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Education:

Ph.D. Economics, Harvard University

M.A. Economics, Harvard University

B.A. Economics, Magna cum Laude, Brandeis University. Elected to Phi Beta Kappa, Feldberg Prize for Best Student in Economics

Present Positions:

Professor of Economics, London School of Economics (LSE)

Director, MSc Program in Economics, LSE, 2014-2017

Research Fellow, Center for Economic Policy Research, 1999-present

Director, Berkeley Research Group

Previous Positions:

Professor of Economics, Muzzy Chair in Entrepreneurship and Presidential Scholar
Executive Director of the McGuire Center for Entrepreneurship
University of Arizona, 2007-2009 (on leave of absence from London School of Economics)

Research Associate, Centre for Economic Performance, LSE, 2005-2015. Research Director, Program on Productivity and Innovation, 2006-07

Senior Advisor to the Office of the Chief Economist, European Bank for Reconstruction and Development (EBRD), 1998-2003

Director of Policy Studies, European Bank for Reconstruction and Development (EBRD), 1995-98

Research Associate, National Bureau of Economic Research, 1982-94

Senior Economist, World Bank: Africa Technical Department, 1992-93

Assistant Professor, Department of Economics, New York University, 1978-1987

Areas of Specialization:

Intellectual property rights, innovation, industrial organization, university technology transfer, emerging economies

Journal Editorships:

Editorial Advisory Council, *Journal of Industrial Economics*, 2007-present

Editor, *Economics of Transition*, 1998-2012

Associate Editor, *RAND Journal of Economics*, 2007-2012

Associate Editor, *Journal of Industrial Economics*, 1989-1994

Editor, *Economica*, 1989-1991

Visiting Professorships and Honorary Fellowships

Ronald Coase Visiting Professor in Law and Economics, Tilburg University (Holland), 2017-2018

Sackler Senior Visiting Professor by Special Appointment of Tel Aviv University, 2017-2023

Visiting Professor, Toulouse School of Economics (France), Spring/Summer 2018

Visiting Professor of Economics, Tel Aviv University, April-May 2016

Visiting Professor of Economics, Institute of Innovation Research, Hitotsubashi University (Tokyo), June-September 2013

Visiting Scholar, University of Texas at Austin, School of Law and Department of Economics, 2012-13

Lady Davis Fellowship and Visiting Professor, The Hebrew University of Jerusalem (January-June 2007)

Vodafone Visiting Professor of Economics, Sant' Anna School of Advanced Studies, University of Pisa (September 2004)

Visiting Scholar, Haas School of Business, University of California, Berkeley (1997-98)

Visiting Professor, Department of Economics, Free University of Brussels (Fall 1991)

Selected Keynote and Invited Policy Addresses

Federal Trade Commission, Twelfth Annual Microeconomics Conference, Washington D.C. (November 2019)

Workshop on Intellectual Property and China's Economic Growth, Peking University (September 2016)

Tilburg Law and Economics Center Conference on Competition, Standardization and Innovation, Amsterdam (December 2015)

50th Anniversary of the Institute for Advanced Studies, Vienna (May 2014)

International Workshop on Innovation and IPR's, Institute of Innovation Research (Tokyo, June 2013)

Incentives and Knowledge for Pharmaceutical Innovation: Industry-University-Government Collaborative Workshop (Tokyo, September 2013)

International Max Planck-Ludwig Maximilian University Research School of Competition and Innovation, Workshop for Junior Researches on the Law & Economics of Intellectual Property (June 2012, Ringberg Castle, Germany)

Conference on Patents, Centre for Economic Research (ZEW), Mannheim, Germany (May 2008)

Beesley Lecture on Regulation (London Business School): "The Economics of Patent Reform: Improving the Design of Incentives and Mechanisms for Enforcement (November 2007)

International Telecommunications Society Conference (Sydney, June 1994)

Public Service

Economic Advisory Group on Competition Policy, Directorate General on Competition, European Commission (2020-)

