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Curriculum Vitae
20 July 2023

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CURRENT POSITIONS

Cain Brothers & Company Professor of Healthcare Management, Columbia University Graduate School of Business

Research Associate, National Bureau of Economic Research, Productivity and Health Care Programs

Research Fellow, CESifo (Center for Economic Studies/Ifo Institute for Economic Research), Munich, Germany

Associate Editor, *Economics*

Editorial Board member, *Journal of Evolutionary Economics*

Editorial Board member, *Defence and Peace Economics*

Member, Conference on Research in Income and Wealth

AWARDS

Winner of the 20th *East Asian Economic Review* Best Paper Award for the article, *The Health Impact of, and Access to, New Drugs in Korea*.

Winner of the *Economic Record* 2017 Best Paper Prize for the article, *The Impact of Pharmaceutical Innovations on Premature Mortality, Hospital Separations, and Cancer Survival in Australia*

Winner of an Outstanding Author Contribution Award at the Literati Network Awards for Excellence 2011 for the publication *The Effect of Drug Vintage on Survival: Micro Evidence from Puerto Rico's Medicaid Program*.

Winner of Research!America's 2010 Garfield Economic Impact Award for the paper, *The effect of new cancer drug approvals on the life expectancy of American cancer patients, 1978-2004*.

Winner of the 2003 Milken Institute Award for Distinguished Economic Research for the paper, *Pharmaceutical Knowledge-Capital Accumulation and Longevity.*

Winner of the 1998 Schumpeter Prize for the paper, *Pharmaceutical Innovation as a Process of Creative Destruction*.

Margaret Chandler Memorial Award for Commitment to Excellence (Best Teacher Award) by the Columbia Business School Executive MBA Class of 1994-II.

EDUCATION

Ph.D. Economics, University of Pennsylvania, 1982
Dissertation: Training, Tenure, and Productivity
Graduate Honors received: University Fellow, Teaching Fellow, Graduate Group Fellow

M.A. Economics, University of Pennsylvania, 1976

B.A. with Honors, History, University of Chicago, 1973
National Merit Scholar Finalist, 1969
attended University of Warwick (England), Fall 1972

PREVIOUS TEACHING AND RESEARCH POSITIONS

Courtney C. Brown Professor of Business, Columbia University Graduate School of Business

Visiting Lecturer, University of Hamburg, Summer 2015

Columbia–Ecole Polytechnique Alliance Visiting Professor at the Ecole Polytechnique, Paris, France (Spring 2011)

Visiting Professor, Center for Strategic Economic Studies, Victoria University, Melbourne, Australia, 2006-2012

Member, Advisory Committee, Division of Information Management, New York Academy of Medicine

Visiting Scholar, Federal Trade Commission, Fall 1997

Visiting Scholar, Center for Economic Studies, University of Munich, July 1997

Columbia University Graduate School of Business
Head of Economics Group, 1994-96
Professor, 1992-95
Associate Professor, 1986-92
Assistant Professor, 1983-86

Visiting Scholar, Wissenschaftszentrum Berlin, July 1995

Visiting Scholar, Kiel (Germany) Institute of World Economics, August 1993

National Bureau of Economic Research
Faculty Research Fellow, 1982-86
Research Economist, 1980-82

Jerome Levy Economics Institute at Bard College
Research Fellow, 1989-90

American Statistical Association/National Science Foundation/Census Bureau
Research Fellow, 1986-87

Columbia University, Center for Education and the American Economy
Senior Research Associate, 1985-87

University of Adelaide (Australia)
Visiting Lecturer, 1982

Harvard University
Instructor, 1982

U.S. Bureau of Labor Statistics, Office of Economic Growth
Dissertation Fellow, 1979-80

Brookings Institution
Research Fellow in Economics, 1978-79

University of Pennsylvania, Wharton School
Instructor, 1978

U.S. Congressional Budget Office, Budget Analysis Division
Intern, 1977

U.S. Department of Justice, Antitrust Division
Intern, 1976

Henry Dreyfuss Associates (Industrial Designers), Production Manager, 1973-75

PUBLICATIONS

Book

Corporate Takeovers and Productivity (Cambridge: MIT Press, 1992).

Articles

The impact of biomedical innovation on the disability of elderly Medicare recipients, 2013-2019. *Economics of Innovation and New Technology*, published online 15 March 2023.

Effect on mortality of inclusion of drugs in Thailand's National List of Essenti*al Medicines, 2005-2016. *Health Policy and Technology* 12(1), March 2023.

The impact of biopharmaceutical innovation on disability, Social Security recipiency, and use of medical care of U.S. community residents, 1998-2015. *Forum for Health Economics & Policy* 24(1): 35-74, 2022 Aug 30.

The effects of dynamic and static competition on prescription drug prices in Denmark, 1997-2017. *Journal of Evolutionary Economics* 32:1155–1173.

The effect of pharmaceutical innovation on longevity: evidence from the U.S. and 26 high-income countries. *Economics and Human Biology* 46 (2022).

