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Curriculum Vitae

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Professional Positions

Deputy Assistant Attorney General for Economics

Antitrust Division, U.S. Department of Justice, 2009 - present

Transamerica Professor of Business Strategy

Haas School of Business
University of California at Berkeley, 1994 - present.

Professor of Business and Economics

Haas School of Business and Department of Economics
University of California at Berkeley, 1990 - present.

Director

Institute of Business and Economic Research
University of California at Berkeley, 1998 - 2008.

Deputy Assistant Attorney General for Economics

Antitrust Division, U.S. Department of Justice, 1995 - 1996

Chair, Economic Analysis and Policy Group

Haas School of Business
University of California at Berkeley, 1991 - 1993.

Professor of Economics and Public Affairs

Woodrow Wilson School of Public and International Affairs and
Department of Economics, Princeton University, 1987 - 1990.

Research Fellow

Center for Advanced Study in the Behavioral Sciences
Stanford University, 1989 - 1990.

Visiting Scholar

Stanford Law School, Stanford University, 1989 - 1990.

Assistant Professor of Economics and Public Affairs

Woodrow Wilson School of Public and International Affairs and
Department of Economics, Princeton University, 1980 - 1987.

Visiting Fellow

Institute for International Economic Studies, University of Stockholm, 1986.

Visiting Assistant Professor of Economics and Public Policy

Graduate School of Business, Stanford University, 1982 - 1983.

Economist

Bureau of Economics, Federal Trade Commission, Summer 1980

Education

Ph.D. Economics, M.I.T., 1981.

M.A. Mathematics, University of California at Berkeley, 1977.

B.S. Economics, M.I.T., 1976.

B.S. Mathematics, M.I.T., 1976.

Publications

[The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years](#), *Antitrust Law Journal*, 2010.

[Injunctions, Hold-Up, and Patent Royalties](#), *American Law and Economics Review*, 2010.

[Economics at the Antitrust Division: 2009-2010](#), with Ken Heyer, *Review of Industrial Organization*, 2010.

[Recapture, Pass-Through, and Market Definition](#), with Joseph Farrell, *Antitrust Law Journal*, 2010.

[Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition](#), with Joseph Farrell, *BE Journal of Theoretical Economics: Policies and Perspectives*, 2010.

- [Upward Pricing Pressure in Horizontal Merger Analysis: Reply to Epstein and Rubinfeld](#), *BE Journal of Theoretical Economics: Policies and Perspectives*, 2010.
- [Upward Pricing Pressure and Critical Loss Analysis](#), with Joseph Farrell, *Global Competition Review*, 2010.
- [Competition Policy in Distressed Industries](#), in *Competition as Public Policy*, American Bar Association, 2010.
- [A Tribute to Oliver Williamson: Antitrust Economics](#), *California Management Review*, 2010.
- [Updating the Merger Guidelines: Issues for the Upcoming Workshops](#), Antitrust Division, U.S. Department of Justice, November 2009.
- [Microsoft: Remedial Failure](#), *Antitrust Law Journal*, 2009.
- [How Strong Are Weak Patents?](#) with Joseph Farrell, *American Economic Review*, 2008.
- [Detecting and Reversing the Decline in Horizontal Merger Enforcement](#), with Jonathan Baker, *Antitrust*, Summer 2008.
- [Reinvigorating Horizontal Merger Enforcement](#), with Jonathan Baker, in *Where the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on Antitrust*, Robert Pitofsky, ed., Oxford University Press, 2008.
- [Merger to Monopoly to Serve a Single Buyer: Comment](#), with Jonathan Baker and Joseph Farrell, *Antitrust Law Journal*, 2008.
- [Improving Critical Loss](#), with Joseph Farrell, *Antitrust Source*, February 2008.
- [Patent Reform: Aligning Reward and Contribution](#), *Innovation Policy and the Economy*, Adam Jaffe, Josh Lerner, and Scott Stern, eds., National Bureau of Economic Research, vol. 8, pp. 111-156, 2007.
- [Standard Setting, Patents and Hold-Up](#), with Joseph Farrell, John Hayes and Theresa Sullivan, *Antitrust Law Journal*, 74, 2007.
- [Antitrust](#), with Louis Kaplow, in *Handbook of Law and Economics, Volume 2*, A. Mitchell Polinsky & Steven Shavell, eds., Elsevier, pp. 1073-1225, 2007.
- [Patent Hold-Up and Royalty Stacking](#), with Mark A. Lemley, *Texas Law Review*, vol. 85, no. 7, pp. 1991-2049, June 2007.
- [Patent Hold-Up and Royalty Stacking: Reply](#), with Mark A. Lemley, *Texas Law Review*, vol. 85, no. 7, pp. 2163-2173, June 2007.
- [Market Definition in Crude Oil: Estimating the Effects of the BP/ARCO Merger](#), with John Hayes and Robert Town, *Antitrust Bulletin*, Summer 2007.