U.S. Patent & Trademark Office, Invited Presentation to the Working Group on Patent Quality (March 2015)

U.S. Patent & Trademark Office, Economics Lecture Series: Understanding the Innovation Economy, "Screening for Patent Quality: Examination, Fees and the Courts" (March 2017)

Scientific Committee, OECD Conference on Intellectual Property Statistics for Decision Makers (IPSDM): 2012-2016

Expert testimony to Expert Group on Patent Aggregation, European Commission (Brussels, June 2014)

U.S. Patent & Trademark Office, Economics Lecture Series: Understanding the Innovation Economy, "Global Diffusion of New Drugs: The Role of Patent Policy, Price Controls and Institutions" (December 2011)

U.S. Patent & Trademark Office, Presentation to the Director and Executive Working Group: on “Designing Patent Fees” (August 2011)

Expert Advisory Panel, Hargreaves Independent Review of Intellectual Property and Growth (UK Government, 2010-11)

Grant Review Panel, Science of Science and Innovation Policy, United States National Science Foundation (2010)

Strategic Advisory Board for Intellectual Property Policy (UK Government, 2009)

Expert Advisory Group, Gower Review of Intellectual Property (UK Government, 2006)

Economic Advisory Group, European Patent Office (2006)

Recent Research Papers

“Licensing Life-Saving Drugs for Developing Countries: Evidence from the Medicines Patent Pool,” with Alberto Galasso. Revise and resubmit at the *Review of Economics and Statistics*. Early version as *CEPR Discussion Paper 15544* (revised July 2021)

Work in Progress

“The Patent Bazaar: Incentives, Bargaining and Screening in the Patent System,” with William Matcham and Jakub Drabik

“On the Validity of Leniency Instruments,” with William Matcham

“Blending Private and Public Financing of R&D” with Zvika Neeman

“Designing Standards: Balancing Incentives for Innovation and Adoption,” with Pierre Regibeau and Florian Schuett

Books

The Comingled Code: Open Source and Economic Development, with Josh Lerner (Cambridge, MA: MIT Press, October 2010). Paperback edition issued in 2013.

Reviewed in *The Economist* (13 January 2011); excerpts published in *European Financial Review* (December 2011-January 2012): 40-44. Translated into Korean (Acorn Publishing, 2013), Polish (Free Media Publishing, Warsaw), and Chinese (CITIC Press)

Published articles

“Patent Screening, Innovation and Welfare,” with Florian Schuett. Forthcoming in the *Review of Economic Studies* (expected 2022)

“Government Financing of R&D: A Mechanism Design Approach,” with Saul Lach and Zvika Neeman, *American Economic Journal: Microeconomics* (2021), 13(3): 238-272

“Patent Rights, Innovation and Firm Exit” with Alberto Galasso, *RAND Journal of Economics* (2018), 49(1): 64-86, Top Downloaded Paper 2018-19

“Patents and the Global Diffusion of New Drugs,” with Iain Cockburn and Jean Lanjouw, *American Economic Review* (2016), 106(1): 136-164

“Patents and Cumulative Innovation: Causal Evidence from the Courts,” with Alberto Galasso, *Quarterly Journal of Economics* (2015), 130(1): 317-369

“Motivation and Sorting of Human Capital in Open Innovation,” with Sharon Belenzon, *Strategic Management Journal* (2015), 36(6): 795-820, lead article

“Patent Rights and Cumulative Innovation: Causal Evidence and Implications for Policy,” in Austrian Council for Research and Technology Development, *Designing the Future: Economic, Societal and Political Dimensions of Innovation* (Vienna: EChomedia Buchverlag, 2015): 413-430

“Identifying Technology Spillovers and Product Market Rivalry,” with Nick Bloom and John Van Reenen, *Econometrica* (2013), 81(4): 1347-1393. Supplementary appendices published on *Econometrica* website: 1-33