The association between pharmaceutical innovation and both premature mortality and hospital utilization in Switzerland, 1996-2019. *Swiss Journal of Economics and Statistics* 158, Article number: 7 (2022).

Are drug prices subject to creative destruction? Evidence from the U.S., 1997-2017. *Health Economics* 30(8):1910-1932, August 2021.

The impact of pharmaceutical innovation on the longevity and hospitalization of New Zealand cancer patients, 1998-2017. *Expert Review of Pharmacoeconomics & Outcomes Research* 21(3): 476-477, March 2021.

Are estimates of "potential gains in life expectancy" potentially unreliable? *Public Health* 189:115-6, December 2020.

Are patients more adherent to newer drugs?, with Katharina Blankart. *Health Care Management Science* 23: 605–18, 8 August 2020.

The health impact of, and access to, new drugs in Korea. *East Asian Economic Review* 24 (2), (June 2020): 127-164.

The impact of pharmaceutical innovation on the burden of disease in Ireland, 2000-2015. *Journal of Public Health*, 42(4): 816–827, December 2020.

How cost-effective are new cancer drugs in the U.S.? *Expert Review of Pharmacoeconomics & Outcomes Research* 20(1): 39-55 (6 January 2020).

How many life-years have new drugs saved? A 3-way fixed-effects analysis of 66 diseases in 27 countries, 2000-2013. *International Health* 11(5): 403–416 (September 2019).

The impact of pharmaceutical innovation on the burden of disease in Canada, 2000-2016. *SSM - Population Health 8* (August 2019).

The impact of access to prescription drugs on disability in eleven European countries. *Disability and Health Journal*, 12(3): 375-386 (July 2019).

The Value of Cytochrome P450 2C19 Pharmacogenomic Information for Patients Receiving Clopidogrel Therapy following a Major Cardiovascular Event: Evidence from Geisinger, with Rebecca A. Pulk, Jove Graham, Daniel Maeng, Marc S. Williams, Eric Wright, in Economic Dimensions of Personalized and Precision Medicine, Ernst Berndt, Dana Goldman, and John Rowe, editors, (University of Chicago Press, 2019), pp. 273-304.

The long-run impact of new medical ideas on cancer survival and mortality, *Economics of Innovation and New Technology* 28(7): 722-740 (2019).

The Physician-Patient Relationship in the Age of Precision Medicine, with Eyal G, Sabatello M, Tabb K, Adams R, Jones M, Nelson A, Ochsner K, Rowe J, Stiles D, Sivaramakrishnan K, Underhill K, Appelbaum PS, *Genetics in Medicine* 21: 813–815 (2019).

The impact of new drug launches on hospitalization in 2015 for 67 medical conditions in 15 OECD countries: a two-way fixed-effects analysis. *Forum for Health Economics & Policy* 21(2) (December 2018).

The impact of new drug launches on longevity growth in 9 Middle Eastern and African countries, 2007-2015, *Review of Middle East Economics and Finance* 14(3) (December 2018).

The Impact of New Drug Launches on Life-Years Lost in 2015 from 19 Types of Cancer in 36 Countries, *Journal of Demographic Economics* 84: 309–354, September 2018.

The impact of pharmaceutical innovation on cancer mortality in Russia, 2001-2011, *Journal of Pharmaceutical Health Services Research* 9 (2): 79-89, June 2018.

The Impact of Public and Private Research on Premature Cancer Mortality and Hospitalization in the U.S., 1999-2013, *The American Economist* 63 (2): 147-165, First Published March 26, 2018.

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The Impact of Pharmaceutical Innovation on Premature Mortality, Hospital Separations, and Cancer Survival in Australia, *Economic Record* 93 (302): 353-378, September 2017.

The impact of biomedical innovation on longevity and health, *Nordic Journal of Health Economics* 5 (1): 45-57; also published in *Elgar Encyclopedia on the Economics of Knowledge and Innovation*, ed. by Cristiano Antonelli.

The impact of pharmaceutical innovation on health outcomes and utilization in Turkey: a re-examination, with Mehtap Tatar and Zafer Çalışkan, *Health Policy and Technology* 6(2): 226–233, June 2017.

The impact of pharmaceutical innovation on cancer mortality in Belgium, 2004-2012, *Forum for Health Economics and Policy* 20:1, 2016.

The impact of pharmaceutical innovation on premature cancer mortality in Switzerland, 1995-2012, *European Journal of Health Economics*, 17 (7): 833–854, September 2016.

The Impact of Pharmaceutical Innovation on Premature Cancer Mortality in Canada, 2000-2011, *International Journal of Health Economics and Management* 15(3):339-359, June 2015.

Pharmaceutical innovation, longevity, and medical expenditure in Greece, 1995-2010, *International Journal of the Economics of Business* 22(2): 277-299.

The impact of cardiovascular drug innovation on the longevity of elderly residents of Switzerland, 2003-2012, *Nordic Journal of Health Economics*, published online March 2015.

