financial Markets, FMA meetings, Dallas
2007	Research Professor of Finance, NYU Barclays Global Investors Prize for Best Paper, Sydney

	Glucksman Award, NYU FIRN Visitor, Australia
2005	Nominated for "Professor of the Year" Award, NYU Research Fellow, CEPR
2004	Charles Schaefer Faculty Fellow, NYU
2003	Charles Schaefer Faculty Fellow, NYU Glucksman Award, NYU
2002	CDC Award for Best Paper, NYU Glucksman Award, NYU
1998	Oxford University "Best MBA Elective Teacher" Award
1996	Bankers Trust Fellow, Merton College, Oxford
1995	Research Affiliate, CEPR
1993	Royal Bank of Canada Award
1991	Jubilee-Scholar of the Lund Academic Society

SCHOLARSHIPS

1994	Nuffield College Third Year Scholarship, Oxford ESRC Research Award (for studies at Oxford)
1993	Dr. Marcus Wallenberg Scholarship (for studies at Oxford) Citibank Scholarship (for studies at Oxford)
1992	ESRC Studentship (declined) Dr. Marcus Wallenberg Scholarship (for studies at Oxford) Citibank Scholarship (for studies at Oxford)
1990	Dr. Marcus Wallenberg Scholarship (for studies at Oxford) Erik Nylander Scholarship (for studies at Lund University)
1989	Michael Hansen College Scholarship (for studies at Lund University) Erik Nylander Scholarship (for studies at Lund University)

SELECTED COMPETITIVE RESEARCH GRANTS

- "Financial integration among immigrants in Sweden" (with Martin Ljunge, IFN)
    - Riksbankens Jubileumsfond (grant no. P17-0206:1, SEK 4.399 million)
    - Jan Wallanders & Tom Hedelius stiftelse (grant no. P2017-0075:1, SEK 1.5 million)
- "Herding in financial markets" (with Paolo Sodini, Stockholm School of Economics)
    - Jan Wallanders & Tom Hedelius stiftelse (grant no. P2017-0159:1, SEK 3.0 million)
- Launch of new research network "Nordic Initiative for Corporate Economics" (with Lars Persson, IFN)
    - Jan Wallanders & Tom Hedelius stiftelse (grant no. F17-0046:1, SEK 0.5 million)

RESEARCH INTERESTS

Corporate finance
- capital structure
- taxes
- CEO ownership and compensation
- boards of directors
- financing constraints
- investment
- behavioral corporate finance

Empirical asset pricing
- testing asymmetric-information models
- liquidity
- limits to arbitrage

Entrepreneurial finance
- private equity
- venture capital
- social networks

Investment banking
- initial public offerings
- securities underwriting
- analyst behavior
- conflicts of interest
- relationship banking

Forensic finance

CITATIONS

Google Scholar citations	>11,600
Google Scholar h-index	38
Web of Science citations to my published papers *http://www.researcherid.com/rid/F-5568-2011*	>2,300
Web of Science citations to my working papers, chapters, and books	>150
Web of Science h-index	25

ACTIVE WORKING PAPERS

- "Busy directors: Strategic interaction and monitoring synergies" (with K. Raff). NBER Working Paper No. 23889. (Under review.)
- "What is a patent worth? Evidence from the U.S. patent 'lottery'" (with J. Farre-Mensa and D. Hegde). NBER Working Paper No. 23268. (R&R for 2nd round.)
- "State capitalism vs. private enterprise" (with D. Chen, D. Jiang, H. Lu, and M. Zhou). NBER Working Paper No. 20930. (R&R for 2nd round.)
- "The incredible shrinking stock market: On the political economy consequences of excessive delistings" (with L. Persson and J. Tåg). NBER Working Paper No. 21909. (Under review.)
- "The investment behavior of buyout funds" (with M. Richardson and D. Wolfenzon). (R&R for 2nd round.)

  Barclays Global Investors Prize, 2007.

  Glucksman Honorable Mention Award for "Best Working Paper in Finance", 2007/8, NYU.
- "To cut or not to cut? On the impact of corporate taxes on employment and income" (with M. Smolyansky). NBER Working Paper No. 20753.