“Trading and Enforcing Patent Rights,” with Alberto Galasso and Carlos Serrano, *RAND Journal of Economics* (Summer 2013), 44(2): 275-312

“Spreading the Word: Geography, Policy and Knowledge Spillovers,” with Sharon Belenzon, *Review of Economics and Statistics* (2013), 95(3): 884-903

“Strategic Patenting and Software Innovation,” with Michael Noel, *Journal of Industrial Economics* (2013), LXI(3): 481-520

Editor and “Introduction to Symposium on Patents, Entrepreneurship and Innovation,” *Journal of Industrial Economics* (2013), LXI (3): 471-480

“Patent Thickets, Courts and the Market for Innovation,” with Alberto Galasso, *RAND Journal of Economics* (2010), 41(3): 472-503

“University Knowledge Transfer: Private Ownership, Incentives and Local Development Objectives,” with Sharon Belenzon, *Journal of Law and Economics*, (2009), .52: 111-144

“Improving Patent Incentives and Enforcement,” *Journal of Intellectual Property Law and Practice* (September 2009): 11-23

“Comments on ‘A Policy Shaped Research Agenda on the Economics of Science and Technology Policy’,” in Dominique Foray (ed.), *The New Economics of Technology Policy* (Cheltenham: Edward Elgar Publishing, 2009): 122-26

“Incentives and Invention in Universities,” with Saul Lach, *RAND Journal of Economics* (2008), 39(2): 403-433. Reprinted in Alison Wolf and Sandra McNally, eds., *Education and Economic Performance* (Edward Elgar Publishing, 2011).

“On the Welfare Effects and Political Economy of Competition-Enhancing Policies,” with Philippe Aghion, *Economic Journal* (2004), 114: 804-824

“Royalty Sharing and Technology Licensing in Universities,” with Saul Lach, *Journal of the European Economic Association* (2004), 2(2-3): 252-264

“Protecting Patent Rights: Are Small Firms Handicapped?” with Jean Lanjouw, *Journal of Law and Economics* (April 2004), 48(1): 45-74

“Patent Quality and Research Productivity: Measuring Innovation with Multiple Indicators,” with Jean Lanjouw. *Economic Journal* (April 2004): 441-465

“Idiosyncratic and Common Shocks to Investment Decisions,” *Economic Journal* (October 2002): 766-785

“An Empirical Analysis of the Enforcement of Patent Rights in the United States,” with Jean Lanjouw, in *Patents in the Knowledge-Based Economy*, ed. Wesley Cohen and Steven Merrill (National Academy Press: Washington, D.C., 2003): 145-179

“Damages and Injunctions for Protecting Intellectual Property,” with Suzanne Scotchmer, *RAND Journal of Economics* (2001): 199-221

“Characteristics of Patent Litigation: A Window on Competition,” with Jean Lanjouw, *RAND Journal of Economics* (2001), 129-151. Reprinted in Robert Merges, ed., *Economics of Intellectual Property Law* (Edward Elgar Publishing, 2007)

"Intervention, Corruption and Capture: The Nexus between Enterprises and the State," with Joel Hellman, *Economics of Transition* (2000): 545-576

“Patent Renewals and R&D Incentives,” with Francesca Cornelli, *RAND Journal of Economics* (1999): 17-34

“Comments in R&D Roundtable,” in Samuel Kortum, ed., “An R&D Roundtable,” *Economics of Innovation and New Technology* (2004), 13(4): 349-363

“Competition, Entry and the Social Returns to Infrastructure in Transition Economies,” with Philippe Aghion, *Economics of Transition* (March 1999), 79-104

“Governance in Transition,” *Transition Report: Enterprise Performance and Growth* (European Bank for Reconstruction and Development, Her Majesty’s Stationery Office: London, 1999), Chapter 6, 48-59

"How Valuable is Patent Protection? Estimates by Technology Field," *RAND Journal of Economic*, (1998), 29(1): 77-107

“Enterprise Restructuring and Social Benefits,” with Simon Commander, *Economics of Transition*, (1997), 5(1): 1-24