The Impact of Biomedical Knowledge Accumulation on Mortality: A Bibliometric Analysis of Cancer Data in Measuring and Modeling Health Care Costs, Ana Aizcorbe, Colin Baker, Ernst Berndt, and David Cutler, editors.

The impact of recent chemotherapy innovation on the longevity of myeloma patients: US and international evidence, with Gisela Hostenkamp, *Social Science & Medicine* 130 (2015): 162-171.

The impact of pharmaceutical innovation on premature mortality, cancer mortality, and hospitalization in Slovenia, 1997-2010, *Applied Health Economics and Health Policy* 13(2): 207-22, April 2015.

The impact of pharmaceutical innovation on disability days and the use of medical services in the United States, 1997-2010, *Journal of Human Capital* 8(4): 432-480.

The effect of pharmaceutical innovation on longevity, hospitalization and medical expenditure in Turkey, 1999-2010, with Mehtap Tatar and Zafer Çalışkan, *Health Policy* 117(3): 361-73, September 2014.

Has Medical Innovation Reduced Cancer Mortality?, *CESifo Economic Studies* (2014) 60 (1): 135-177, First published online: November 14, 2013.

Pharmaceutical Innovation and Longevity Growth in 30 Developing and High-income Countries, 2000-2009, *Health Policy and Technology* 3(1): 36-58, March 2014.

The impact of pharmaceutical innovation on longevity and medical expenditure in Sweden, 1997-2010: evidence from longitudinal, disease-level data, with Billie Pettersson, *Economics of Innovation and New Technology* 23 (3), 2014: 239-273; Published online: 02 Sep 2013.

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The effect of pharmaceutical innovation on the functional limitations of elderly Americans: evidence from the 2004 National Nursing Home Survey, *Advances in Health Economics and Health Services Research 23*, 71-99 (2012).

Is home health care a substitute for hospital care?, *Home Health Care Services Quarterly* 31, 8-109 (2012).

Does competition stimulate drug utilization? The impact of changes in market structure on US drug prices, marketing and utilization, with Gautier Duflos, *International Review of Law and Economics 32(1)*, March 2012, 95–109.

The contribution of pharmaceutical innovation to longevity growth in Germany and France, 2001-2007, *PharmacoEconomics* 30(3), March 2012, 197-211.

The impact of new (orphan) drug approvals on premature mortality from rare diseases in the U.S. and France, 1999-2007, *European Journal of Health Economics* 14(1): 41-56.

Has pharmaceutical innovation reduced Social Security Disability growth?, *International Journal of the Economics of Business* 18 (2), 2011.

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What are the Respective Roles of the Public and Private Sectors in Pharmaceutical Innovation?, with Bhaven Sampat, *Health Affairs* 30(2):332-9, Feb. 2011.

The quality of medical care, behavioral risk factors, and longevity growth**.** *International Journal of Health Care Finance and Economics* 11(1), March 2011, 1-34.

Spurious correlation in estimation of the health production function: A note, *Economics Bulletin* 30 (3), pp. 2505-2514, September 28, 2010, with Sule Akkoyunlu, Boriss Siliverstovs and Peter Zweifel,

Pharmaceutical Price Discrimination and Social Welfare, *Capitalism and Society* 5 (1), Article 2, 2010.

Are Increasing 5-Year Survival Rates Evidence of Success Against Cancer? A Reexamination Using Data from the U.S. and Australia, *Forum for Health Economics & Policy* 13 (2) (Health Economics), Article 11. http://www.bepress.com/fhep/13/2/11

The Effect of Patent Expiration on U.S. Drug Prices, Marketing, and Utilization, with Gautier Duflos, *Concurrences (Review of Competition Laws)*, forthcoming, http://www.concurrences.com/toc_revue.php3?id_rubrique=1052&lang=en

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Pharmaceutical Innovation and Mortality in the United States, 1960-2000. A commentary on Schnittker and Karandinos, *Social Science & Medicine* 70 (2010), pp. 969-971.

Life-expectancy gains from pharmaceutical drugs: a critical appraisal of the literature, *Expert Review of Pharmacoeconomics & Outcomes Research* 9 (6), 499-504.

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International differences in cancer survival rates: the role of new drug launches, *International Journal of Healthcare Technology and Management* 10 (3), 2009, 138-55.

Does Misery Love Company? Evidence from pharmaceutical markets before and after the Orphan Drug Act, with Joel Waldfogel, 15 *Michigan Telecommunications and Technology Law Review*, 335 (2009).

The effect of new cancer drug approvals on the life expectancy of American cancer patients, 1978-2004, *Economics of Innovation and New Technology* 18 (5), 2009, 407-28.

Home, or nursing home? The effect of medical innovation on the demand for long-term care, in J. Costa i Font, A. McGuire and C. Courbage (eds), *The Economics of New Health Technologies: Incentives, Organisation and Financing*, Oxford University Press (2009).