PUBLISHED AND FORTHCOMING ARTICLES

- Back, K., P. Collin-Dufresne, V. Fos, T. Li, and A. Ljungqvist, 2018, "Activism, strategic trading, and liquidity", *Econometrica*, forthcoming.
- Ljungqvist, A., L. Zhang, and L. Zuo, 2017, "Sharing risk with the government: How taxes affect corporate risk-taking", *Journal of Accounting Research* 55, 669-707.

  Award for the Best Paper in Accounting, MIT Asia Conference, 2016.

- Ljungqvist, A., and W. Qian, 2016, "How constraining are limits to arbitrage?", *Review of Financial Studies* 29, 1975-2028.

  Award for the Best Paper in Asset Pricing, SFS Cavalcade, 2014.

  BlackRock Prize for the Best Paper in Capital Markets, AFBC, 2014.

- Farre-Mensa, J., and A. Ljungqvist, 2016, "Do measures of financial constraints measure financial constraints?", *Review of Financial Studies* 29, 271-308.

  Lead article.

- Heider, F., and A. Ljungqvist, 2015, "As certain as debt and taxes: Estimating the tax sensitivity of leverage from state tax changes", *Journal of Financial Economics* 118, 684-712.

- Asker, J., J. Farre-Mensa, and A. Ljungqvist, 2015, "Corporate investment and stock market listing: A puzzle?", *Review of Financial Studies* 28, 342-390.

- Balakrishnan, K., M. Billings, B. Kelly, and A. Ljungqvist, 2014, "Shaping liquidity: On the causal effects of voluntary disclosure", *Journal of Finance* 69, 2237-2278.

  Glucksman Award for "Best Working Paper in Finance", 2012/13, NYU.

- Hochberg, Y., A. Ljungqvist, and A. Vissing-Jørgensen, 2014, "Informational hold-up and performance persistence in venture capital", *Review of Financial Studies* 27, 102-152.

  Argentum Best Paper Prize, EFA, 2009.

- Cornelli, F., Z. Kominek, and A. Ljungqvist, 2013, "Monitoring managers: Does it matter?", *Journal of Finance* 68, 431-481.

- Kelly, B., and A. Ljungqvist, 2012, "Testing asymmetric-information asset pricing models", *Review of Financial Studies* 25, 1366-1413.

- Asker, J., and A. Ljungqvist, 2010, "Competition and the structure of vertical relationships in capital markets", *Journal of Political Economy* 118, 599-647.

- Hochberg, Y., A. Ljungqvist, and Y. Lu, 2010, "Networking as a barrier to entry and the competitive supply of venture capital", *Journal of Finance* 65, 829-859.

- Ljungqvist, A., F. Marston, and W.J. Wilhelm, 2009, "Scaling the hierarchy: How and why investment banks compete for syndicate co-management appointments", *Review of Financial Studies* 22, 3977-4007.

- Ljungqvist, A., C. Malloy, and F. Marston, 2009, "Rewriting history", *Journal of Finance* 64, 1935-1960.

  Glucksman Award for "Best Working Paper in Finance", 2006/7, NYU.

- Ljungqvist, A., F. Marston, L. Starks, K. Wei, and H. Yan, 2007, "Conflicts of interest in sell-side research and the moderating role of institutional investors", *Journal of Financial Economics* 85, 420-456.

- Chemla, G., M. Habib, and A. Ljungqvist, 2007, "An analysis of shareholder agreements", *Journal of the European Economic Association* 5, 93-121.

- Hochberg, Y., A. Ljungqvist, and Y. Lu, 2007, "Whom you know matters: Venture capital networks and investment performance", *Journal of Finance* 62, 251-301.

  2014 Emerald Citations of Excellence Award, recognizing the 35 most influential papers published in 300 management journals since 1999.

  2011 Emerald Citations of Excellence Award, recognizing the 50 most influential papers published in 300 management journals since 2007.

  Listed among the 25 most cited articles published in the Journal of Finance since 2004.

- Ljungqvist, A., V. Nanda, and R. Singh, 2006, "Hot markets, investor sentiment, and IPO pricing", *Journal of Business* 79, 1667-1702.

  Glucksman Runner-Up Award for "Best Working Paper in Finance", 2001/2, NYU.

  Lead article.

- Cornelli, F., D. Goldreich, and A. Ljungqvist, 2006, "Investor sentiment and pre-IPO markets", *Journal of Finance* 61, 1187-1216.