“Growth in Transition Economies: Sources and Obstacles,” with Philippe Aghion, in *Transition Report: Enterprise Performance and Growth* (European Bank for Reconstruction and Development, Her Majesty’s Stationery Office: London, 1997), Chapter 3, 48-59

“Symmetric Regulation for Competitive Telecommunications,” *Information Economics and Policy*, vol.8 (1996), 3-23

Transition Report: Investment and Enterprise Development (European Bank for Reconstruction and Development, distributed by Her Majesty’s Stationery Office: London, 1995), editor and co-author of 3 chapters:

“Transition: measurement and indicators,” Chapter 2, 14-32

“Transition Impact of Investment Projects,” Chapter 7, 118-126

“Ownership, Governance and Restructuring,” with Philippe Aghion, Chapter 8, 128-138

“Exploiting New Market Opportunities in Telecommunications,” with V Bishop and A Mody, in *Infrastructure Delivery: Private Initiatives and the Public Good*, edited by Ashok Mody (Washington, D.C.: World Bank, 1997), 37-78

“Measurement of the Value of Patent Rights and Inventive Output Using Patent Renewal Data”, *Science and Technology Indicators Review* (Paris: OECD, 1991), 101-122

“Dynamics of R&D and Investment in the Scientific Sector”, with Saul Lach, *Journal of Political Economy* (August 1989), 880-904

“Estimates of the Value of Patent Rights in European Countries During the Post-1950 Period,” with Ariel Pakes, *Economic Journal* (December 1986), 1052-1076. Reprinted in Robert Merges, ed., *Economics of Intellectual Property Law* (Edward Elgar Publishing, 2007).

“A Test of static Equilibrium Models and Rates of Return to Quasi-Fixed Factors, with an Application to the Bell System”, with M.I. Nadiri, *Journal of Econometrics* (October/November 1986), 97-118

“Estimating the Effects of R&D on Bell System Productivity: A Model of Embodied Technical Change”, with Roger Gordon and Richard Spady, in M. Peston and R. Quandt, eds., *Prices, Competition and Equilibrium* (Oxford: Philip Allan Press, 1986), 164-190

“Valeur et obsolescence des brevets: une analyse des statistiques de renouvellement des brevets Européens”, *Revue Economique: Economie de la Recherche-Développement* (September 1985), 917-942

"An Exploration into the Determinants of Research intensity", with Ariel Pakes, in Z. Griliches, ed., *R&D, Patents and Productivity* (Chicago: University of Chicago Press, 1984), 209-233

"Investment in R&D, Costs of Adjustment and Expectations", with M.I. Nadiri, in Zvi Griliches, ed., *R&D, Patents and Productivity*, (Chicago: University of Chicago Press, 1984), 315-338

"The Rate of Obsolescence of Patents, Research Gestation Lags, and the Private Rate of Return to Research Resources", with Ariel Pakes, in Zvi Griliches, ed., *R&D, Patents and Productivity* (Chicago: University of Chicago Press, 1984), 98-112

"Comment on Long Run Trends in Patents", in Zvi Griliches, ed., *R&D, Patents and Productivity* University of Chicago Press, 1984)

"Technical Change, Returns to Scale, and the Productivity Slowdown," with M.I. Nadiri, *American Economic Review* (May 1981), 314-319

"The Structure of Production, Technological Change, and Total Factor Productivity Growth in the Bell System", with M.I. Nadiri, in T. Cowing and R. Stevenson, eds., *Productivity Measurement in Regulated Industries* (New York: Academic Press, 1981), 219-247

"The Effects of Double Counting and Expensing on the Measured Returns to R&D," *Review of Economics and Statistics* (August 1981), 454-459

"Identical Bids and Cartel Behavior," with William Comanor, *Bell Journal of Economics and Management Science* (Spring 1976), 281-286