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Pharmaceutical innovation and the longevity of Australians: a first look, with Gautier Duflos, *Advances in Health Economics and Health Services Research* 19, 2008, pp 95-117.

Pharmaceutical Innovation and U.S. Cancer Survival, 1992-2003: Evidence from Linked SEER-MEDSTAT Data, *Forum for Health Economics & Policy*: Vol. 10: Iss. 1 (Frontiers in Health Policy Research), Article 1. http://www.bepress.com/fhep/10/1/1

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The impact of Medicare Part D on prescription drug use by the elderly: evidence from a large retail pharmacy chain, with Shawn Sun, *Health Affairs* 26(6), November/December 2007, 1735-44; reprinted in the *Pharmaceutical Economics* volume (ed. by W. S. Comanor and S. O. Schweitzer) of the *International Library of Critical Writings in Economics* (Edward Elgar Publishing).

Importation and innovation, *Economics of Innovation and New Technology*, 2007, Vol. 16(6), September, pp. 403–417

Benefits and Costs of Newer Drugs: An Update, *Managerial and Decision Economics* 28: 485–490 (2007).

Pharmaceutical-embodied technical progress, longevity, and quality of life: drugs as 'equipment for your health,' with Suchin Virabhak, *Managerial and Decision Economics* 28: 371–392 (2007)

The Effect of Drug Vintage on Mortality: Economic Effect of New Drugs, with Kee Taig Jung and Jeong Yoon Kim, *Korean Journal of Health Policy and Administration* 16(4), December 2006, 147-68.

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Ensuring the future supply of vaccines: Is a National Vaccine Authority the answer?, in *Pharmaceutical Innovation: Incentives, Competition, and Cost-Benefit Analysis in International Perspective* , ed. by Chee-Ruey Hsieh and Frank Sloan (Cambridge University Press, 2007), 127-52.

The impact of increased utilization of HIV drugs on longevity and medical expenditure: an assessment based on aggregate U.S. time-series data, *Expert Review of Pharmacoeconomics and Outcomes Research*, Volume 6, Number 4, August 2006, 425-436.

Did CMS' Functional Equivalence Decision Result in Equitable Payments?, *Journal of Pharmaceutical Finance, Economics & Policy* 15(1), 2006, 7-20.

Has using newer drugs reduced admissions to hospitals and nursing homes?, *Swiss Journal of Economics and Statistics* 142, 2006, pp. 69-75.

The Benefits to Society of New Drugs: A Survey of the Econometric Evidence, in *Engaging the New World: Responses to the Knowledge Economy*, edited by Bhajan S. Grewal and Margarita Kumnick, Melbourne University Press, Melbourne, 2006.

Pharmaceutical Innovation as a Process of Creative Destruction, in *Knowledge Accumulation and Industry Evolution: The Case of Pharma-Biotech*, ed. by Mariana Mazzucato and Giovanni Dosi (Cambridge University Press, 2006), pp. 21-72.

Pharmaceutical innovation and the burden of disease in developing countries, *Journal of Medicine and Philosophy* 30(6), December 2005.

Pharmaceutical Knowledge-Capital Accumulation and Longevity, in *Measuring Capital in the New Economy*, ed. by Carol Corrado, John Haltiwanger, and Dan Sichel, pp. 237-269 (University of Chicago Press, 2005).

Availability of new drugs and Americans' ability to work, *Journal of Occupational and Environmental Medicine* 47 (4), April 2005, 373-380.

The Effect of Access Restrictions on the Vintage of Drugs Used by Medicaid Enrollees, *American Journal of Managed Care* 11, Special Issue, 2005, SP7-SP13.

The impact of new drug launches on longevity: evidence from longitudinal disease-level data from 52 countries, 1982-2001, *International Journal of Health Care Finance and Economics* 5, 2005, pp. 47-73.

Sources of U.S. Longevity Increase, 1960-2001, *Quarterly Review of Economics and Finance* 44(3), pp. 369-389 (July 2004).

Public policy and innovation in the U.S. pharmaceutical industry, in *Public Policy and the Economics of Entrepreneurship*, ed. by Douglas Holtz-Eakin and Harvey S. Rosen (MIT Press, 2004), pp. 83-113.

The Effect of New Drugs on HIV Mortality in the U.S., 1987-1998, *Economics and Human Biology* 1 (2003) 259-266.

Pharmaceutical Innovation, Mortality Reduction, and Economic Growth, in *Measuring the Gains from Medical Research: An Economic Approach*, ed. by Kevin M. Murphy and Robert H. Topel (Chicago: University of Chicago Press, 2003), pp. 74-109.

The Dual Effects of Intellectual Property Regulations: Within- and Between-Patent Competition in The US Pharmaceuticals Industry, with Tomas Philipson, *Journal of Law & Economics 45,* pp. 643-672, 2002.