- Ljungqvist, A., F. Marston, and W.J. Wilhelm, 2006, "Competing for securities underwriting mandates: Banking relationships and analyst recommendations", *Journal of Finance* 61, 301-340.

- Habib, M. and A. Ljungqvist, 2005, "Firm value and managerial incentives: A stochastic frontier approach", *Journal of Business* 78, 2053-2094.

  Lead article.

- Ljungqvist, A. and W.J. Wilhelm, 2005, "Does prospect theory explain IPO market behavior?", *Journal of Finance* 60, 1759-1790.

- Benveniste, L.M., A. Ljungqvist, W.J. Wilhelm, and X. Yu, 2003, "Evidence of information spillovers in the production of investment banking services", *Journal of Finance* 58, 577-608.

- Ljungqvist, A. and W.J. Wilhelm, 2003, "IPO pricing in the dot-com bubble", *Journal of Finance* 58, 723-752.

- Ljungqvist, A., T.J. Jenkinson, and W.J. Wilhelm, 2003, "Global integration of primary equity markets: The role of U.S. banks and U.S. investors", *Review of Financial Studies* 16, 63-99.

  Reprinted in: Ritter, J.R. (ed.), *Recent Developments in Corporate Finance*, Edward Elgar (2005).

  Reprinted in: Madura, J. (ed.), *Financial Markets, Vol. 1*, Sage Publishing (2004).

- Ljungqvist, A. and W.J. Wilhelm, 2002, "IPO allocations: Discriminatory or discretionary?", *Journal of Financial Economics* 65, 167-201.

  Lead article.

- Habib, M. and A. Ljungqvist, 2001, "Underpricing and entrepreneurial wealth losses in IPOs: Theory and evidence", *Review of Financial Studies* 14, 433-458.

  Reprinted in: Biais, B. and M. Pagano (eds.), *Readings in Financial Markets, Vol. 2*, OUP (2001).

- Jenkinson, T.J. and A. Ljungqvist, 2001, "The role of hostile stakes in German corporate governance", *Journal of Corporate Finance* 7, 397-446.

  Reprinted in: Ang, J.S, R.A.I. van Frederikslust, and S. Sudarsanam (eds.), *Corporate Governance and Corporate Finance: A European Perspective*, Routledge (2007).

- Habib, M. and A. Ljungqvist, 1998, Underpricing and IPO proceeds: A note, *Economics Letters* 61, 381-383.

- Ljungqvist, A., 1997, "The pricing of initial public offerings—Further evidence from Germany", *European Economic Review* 41, 1309-1320.

MONOGRAPHS, CHAPTERS AND OTHER PUBLICATIONS

Ljungqvist, A., 2012, "Disruptive innovation: Are stock exchanges under threat?", in: Rethinking Financial Innovation, Geneva: World Economic Forum.

Brown, S.J., M. Kacperczyk, A. Ljungqvist, A. Lynch, L. Pedersen, and M. Richardson, 2009, "Hedge funds in the aftermath of the financial crisis", in: V. Acharya and M. Richardson (eds.), Restoring Financial Stability: How to Repair a Failed System, Wiley.

Ljungqvist, A., 2007, "IPO underpricing", in: B.E. Eckbo (ed.), Handbook of Corporate Finance, North-Holland.

Jenkinson, T.J., and A. Ljungqvist, 2001, Going public: The theory and evidence on how companies raise equity finance – Second revised edition, Oxford and New York: Oxford University Press.

Jenkinson, T.J., and A. Ljungqvist, 1996, Going public: The theory and evidence on how companies raise equity finance, Oxford and New York: Oxford University Press.

EARLIER WORKING PAPERS

- "The bright side of patents" (with J. Farre-Mensa and D. Hegde). NBER Working Paper No. 21959.
- "Liquidity and governance" (with K. Back and T. Li). NBER Working Paper No. 19669.

  Charles River Associates Award for the Best Paper on Corporate Finance, WFA, 2014.
- "Managerial labor market frictions and corporate investment" (with A. Agrawal).
- "The value of research" (with B. Kelly).

  Best Paper Award in Financial Markets, FMA, 2008.
- "The cash flow, return, and risk characteristics of private equity" (with M. Richardson). NBER Working Paper No. 9454.
- "Conflicts of interest and efficient contracting in IPOs", CEPR Discussion Paper No. 4163.