"Common Costs in Pharmaceutical Research and Development: Implications for Direct Price Regulation", in Samuel Mitchell and Emery Link, ed., *Impact of Public Policy on Drug Innovation and Pricing* (American University Press: Washington, 1976), 3-26

Other Research and Policy Papers:

"Economic Principles for Efficient Public Procurement in Information Technology," with Jacques Cremer, *Submission to the U.K. Cabinet Office in connection with the Open Standards Consultation* (May 2012), <http://ssrn.com/abstract=2143096>

"Public Support for Research in Universities: Some Discussion Points," Invited Discussion Paper for the U.K. Economic and Social Research Council (March 2006)

"Blended Finance and Subsidies: An Economic Analysis of the Use of Grants and Other Subsidies in Project Finance of Multilateral Development Banks," with Willem Buiter, European Bank for Reconstruction and Development, Working Paper (June 2002)

"Blended Finance and Grants: An Accounting Framework for Enhanced Transparency in the Use of Grants in Projects," with Willem Buiter and Maria Vagliasindi (European Bank for Reconstruction and Development (January 2003)

“An Analytical Framework for Evaluating Transition Impact of Infrastructure Projects,” with Philippe Aghion, European Bank for Reconstruction and Development, Working Paper No. 57 (October 2000)

“Corruption and Regulation: Theory and Evidence,” London School of Economics, mimeo (December 2001). Presented at the EBRD Tenth Anniversary Conference on Transition (London)

"Measuring Governance, Corruption and State Capture: How Firms and Bureaucrats Shape the Business Environment in Transition Economies," with J Hellman, G Jones and D Kaufmann, World Bank Working Paper No.2312 (2000)

“Symmetric Regulation,” with Len Waverman and Lorenzo Pupillo, Paper presented at European Telecommunications Conference, Stockholm (June 1999)

"Evaluating the Need for Broadband Open Access Policies," with Len Waverman and Carlo Cardilli (1998)

“Investment Appraisal, Policy Reform and the Transition Process,” with Robin Burgess and Nicholas Stern, presented at the Conference on Policy Studies to Promote Private Sector Development (EBRD, April 1996)

"Shackles or Shillings: Constraints to Kenyan Private Sector Development," mimeo, World Bank, 1992

"The Private Value of Patent Rights in France, 1969-1987: An Empirical Study of Patent Renewal Data," Final Report, Division of Science and Technology Indicators, U.S. National Science Foundation (January 1990)

Book Reviews:

Adam Jaffe and Manuel Trajtenberg, *Patents, Citations and Innovations: A Window on the Knowledge Economy* (MIT Press: Cambridge, MA, 2002), *Economic Journal*, 113 (November 2003), 653-654

Maxim Boyko, Andrei Shleifer and Robert Vishny, *Privatizing Russia* (MIT Press: Cambridge, MA, 1995), *Journal of Economic Literature* (June 1997), 818-820

Partha Dsgupta and Paul Stoneman, ed., *Economic Policy and Technological Performance* (Cambridge University Press, 1987) in *Journal of Economic Literature* (June 1990)

James Tobin, *Asset Accumulation and Economic Activity*, *Giornale Economisti* (September/October 1984)

Robert Amman and Michael Cooper, ed., *Industrial Innovation in the Soviet Union*, *Giornale Economisti* (September/October 1984)

Research Grants:

Suntory-Toyota Center for Economics and Related Disciplines (London School of Economics), 2020-2022: “The Patent Bazaar: Incentives, Bargaining and Screening in the Patent System”

National Foreign Trade Council Foundation (2012-14), “Global Diffusion of New Drugs: Patent Policy, Price Regulation and Health Institutions,” with Iain Cockburn

British Academy (2006): “Explaining Open Source Software Development: Reputation Effects, Tacit Reciprocation and Motivated Agents”

Microsoft Corporation (2004): “Strategic Patenting and Innovation in Software”

Neaman Institute for Advanced Studies in Science and Technology Policy, Israel Institute of Technology (2004): “Incentives, Constraints and Objectives in Technology Licensing Offices and the Effectiveness of Technology Transfer Activities”