[Prior User Rights](#), *American Economic Review Papers & Proceedings*, May 2006.

[Probabilistic Patents](#), with Mark A. Lemley, *Journal of Economic Perspectives*, Spring 2005.

[Patent System Reform: Economic Analysis and Critique](#), *Berkeley Technology Law Journal*, vol. 19, no. 3, pp. 1017-1047, 2004.

The Economics of Information Technology, with Hal R. Varian and Joseph Farrell, Cambridge University Press, 2004.

[Further Thoughts on Critical Loss](#), with Michael L. Katz, *Antitrust Source*, March 2004.

[Antitrust Limits to Patent Settlements](#), *Rand Journal of Economics*, vol. 34, no. 2, pp. 391-411, Summer 2003.

[Antitrust Analysis of Patent Settlements Between Rivals](#), *Antitrust Magazine*, pp. 70-77, Summer 2003.

[Critical Loss: Let's Tell the Whole Story](#), with Michael L. Katz, *Antitrust Magazine*, pp. 49-56, Spring 2003.

[The FTC's Challenge to Intel's Licensing Practices](#), in *The Antitrust Revolution: Economics, Competition, and Policy*, 4th Edition, John E. Kwoka, Jr. and Lawrence J. White, eds., Oxford University Press, 2003.

[The British Petroleum/ARCO Merger: Alaskan Crude Oil](#), with Jeremy Bulow, in *The Antitrust Revolution: Economics, Competition, and Policy*, 4th Edition, John E. Kwoka, Jr. and Lawrence J. White, eds., Oxford University Press, 2003.

[Antitrust Policy in the Clinton Administration](#), with Robert E. Litan, in *American Economic Policy in the 1990s*, Jeffrey Frankel and Peter Orszag, eds., Center for Business and Government, John F. Kennedy School of Government, Harvard University, 2002.

[Trans-Atlantic Divergence in GE/Honeywell: Causes and Lessons](#), with Donna E. Patterson, *Antitrust Magazine*, Fall 2001.

[Scale Economies and Synergies in Horizontal Merger Analysis](#), with Joseph Farrell, *Antitrust Law Journal*, vol. 68, no. 3, 2001.

[Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard Setting](#), in *Innovation Policy and the Economy*, Adam Jaffe, Joshua Lerner, and Scott Stern, eds., National Bureau of Economic Research, vol. 1, pp. 1190-150, 2000.

[Setting Compatibility Standards: Cooperation or Collusion?](#), in *Expanding the Bounds of Intellectual Property*, Rochelle Dreyfuss, Diane Zimmerman, and Harry First, eds., 2001, Oxford University Press.

Simulating Partial Asset Divestitures to 'Fix' Mergers, with Jith Jayaratne, *International Journal of the Economics of Business*, 2000.

[Competition Policy: A Century of Economic and Legal Thinking](#), with William Kovacic, *Journal of Economic Perspectives*, Winter 2000.