  Glucksman Runner-Up Award for "Best Working Paper in Finance", 2002/3, NYU.
- "On the decision to go public: Evidence from privately-held firms" (with E. Boehmer).

  CDC Award for "Best Working Paper in Finance", 2002, NYU.

INVITED LECTURES AND KEYNOTES

2018 Keynote speaker, Asian Finance Association meetings, Tokyo
Keynote speaker, German Finance Association meetings, Trier
Keynote speaker, European Capital Markets Institute annual conference, Brussels
Invited lecture, The Econometric Society meetings, Shanghai

2017 Invited speaker, Asian FMA Conference, Taipei
Invited speaker, 6th Annual Corporate Finance Conference, Exeter

2016 Inaugural Henry Grunfeld Lecture, Chartered Institute of Bankers/Institute of Financial Services, London
Keynote speaker, 29th Australasian Finance and Banking conference, Sydney
Keynote speaker, Knut Wicksell Centre for Financial Studies, Lund

2015 Dean's Lecture, City University London

2014 Distinguished Public Lecture, Jockey Club Institute for Advanced Study, Hong Kong
Keynote speaker, Frontiers in Finance Conference, Warwick
Invited speaker, Asian FMA Conference, Tokyo
Invited speaker, Finance Symposium, Hong Kong University of Science and Technology
Invited speaker, Corporate Finance Conference, University of Minnesota

2012 Keynote speaker, Coller Institute's Private Equity Findings Symposium, London
Keynote speaker, Singapore International Finance Conference
Opening keynote, Asian Finance Association meetings, Taipei
Dean's Distinguished Lecture, The Hong Kong Polytechnic University

2011 Keynote speaker, Asian Finance Association meetings, Macau
Keynote speaker, Kauffman Foundation Symposium, Denver
Keynote speaker, Finance & Accounting Forum, Brisbane
Keynote speaker, New Year's Conference, WHU Otto Beisheim School of Management
Distinguished Lecture, NYUAD Institute, Abu Dhabi

2010 Inaugural Sir Evelyn de Rothschild Lecture, Cambridge University
Keynote speaker, EFM Symposium on Entrepreneurial Finance & Venture Capital Markets, Montreal

2009 Keynote speaker, Asian Finance Association meetings, Brisbane
Keynote speaker, XVII Foro de Finanzas, Spanish Finance Association (AEFIN) annual meetings, Madrid

2005 Keynote speaker, Canadian Investment Review (CIR) Conference on Alternative Investments, Monticello

CONFERENCE PRESENTATIONS

2018 Econometric Society, WFA, Global Corporate Governance Conference/Harvard

2017 AFA, Asian FMA, Exeter Corporate Governance Conference

2016 WFA (x2), Stanford University/Hoover Institution IP^2 Conference, NBER/Universities, NBER/Productivity, SFS Cavalcade, Wharton Technology & Innovation Conference, MIT Asia Conference, China International Conference in Finance, AAA, LBS Private Equity Symposium

2015 AEA/AFE (joint session), AFA, UPenn-NYU Law & Finance Conference, NBER/China, NBER/Productivity, ABFER Conference, MIT Asia Conference, National Tax Association, NTU Accounting Research Symposium

2014 AFA, WFA (x3), NBER/Behavioral, EFA, SFS Cavalcade, FIRS Conference, UNC Tax Symposium, Minnesota Corporate Finance Conference, Asian FMA, China International Conference in Finance, ABFER Conference, 27th AFBC Conference

2013 AFA, NBER Summer Institute/Corporate, NBER Summer Institute/Entrepreneurship, NBER-JFE Conference on Capital Structure, NBER/Corporate Finance, EFA, Utah Winter Finance Conference, UNC-Duke Corporate Finance Conference, Adam Smith Conference, FIRS Conference, LBS Summer

Symposium, China International Conference in Finance, University of Michigan Mitsui Finance Symposium, Rising Star Conference, Kauffman Entrepreneurship Conference, IDC Summer Finance Conference

2012 WFA, Utah Winter Conference, NBER Conference on Innovation & Entrepreneurship, 9th Corporate Finance Conference at Washington University, Five Star Conference