The Effects of Medicare on Health Care Utilization and Outcomes, *Frontiers in Health Policy Research*, Vol. 5, ed. by Alan Garber (MIT Press, 2002), http://www.nber.org/chapters/c9857

Are the Benefits of Newer Drugs Worth Their Cost? Evidence from the 1996 MEPS, *Health Affairs* 20(5), September/October 2001, 241-51.

Does foreign direct investment transfer technology across borders?, with Bruno van Pottelsberghe de la Potterie*, The Review of Economics and Statistics*, Aug 2001; Vol. 83, Iss. 3; pp. 490-7.

The Allocation of Publicly Funded Biomedical Research, in *Medical Care Output and Productivity*, Studies in Income and Wealth Volume 62, ed. by Ernst Berndt and David Cutler (University of Chicago Press, 2001), 565-89.

The Effect of Pharmaceutical Utilisation and Innovation on Hospitalisation and Mortality, in *Productivity, Technology, and Economic Growth*, ed. by B. van Ark, S. K. Kuipers and G. Kuper (Kluwer Academic Publishers, 2000).

The European Strategic Programme for Research in Information Technologies (ESPRIT): An Ex-Post Analysis, in *The Political Economy of Industrial Policy*, ed. by D. Neven and Lars-Hendrik Roller (Wissenschaftszentrum Berlin and Edition Sigma).

Managerial Ownership and Firm Performance: A Re-examination Using Productivity Measurement, with Darius Palia, *Journal of Corporate Finance: Contracting, Governance and Organization* 5(4), December 1999, 323-39.

Information Technology and Its Impact on Productivity: Firm-level Evidence from Government and Private Data Sources, 1977-1993, with Bill Lehr, *Canadian Journal of Economics* 32(2), April 1999, 335-62.

Computer Use and Productivity Growth in Federal Government Agencies, 1987-92, with Bill Lehr, *Journal of Industrial Economics* 46(2), June 1998, 257-79.

International R&D Spillovers: A Comment, with Bruno van Pottelsberghe de la Potterie, *European Economic Review* 42(8), September 1998, 1483-91.

The Impact and Organization of Publicly-Funded Research and Development in the European Community, with Maryann Feldman, *Annales d'Economie et Statistique* 0(49-50), (in English), Jan.-June 1998, 199-222.

Technology Investment is Driving Economic Growth, *in The Rising Tide*, ed. by Jerry Jasinowski (New York: Wiley, 1998), 163-9.

Commentary: Shoring up Government Support, in *The Future of Biomedical Research*, ed. by Claude Barfield and Bruce Smith (Washington: American Enterprise Institute and Brookings Institution, 1997), 67-72.

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Labour Market Institutions, Liquidity Constraints, and Macroeconomic Stability, *Journal of Economic Behavior and Organization* 28 (1995), 145-54.

The Output Contributions of Computer Equipment and Personnel: A Firm-Level Analysis, *Economics of Innovation and New Technology* 3 (1995), 201-17.

The Economics of Defense R&D, in *The Handbook of Defense Economics*, Volume 1, ed. by K. Hartley and T. Sandler. Handbooks in Economics, vol. 12. (Amsterdam, New York and Oxford: Elsevier, 1995), 431-57.

Ownership Structure and Corporate Performance in Japan, with George Pushner, *Japan and the World Economy* 6 (1994), 239-61.

Testing the Convergence Hypothesis, *Review of Economics and Statistics* 76(3), August 1994, 576-9.

An Industry-Level Analysis of Import Relief Petitions Filed by U.S. Manufacturers, 1958-1985, with Hong Tan, in *Troubled Industries in the United States and Japan*, ed. by Hong Tan and Haruo Shimada (New York: St. Martin's Press, 1994), 161-88.

Have International Differences in Educational Attainment Levels Narrowed?, in *Convergence of Productivity: Cross-National Studies and Historical Evidence*, ed. by W. Baumol, R. Nelson, and E. Wolff (New York: Oxford University Press, 1994), 225-42.

R&D Investment and International Productivity Differences, in *Economic Growth in the World Economy*, ed. by Horst Siebert (Tubingen: J. C. B. Mohr, 1993), 89-110.

Industrial De-Diversification and Its Consequences for Productivity, *Journal of Economic Behavior and Organization* 18 (1992), 427-38.

A Perspective on Accounting for Defense Contracts, *The Accounting Review* 67 (4), 742-53, October 1992.

Asset Stripping, in *The New Palgrave Dictionary of Money and Finance*, J. Eatwell, M. Milgate, and P. Newman, eds. (London: Macmillan, 1992).

The Managerial Response to Regulation of Financial Reporting for Segments of a Business Enterprise, *Journal of Regulatory Economics* 3 (1991), 241-9.

The Age of Technology and Its Impact on Employee Wages, with Ann Bartel, *Economics of Innovation and New Technology* 1 (1991), 215-31.

The Impact of R&D Investment on Productivity: New Evidence Using Linked R&D-LRD Data, with Donald Siegel, *Economic Inquiry* 29 (1991), April, 203-28.