U.S. National Academy of Sciences: Board on Science, Technology and Economic Policy (2000): "Enforcing Intellectual Property Rights: the Incidence and Outcomes of Patent Suits"

Director, Policy Studies for the Economic Analysis of Project Preparation and Appraisal in Transition Economies, Grant to the Office of the Chief Economist from European Commission to the EBRD (1996), ECU 589,500

Director, Policy Studies to Promote Private Sector Development, Grant to Office of the Chief Economist from the Japan-Europe Cooperation Fund to the EBRD (1994), £480,000

Nuffield Foundation (1995): “Patent Litigation and the Value of Patent Protection”

Suntory-Toyota Center for Economics and Related Disciplines, London School of Economics (1995): “Patent Litigation and the Value of Patent Protection”

U.S. National Science Foundation, Division of Science and Technology Indicators (1986): “The Private Value of Patent Rights in France”

Bell Laboratories (1983): “Economic Effects of R&D in the Bell System”

American Telephone and Telegraph Company (1979): “Production Structure and Technical Change in the Bell System”

Invited University Courses (Selected):

Advanced Institute on Science and Education, Steyr, Austria: (July 2006)

Vodafone Visiting Professor, Sant’ Anna School of Advanced Studies, University of Pisa: Doctoral Program in Economics and Management, Lectures on R&D and Intellectual Property (September 2004)

Institute for Advanced Studies (Vienna, Austria): Transition in Eastern Europe and the Former Soviet Union, 1997

Bocconi University (Milan, Italy): (1) Applied Duality Analysis, 1987; (2) Panel Data with Applications to R&D, 1991.

Hebrew University (Jerusalem, Israel): Panel Data Analysis, 1990

Gothenberg University (Gothenberg, Sweden): Panel Data Analysis, 1989

Invited Conference Presentations (Selected; to be updated):

ZEW Workshop on Empirical Economics of Innovation and Patenting (Mannheim, Germany), March 2011

European Policy for Intellectual Property, 6th Annual Conference on Intellectual Property Rights (Maastricht, Netherlands), September 2010

European Policy for Intellectual Property, 3rd Annual Conference on Intellectual Property Rights (Bern, Switzerland), October 2008

International Association for the Protection of Intellectual Property (London), July 2008

World Intellectual Property Organization (WIPO), National Roundtable on the Economics of Intellectual Property (New Delhi, India), March 2007

European Policy for Intellectual Property, 1st Annual Conference on Intellectual Property Rights (Munich, Germany), October 2006

San Francisco Federal Reserve Bank, Conference on Productivity: Causes and Consequences, November 2005

ZEW Workshop on Empirical Economics of Innovation and Patenting (Mannheim, Germany), March 2003

San Francisco Federal Reserve Bank, Conference on Productivity, November 2003

NBER Summer Institute (Cambridge, USA), July 2003, 2007, 2008, 2010

Corporate Expert Testimony and Consulting for International Institutions (details available on request):

Corporate

Qualcomm (written testimony in two cases)

Nokia Corporation (written and oral testimony)

Sanofi Pharmaceuticals

CenturyLink Inc. (written testimony and oral representations at the FCC)

General Telephone and Electronics Corporation (written and oral testimony in various cases involving price caps)

Pacific Gas and Electric Company, California (written and oral testimony)

Telecom Italia

Telewest

Bell Canada (written and oral testimony)

Multilateral Institutions

World Bank, Washington D.C. (worked in Ghana, Kenya, Zimbabwe and South Africa)

European Bank for Reconstruction and Development, London

Organization for Economic Co-operation and Development (OECD, Paris)

World Intellectual Property Organization (WIPO, Geneva)

Academic References:

Philippe Aghion: Department of Economics, London School of Economics

Ariel Pakes: Department of Economics, Harvard University

John Sutton: Department of Economics, London School of Economics