2011 FIRS Conference (x2)

2010 WFA, AFE, EFA, NBER/Entrepreneurship, Paris Spring Conference, 18th Mitsui Symposium at University of Michigan, LBS Private Equity Conference, 7th Corporate Finance Conference at Washington University

2009 WFA (x2), AFA, NBER/Summer Institute, EFA, Fourth CEPR-Bank of Italy Conference, National University of Singapore Corporate Governance Conference, INSEAD/Thailand Conference on Networks

2008 WFA, AFA, NBER/Private Equity, NBER/Entrepreneurship, Napa Conference, FMA, EFA

2007 AFA (x2), NBER/Private Equity, NBER/Behavioral Finance, 20th AFBC, LBS Entrepreneurship Conference

2006 NBER/Entrepreneurship, WFA, UNC-Duke/Corporate Finance Conference, Fourth EVI Conference (HBS), First RICAFE2 Conference

2005 NBER/Entrepreneurship, WFA (x2), AFA, ASSA, EFA, Third RICAFE Conference

2004 NBER/Corporate Finance, WFA (x2), AFA, Wharton-West VC Conference, FIRS Conference, Deutsche Bundesbank Spring Conference, Tuck/Corporate Finance Conference, Third EVI Conference, JFE Conference on Conflicts of Interest in Investment Banking

2003 NBER/Summer Institute, WFA (x2), NYSE/Stanford Conference (x2), EFA, First RICAFE Conference (x2)

2002 WFA, AFA, RFS Conference on Experimental Finance, Texas Finance Festival, Utah Winter Finance Conference, First EVI Conference (Yale)

2001 NYSE Conference

2000 WFA, NYSE/CEPR Conference on IPOs, CEPR/Gerzensee, EFA, ABN-Amro Conference on IPOs, EU/TMR Conference

1998 EFA, EU/TMR Conference, Wharton Conference on Raising Capital

1997 EFA, European Corporate Governance Network, EU/TMR Conference, NYU Conference on Small Business Finance

1996 CEPR/Gerzensee, MFA, German Finance Association Conference, Humboldt-University IPO Conference

1995 CEPR/Gerzensee, EFA, EFMA, Nordic Doctoral Program in Economics

1994 German NSF Conference, Royal Economic Society

1993 EFA

1992 EIASM Workshop on Corporate Finance, LBS 5th European Foundation for Entrepreneurship Conference

SEMINARS

2019 Helsinki Finance (Aalto/Hanken)

2018 INSEAD; LBS Accounting; Oklahoma; National Taiwan University (x2); Lund University

2017 UT Austin; University of Mannheim; Purdue University; NYU Accounting

2016 Cornell Tech; Dartmouth College; University of Amsterdam; Swedish House of Finance; University of Miami; University of Oxford; University of Exeter; University of Bristol

2015 Chicago Booth; University of Michigan; Ohio State; BI Norwegian Business School; NHH Bergen; Northeastern University; Melbourne University; ESMT; Baruch College

2014 Harvard Business School; Notre Dame; University of Vienna; NHH Bergen; Hong Kong Polytechnic University; HEC Paris; University of Queensland; Tokyo Institute of Technology; City University London; City University of Hong Kong; National Chengchi University; National Taiwan University

2013 Chicago Booth; MIT Sloan; Kellogg School; Harvard Business School (x2); University of Rochester; Board of Governors; University of North Carolina at Chapel Hill; University of Illinois, Urbana-Champaign; ESC Toulouse; Hong Kong University; National Chengchi University; National Taiwan University; Sveriges Riksbank

2012 University of Michigan; Carnegie Mellon University; Rice University; New York Fed; European Central Bank; McGill University; Shanghai Advanced Institute of Finance; SIFR; Stockholm Research Institute of Industrial Economics; Cambridge University; University of Queensland; Australian National University

2011 Wharton School; European Central Bank; Boston College; Emory University; University of Georgia; Temple University; HKUST; Toulouse University; Cambridge University; Australian National University; Singapore Management University; National Taiwan University

2010 NYU Economics; New York Fed; Indiana University; University of Texas, Dallas; Southern Methodist University; ESMT Berlin; Swedish School of Economics; Cambridge University; Tokyo University (x2); Tokyo Institute of Technology; Kyoto University; Hitotsubashi University; Nagoya University; National Taiwan University; Korean Advanced Institute of Science and Technology; Peking University; Nanyang Business School; National University of Singapore