The Effect of Leveraged Buyouts on Productivity and Related Aspects of Firm Behavior, with Donald Siegel, *Journal of Financial Economics* 26 (1990), 165-94.

The Effect of Ownership Changes on the Employment and Wages of Central-Office and Other Personnel, with Donald Siegel, *Journal of Law and Economics* 33 (1990), October, 383-408.

U.S. Government Subsidies to Private Military R&D: The Defense Department's Independent R&D Policy, *Defense Economics* 1 (1990), 149-58.

Aggregation of Variables in Least-Squares Regression, *American Statistician* 44 (1990), 169-71.
Issues in Measuring Industrial R&D, *Research Policy* 19 (1990), 157-63.

How Elastic is the Government's Demand for Weapons?, *Journal of Public Economics* 40 (1989), 57-78.

The Effect of Control Changes on the Productivity of U.S. Manufacturing Plants, with Donald Siegel, *Journal of Applied Corporate Finance*, August 1989, 60-7.
Contributions to Federal Election Campaigns by Government Contractors, *Journal of Industrial Economics* 38, September 1989, 31-48.

IR&D Project Data and Theories of R&D Investment, *Journal of Economic Dynamics and Control* 13, 1989, 271-82.

Errors of Measurement in Output Deflators, with Zvi Griliches, *Journal of Business and Economic Statistics* 7, Jan. 1989, 1-9.

The Impact of the Strategic Defense Initiative on U.S. Civilian R&D Investment and International Competitiveness, *Social Studies of Science* 19(2), 1989; also published (in French) in J.J. Salomon (ed.), *Science, Guerre et Paix* (Paris: Economica, 1989), 137-56.

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Productivity and Changes in Ownership of Manufacturing Plants, with Donald Siegel, *Brookings Papers on Economic Activity*, 1987:3, 643-73.

The Effect of Government Funding on Private Industrial Research and Development: A Re-Assessment, *Journal of Industrial Economics* 36(1), Sept. 1987.

Changing Market Opportunities and the Structure of R&D Investment: The Case of Energy, *Energy Economics* 9(3), July 1987, 154-8.

The Comparative Advantage of Educated Workers in Implementing New Technology, with Ann Bartel, *Review of Economics and Statistics* 69(1), Feb. 1987, 1-11.

The Skill Distribution and Competitive Trade Advantage of High-Technology Industries, with Ann Bartel, in *Advances in Industrial and Labor Relations*, Vol. 4, D. Lewin, D. Lipsky, and D. Sockell, eds. (JAI Press, 1987).

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Energy Prices and Induced Innovation, *Research Policy* 15, 1986, 67-75.

Interindustry Technology Flows and Productivity Growth: A Re-Examination, with Zvi Griliches, *Review of Economics and Statistics* 66(2), May 1984.

The Relationship Between Federal Contract R&D and Company R&D, *American Economic Association Papers and Proceedings* 74(2), May 1984.

R&D and Productivity at the Industry Level: Is There Still a Relationship?, with Zvi Griliches, in *R&D, Patents, and Productivity*, Zvi Griliches, ed. (Chicago: Univ. of Chicago Press, 1984), pp. 465-496.

Other Publications

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Comment on Decade of Debt: Lessons from LBOs in the 1980s, by William Long and David Ravenscraft, in *The Deal Decade: What Takeovers and Leveraged Buyouts Mean for Corporate Governance*, edited by Margaret Blair (Washington: Brookings, 1993), 230-234.

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The Issues in Restructuring, *Institutional Investor*, June 1989.

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Review of *The Burden of Government*, by Edwin S. Mills (Stanford: Hoover Institution Press, 1986) in *Journal of Comparative Economics* 12(2), June 1988, 304-5.

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CONGRESSIONAL TESTIMONY

Testified before the House Committee on Veterans' Affairs on Access to new drugs in the Veterans Health Administration, Sept. 22, 2009.

Testified before the House Committee on Science, Space, and Technology in hearings on Corporate Restructuring and Its Effects on R&D, July 13, 1989.

SOURCES OF RESEARCH GRANTS, FELLOWSHIPS, AND CONTRACTS

American Assembly of Collegiate Schools of Business
American Enterprise Institute
American Statistical Association
Federal Trade Commission
French-American Foundation
Fulbright Commission
German Academic Exchange Service
German Marshall Fund of the U.S.
Jerome Levy Economics Institute
MacArthur Foundation
Merck and Co.
National Institute of Education
National Institutes of Health
National Pharmaceutical Council
National Science Foundation
Pfizer, Inc.
RAND Corporation
Research Triangle Institute
Securities Industry Association
Alfred P. Sloan Foundation

Siemens U.S. Bureau of the Census

CONSULTING AND REVIEWING ACTIVITIES

Reviewer for:

Administrative Science Quarterly
American Economic Review
Commonwealth Fund
Econometrica
Economic Letters
Economica
Economics of Innovation and New Technology
European Economic Review
Financial Management
Health Affairs
Health Economics
Industrial Relations
International Journal of Epidemiology
International Journal of Industrial Organization
Journal of Comparative Economics
Journal of Development Economics
Journal of Economic Behavior and Organization
Journal of Econometrics
Journal of Economic Literature
Journal of Health Economics
Journal of Health Politics, Policy and Law
Journal of Industrial Economics
Journal of Labor Economics
Journal of Peace Research
Journal of Political Economy
Journal of Policy Analysis and Management
Journal of Productivity Analysis
Journal of Public Economics
Journal of the American Medical Association
Medical Care
MIT Press
National Science Foundation
Oxford University Press
Population Studies
Prentice Hall
Princeton University Press
Quarterly Journal of Economics
Rand Journal of Economics
Research Policy
Review of Income and Wealth
Science
University of Chicago Press

Consultant to:

Amer. Fed. of State, County, and Municipal Employees
American Hospital Association
American Society for Clinical Oncology
Barr Laboratories
Community Preservation Corporation
Consortium on Productivity in the Schools
Economic Policy Institute/Union of Concerned Scientists
Gellman Research Associates
Institute of Medicine
Internal Revenue Service
National Institute of Standards & Technology
National Science Foundation
New York Attorney General
New York City Water Board
New York State Dept. of Econ. Devel.
OECD
Pennie and Edmonds
RAND Corporation
Research Triangle Institute
Skadden, Arps, Slate, Meagher, & Flom
Touche, Ross, and Co.
U.S. Bureau of the Census
Wachtell, Lipton, Rosen & Katz
Weil, Gotshal, & Manges
World Health Organization

Outside activities, January 2006-July 2023

Consultant: Amgen, Baker Brothers, Deloitte Consulting LLP, Edelman, Eisai, Korean Research Based Pharmaceutical Industry Association, McKinsey, Mylan Laboratories, OTR Media Group, Oxford University Press, PharmaInvest, L.L.C., Price Waterhouse Coopers, Roche, Sanofi Aventis, TAP pharmaceuticals, Viewpoint Consulting

Expert witness: Food Marketing Consultants, Global Pharmaceuticals, Internal Revenue Service, New York City Law Department, New York State Office of Attorney General, anonymous generic pharmaceutical company

Speaker: Abbott Labs, AdvaMed, Alliance for Aging Research, AMCP Horizons, LLC, Associação Portuguesa da Indústria Farmacêutica, Association of Research-based Pharmaceutical Firms (Turkey), Bates White Economic Consulting, Biogen Idec, Canada's Research-Based Pharmaceutical Companies (Rx&D), Canadian Medical Association, Croatian Association of Research-based Pharmaceutical Companies, Danish Association of the Pharmaceutical Industry, George Mason University, Gerson Lehrman Group, Hamburg Center for Health Economics, Hitotsubashi University, InHealth Institute for Health Technology Studies, International Federation of Pharmaceutical Manufacturers and Associations, Interpharma, International Research-Based Pharmaceutical Manufacturers Association, Irish Pharmaceutical Healthcare Association Ltd, Manhattan Institute for Policy Research, Merck & Co., Inc., Merck Frosst, Milken Institute, Montreal Economic Institute, MSD Portugal, National Institutes of Health, Ontario Ministry of Health, Pfizer, pharma.be, Pharma Israel, Pharmacy Society of Wisconsin, Quebec International, Research!America, Roche, Rutgers University, Science Union et Cie, St. Vincent's Hospital, (Slovenian) Forum of International Research and Development Pharmaceutical Companies, Stockholm Network, Swiss Ministry of Health, Swiss Pharma importers, US-Russia Business Council, Vital Options, Watson Wyatt Worldwide
Researcher:

Organization	**Research area**
Medicines Australia	The effect of drugs provided by the Pharmaceutical Benefits Scheme on mortality and hospital utilization in Australia, 2002-2019
pharma.be	Impact of pharmaceutical innovation on mortality and hospitalization in Belgium
Asociación Nacional Empresarial de la Industria Farmacéutica	The relationship between pharmaceutical innovation and cancer mortality in Spain, 1999-2016
American Association of Nurse Anesthetists	Do certified registered nurse anesthetists increase access to anesthesia services by underserved populations?
Analysis Group	Analysis of IMF Recommendations to Foreign Governments Faced with Fiscal Crises and Impacts on the Biopharmaceutical Sector; Global Drug Price Index project
American Enterprise Institute	The impact of new (orphan) drug approvals on premature mortality from rare diseases in the U.S. and France, 1999-2007; The effect of pharmaceutical innovation on longevity: patient-level evidence from the 1996-2005 Medical Expenditure Panel Survey and Linked Mortality Public-use Files
Center for Medicine in the Public Interest	The impact of pharmaceutical innovation on cancer survival: evidence from the SEER-Medicare Linked Database
Home Instead, Inc.	Is home health care a substitute for hospital care?
Laboratory Health Care Coalition	Econometric Estimation of the Value of Clinical Laboratory Innovations
Novartis	The impact of new (orphan) drug approvals on premature mortality from rare diseases in the U.S. and France, 1979-2005; The effect of pharmaceutical innovation on the functional limitations of elderly Americans: evidence from the 2004 National Nursing Home Survey; The effect of pharmaceutical innovation on longevity: patient-level evidence from the 1996-2005 Medical Expenditure Panel Survey and Linked Mortality Public-use Files; The impact of pharmaceutical innovation on medication adherence in the U.S.