2009 UC Berkeley; University of Zurich; Cambridge University (x2); Australian National University; National University of Singapore; Singapore Management University; Case Western Reserve University

2008 Columbia University; Cambridge University; University of Colorado; Sydney University; Monash University

2007 Stanford GSB (x2); Harvard Business School; Wharton School; University of Michigan; Washington University; University of Zurich; Tilburg University; American University; University of Queensland; Melbourne University; NYU Dean's Lunch

2006 European Central Bank; Cornell University; University of Pittsburgh; CUNY Economics; NYU/Berkley; HKUST; Australian National University; Sydney University; University of New South Wales; University of Auckland; Simon Fraser University; University of Texas, Austin

2005 Stanford GSB; UC Berkeley; London Business School; University of British Columbia; University of Southern California; University of Maryland; University of Wisconsin-Madison; DePaul University/Chicago Federal Reserve Bank; University of Amsterdam; Erasmus University Rotterdam

2004 Chicago GSB; Cornell University; Yale School of Management; London School of Economics; Carnegie-Mellon University; Vanderbilt University Law School; Michigan State University; University of Virginia; HEC Paris

2003 Harvard Business School; Kellogg School; University of Minnesota; Tulane University; New York Fed; NYU Law School; University of Lisbon; Oxford University

2002 Columbia University; INSEAD; University of Florida; Georgetown University; Notre Dame University; Indiana University; Purdue University; Penn State University; University of Virginia; Rutgers University; Stockholm School of Economics; BI Norwegian Business School; Norwegian School of Economics; Oxford University; NYU/CDC Award Seminar

2001 Columbia University Law School; University of North Carolina at Chapel Hill; University of Wisconsin-Madison; Cambridge University; Toulouse University; Goethe University Frankfurt; University of Amsterdam; Tilburg University

2000 Duke University; Dartmouth College; London School of Economics; University of Warwick

1999 Columbia University; NYU; Oxford University; University of Vienna; University of Mannheim; University of Bristol; Boston College; Oxford University; University of Hamburg

1997 Stockholm School of Economics; Lund University; Humboldt-University Berlin; London Business School; Birkbeck College

1995 London School of Economics; University of Leeds; Lancaster University; Oxford University

1994 University of Illinois, Urbana-Champaign; Oxford University; Nuffield College; Lancaster University

1993 Humboldt-University Berlin

1992 Nuffield College

INDUSTRY TALKS

2017 Agenta; SEC-NYU Dialogue on Securities Market Regulation

2016 Analysis Group

2015 SEC; Norges Bank Investment Management; ASX; Danske Capital

2013 Knut Wicksell Centre for Financial Studies/IFN Policy Forum on “The Disappearing Stock Market”

2011 World Economic Forum, New York; South China Morning Post/HK Treasury Markets Association; two leading family offices; Nasdaq DRP

2010 Society of Quantitative Analysts; Development Bank of Japan; Norinchukin Bank, Tokyo

2009 EBRD

2007 AQR; SEC; Oppenheimer Funds

2001 NYSE

2000 SEC

TEACHING EXPERIENCE

Executive	Executive MBA (NYU, 2009–2017) MS in Global Finance (NYU & HKUST, 2008–2015) Senior Management Program in Banking (Swiss Finance Institute, 2008–2013) Advanced Executive Program (Swiss Finance Institute, 2008) Open-enrolment & firm-specific courses in finance & economics (O|X|E|R|A, 1995–2000)
Ph.D.	Empirical Methods in Corporate Finance (NYU, 2006, 2008, 2012, 2014, 2016, 2017) Seminar in Empirical Corporate Finance (SHoF/Stockholm, 2016; NHH Bergen, 2015; HKUST, 2014; Swiss Finance Institute, 2009; FIRN/Australia, 2007) NBER PhD Boot Camp (2011) Seminar in Entrepreneurial Finance (LBS, 2007)
MBA	New Venture Financing (NYU, since 2002) Venture Capital Financing (NYU, since 2016) Venture Capital and Private Equity (HBS, 2013) Venture Capital (Cambridge, 2009–2011) Entrepreneurial Finance (Oxford, LBS, NYU, 1998–2001) Valuation (Oxford, 1997)
Undergraduate	Entrepreneurial Finance (NYU, 2001–2005); Corporate Finance, Investments, Finance for Mathematicians, Microeconomics, IO, Introduction to Management (Oxford, 1995–2000)

TEACHING AWARDS

2015-2016	Nominated for "Professor of the Year" Award, NYU Stern
2009	Teaching Excellence Award, NYU Stern
2004–2005	Nominated for "Professor of the Year" Award, NYU Stern
1997–1998	Students' Award for Best Elective Teacher on the MBA Program, Oxford University

NYU TEACHING EVALUATIONS

Average for question "Overall evaluation of the instructor"; scale 1 to 7

	EMBA	MBA				UG
AY	New Venture Financing	New Venture Financing		Venture Capital Financing	Entre-preneurial Finance	Entre-preneurial Finance
2016-2017	6.8	6.5	6.6	6.8		
2015-2016	6.8	6.7		6.9		
2014-2015	7.0	6.8				
2013-2014		6.7	6.8			
2012-2013	6.7	6.3				
2011-2012	6.7	6.5	6.9			
2010-2011	6.9					
2009-2010	6.8	6.5	6.8			
2008-2009	6.9	6.6	6.7			
2007-2008		6.7	6.8			
2006-2007						
2005-2006		6.7	6.8			
2004-2005		6.6	6.7			6.8
2003-2004		6.2	6.6			5.9
2002-2003		6.5	6.8			6.0
2001-2002		6.3	6.5			6.6
2000-2001					6.7	6.7

Ph.D.

Empirical Methods in Corporate Finance (2017): 7.0
Empirical Methods in Corporate Finance (2016): 7.0
Empirical Methods in Corporate Finance (2014): 7.0
Seminar in Empirical Corporate Finance (2012): 6.8
Seminar in Corporate Finance (2008): 7.0
Seminar in Banking and Corporate Finance (2006): 6.0

EXTERNAL SERVICE

NASDAQ OMX	NASDAQ Listing Council (2011–2017)
World Economic Forum	Council of Experts overseeing "Alternative Investments 2020" project (2012–2015)
	Working group for "Rethinking Financial Innovation" project (2011–2012)
European biotech start-up	Supervisory board (2014–2016)
UK Dept. for Business, Innovation & Skills	Panel of Experts, Review of UK Equity Markets (2013–2014)

PROFESSIONAL SERVICE

Directorships	Academic Director, Financial Management Association (2012–2014)
Nominating Committees	The Economics Nobel Prize (2016–) American Finance Association (2014–2015)
External Member	International Scientific Advisory Board, Knut Wicksell Centre for Financial Studies, Lund University (2017–) Research Funding Review Committee, Swiss Finance Institute (2012–2016) Senior Promotions Review Committee, London Business School (2012–2013) Dissertation committees in finance and accounting, Columbia University (Daniel Dorn; Jörg Rocholl, Erik Johanneson)
Conference Chair	SEC-NYU Dialogue on Securities Market Regulation (quarterly since 2017) NYU Stern/NY Fed Conference on Financial Intermediation (annually since 2005) Riksbanken Conference on Interconnected Financial Systems (2016) IFN Conference on the Economics of Corporate Ownership (2015) EFA (Track Chair, Financial Intermediation, 2011) FMA (Track Chair, Corporate Finance, 2008, 2018) EVI Conference on Entrepreneurship, Venture Capital, and IPOs (2003)
Program Committees	NBER CF Meeting (Spring 2012), WFA (since 2007), AFA (2009, 2006), EFA (since 2000), Utah Winter Finance Conference (2014), SFS Cavalcade (2011), EVI Conference (2006, 2004, 2003), FMA (2018, 2008, 2004), Finance Down Under (2011), ABN-Amro Conference (2000)
Discussant	Annual conferences: AFA, WFA, NBER/Entrepreneurship, NBER/Corporate Finance, CEPR, EFA, ABFER, European Corporate Governance Network, Global Corporate Governance Colloquia; One-off conferences: World Bank/Entrepreneurship (2009), European Central Bank/Corporate Finance and Monetary Policy (2006), Tuck/Corporate Finance (2004), RFS/Price Formation (1999), (1997), EU/TMR Conference (1997)
External Reviewer	All major finance and economics journals; some top accounting journals; National Science Foundation; Social Sciences and Humanities Research Council of Canada; Finland Distinguished Professor Program; Kauffman Foundation