National Pharmaceutical Council	Has Medicare Part D improved the health of elderly Americans?
PhRMA	Value of Medicines in the Korean Health Care System
Siemens Medical Solutions	The Quality of Medical Care, Behavioral Risk Factors, and Longevity Growth; Has Medical Innovation Reduced Cancer Mortality?
AdvaMed	The impact of antimicrobial susceptibility testing on the survival and treatment costs of inpatients with infectious diseases
Canada's Research-Based Pharmaceutical Companies (Rx&D)	The impact of drug vintage on patient survival: A Patient-Level Analysis Using Quebec's Provincial Health Plan Data; The impact of pharmaceutical innovation on premature cancer mortality in Canada
International Federation of Pharmaceutical Manufacturers and Associations	Have newer cardiovascular drugs reduced hospitalization? Evidence from longitudinal country-level data on 21 OECD countries, 1995-2004
Manhattan Institute for Policy Research	The Quality of Medical Care, Behavioral Risk Factors, and Longevity Growth; Has pharmaceutical innovation reduced Social Security Disability growth?; Does competition stimulate drug utilization? The impact of changes in market structure on US drug prices, marketing and utilization
Merck & Co., Inc.	The contribution of pharmaceutical innovation to longevity growth in Germany and France, 2001-2007; The impact of pharmaceutical innovation on longevity and medical expenditure in Greece
National Institutes of Health	What are the respective roles of the public and private sectors in pharmaceutical innovation?
Pfizer	The impact of new (orphan) drug approvals on premature mortality from rare diseases in the U.S. and France, 1979-2005; The effect of pharmaceutical innovation on longevity: patient-level evidence from the 1996-2005 Medical Expenditure Panel Survey and Linked Mortality Public-use Files; Pharmaceutical innovation and longevity growth in 30 developing and high-income countries, 2000-2009
Science Union et Cie	The contribution of pharmaceutical innovation to longevity growth in Germany and France, 2001-2007
SNS - Centre for Business and Policy Studies	The impact of pharmaceutical innovation on longevity and medical expenditure in Sweden, 1997-2010: evidence from longitudinal, disease-level data
Celgene	The impact of recent chemotherapy innovation on the longevity of myeloma patients: U.S. and international evidence
Vereinigung Pharmafirmen in der Schweiz	The impact of pharmaceutical innovation on longevity and medical expenditure in Switzerland
(Slovenian) Forum of International Research and Development Pharmaceutical Companies	The impact of pharmaceutical innovation on longevity and medical expenditure in Slovenia
Steptoe & Johnson	Preparation of expert report

Polar Sağlık Ekonomisi ve Politikası Dan. Tic. Ltd. Şti	Research on the impact of pharmaceutical innovation on longevity and medical expenditure in Turkey
MSD Portugal	Research on the impact of pharmaceutical innovation on mortality and hospitalization in Portugal
MSD Australia	Research on the impact of pharmaceutical innovation on premature mortality, hospitalization, and cancer survival in Australia
Asociación Mexicana de Industrias de Investigación Farmaceútica A.C.	Research on the impact of pharmaceutical innovation on premature mortality, hospitalization, and cancer survival in Mexico
Medicines New Zealand	Research on the impact of pharmaceutical innovation on the longevity and hospitalization of cancer patients in New Zealand
Montreal Economic Institute	Preparation and presentation of report, *The benefits of pharmaceutical innovation: health, longevity, and savings*
PhRMA	The impact of new drug launches on longevity growth in 9 Middle Eastern and African countries, 2007-2015
Novartis	The impact of pharmaceutical innovation on health and disability in 27 European countries, 2004-2015
AFIDRO - Asociación de Laboratorios Farmacéuticos de Investigación y Desarrollo	The impact of new drug launches on premature mortality, medical procedure utilization, and medical expenditure in Colombia, 2003-2015
CAEMe - Cámara Argentina de Especialidades Medicinales	The impact of new drug launches on premature mortality and medical expenditure in Argentina, 2003-2013
MSD Ireland	the impact of pharmaceutical innovation on longevity in Ireland
Incyte	The impact of pharmaceutical innovation on mortality from 22 types of cancer in 28 countries, 2002-2012: a triple-differences analysis
Merck	The impact of pharmaceutical innovation on cancer patient outcomes in Russia during the period 2002-2012
Analysis Group	Preparation of expert report