UNIVERSITY SERVICE

Stockholm School	Nominated to the Board of Directors of the Stockholm School of Economics
	Tenure Review Committee (2018–)
New York University	Sidney Homer Director, NYU Salomon Center (2015–2018)
	Research Director, NYU Berkley Center for Entrepreneurship (2005–2014)
	Program Director for Alternative Investments, NYU Salomon Center (2009–2014)
	Program Director for Financial Institutions, NYU Salomon Center (2003–2009)
	NYU Glucksman Institute prize committee (2010–2011)

	Co-organizer, Friday finance brown-bag (2010–2015)
	Co-organizer, Wednesday finance seminar (2003–2004)
	Founding organizer, Monday finance brown-bag (2001–2004)
	Seminar co-organizer, NYU Berkley Center for Entrepreneurship (2002, 2005–2014)
	Search Committee for Senior Faculty in Entrepreneurship (2003–2005)
	Entrepreneurship Curriculum Committee (2006–)
	Faculty Grievance Committee (2011–2014)
	Chair of the Junior Recruitment Committee (2008–2009)
	PhD committees: Victoria Ivashina (HBS); David Ross (Columbia); Yang Lu (chair; AQR); Bryan Kelly (co-chair; Chicago Booth); Joan Farre-Mensa (co-chair; HBS); Michael Smolyansky (chair; Federal Reserve Board); James Albertus (Carnegie-Mellon)
Oxford University	Public Examiner, Final Honour School of Economics & Management (1996–2000)
	Organizer, finance seminar (1996–2000)
	Recruitment committees: Finance (1996–1999), Accounting (1995–1997)
	Lecture list co-ordinator (1995–1998)
Merton College	Committee service: Governing Body; Finance; Investments; Academic policy; Strategy; Development (1995–2000)

Manav Raj

Doctoral Candidate in Management and Organizations
New York University • Leonard Stern School of Business
40 West 4th Street • New York City, NY • 10012
Telephone: (512) 923-2945
mraj@stern.nyu.edu

April 2018

EDUCATION

New York University, Leonard Stern School of Business, New York City, NY
Ph.D., Management and Organizations (Specialization: Management Strategy)
Expected graduation: May 2022

Dartmouth College, Hanover, NH
A.B., *Cum Laude*, Economics Major with a Minor in Public Policy, 2015

RESEARCH INTERESTS

Primary: Drivers of entrepreneurial entry and factors determining entrepreneurial success

Secondary: Decision-making under uncertainty and the effect of technological change

PUBLICATIONS

1. Felten, E., **M. Raj**, & R. Seamans (2018) A Method to Link Advances in Artificial Intelligence to Occupational Abilities. *American Economic Association Papers & Proceedings.* (Forthcoming)

2. **Raj, M.** & R. Seamans (2018) AI, Labor, Productivity, and the Need for Firm-Level Data. In *The Economics of Artificial Intelligence: An Agenda*, eds. Ajay Agrawal, Joshua S. Gans and Avi Goldfarb, University of Chicago Press: Chicago. (Forthcoming)

WORK IN PROGRESS

1. Hegde. D, Ljungqvist, A. & **M. Raj**. Effect of Ethnicity on Patent Examination.

2. Felten, E., **M. Raj**, & R. Seamans. Linking Advances in Artificial Intelligence to Occupations and Industries.

3. **M. Raj** & J. Eggers. CEO Decision-Making Under Employment Threat

CONFERENCE PRESENTATIONS

*Denotes author who presented (or will present).

Felten, E., **M. Raj**, & *R. Seamans (2018) A Method to Link Advances in Artificial Intelligence to Occupational Abilities. Paper presented at the Wharton Technology & Innovation Conference, Philadelphia, PA. (*April*)

REVIEWING EXPERIENCE

Organization Science Review (*Ad Hoc Reviewer)* 2018 to present

MEMBERSHIPS AND AFFILIATIONS

Academy of Management 2018 to present

Strategic Management Society 2018 to present

Institute for Operations Research and the Management Sciences 2018 to present

PREVIOUS WORKING EXPERIENCE

Cornerstone Research Fall 2015 – Spring 2017
Analyst, Consulting Group

Dimensional Fund Advisors Summer 2014
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