[Competition Policy in the Information Economy](#), in *Competition Policy Analysis*, Einar Hope, ed., 2000, Routledge Studies in the Modern World Economy.

[Information Rules: A Strategic Guide to the Network Economy](#), with Hal R. Varian, Harvard Business School Press, 1999.

[Exclusivity in Network Industries](#), *George Mason Law Review*, Spring 1999.

[The Art of Standards Wars](#), with Hal R. Varian, *California Management Review*, Winter 1999.

[Antitrust in Software Markets](#), with Michael L. Katz, in *Competition, Innovation and the Microsoft Monopoly: Antitrust in the Digital Marketplace*, Jeffrey A. Eisenbach and Thomas M. Lenard, eds., 1999, Kluwer Academic Publishers.

[Versioning: The Smart Way to Sell Information](#), with Hal R. Varian, *Harvard Business Review*, November-December 1998.

Unilateral Refusals to License Intellectual Property and International Competition Policy, with Richard J. Gilbert, in *Competition and Trade Policies*, Einar Hope and Per Maeleng, eds., 1998, Routledge.

[Antitrust Issues in the Licensing of Intellectual Property: The Nine No-No's Meet the Nineties](#), with Richard J. Gilbert, *Brookings Papers on Economics: Microeconomics*, 1997.

Crown-Jewel Provisions in Merger Consent Decrees, with Michael Sohn, *Antitrust Magazine*, 1997.

Privacy, Self-Regulation, and Antitrust, with Joseph Kattan, in *Privacy and Self-Regulation in the Information Age*, National Telecommunications and Information Administration, U.S. Department of Commerce, 1997.

Antitrust Policy: Towards a Post-Chicago Synthesis, *Jobs & Capital*, Winter 1997.

An Economic Analysis of Unilateral Refusals to License Intellectual Property, with Richard J. Gilbert, *Proceedings of the National Academy of Sciences*, November 12, 1996.

Re-Examining Dominance and Unlawful Exclusion Rules, *Antitrust Conference Report*, The Conference Board, 1996.

[Antitrust in Network Industries](#), Antitrust Division, U.S. Department of Justice, March 1996.

[Mergers with Differentiated Products](#), *Antitrust*, Spring 1996. See also <http://www.usdoj.gov/atr/public/speeches/shapiro.spc.htm>.

Aftermarkets and Consumer Welfare: Making Sense of *Kodak*, *Antitrust Law Journal*, Spring 1995.

Systems Competition and Network Effects, with Michael L. Katz, *Journal of Economic Perspectives*, Spring 1994.

Systems Competition and Aftermarkets: An Economic Analysis of *Kodak*, with David J. Teece, *Antitrust Bulletin*, Spring 1994.

The Dynamics of Bandwagons, with Joseph Farrell, in *Problems of Coordination in Economic Activity*, James W. Friedman, ed., Kluwer Press, 1993.

Standard Setting in High Definition Television, with Joseph Farrell, *Brookings Papers on Economic Activity: Microeconomics*, 1992.

Product Introduction with Network Externalities, with Michael L. Katz, *Journal of Industrial Economics*, March 1992.

Horizontal Mergers: Reply, with Joseph Farrell, *American Economic Review*, September 1991.

Introduction to Liability Symposium, *Journal of Economic Perspectives*, Summer 1991.

Economic Rationales for the Scope of Privatization, with Robert D. Willig, in *The Political Economy of Public Sector Reform and Privatization*, Ezra N. Suleiman and John Waterbury, eds., Westview Press, San Francisco, CA, 1990.

On the Antitrust Treatment of Production Joint Ventures, with Robert D. Willig, *Journal of Economic Perspectives*, Summer 1990.

Asset Ownership and Market Structure in Oligopoly, with Joseph Farrell, *Rand Journal of Economics*, Summer 1990.

Optimal Patent Length and Breadth, with Richard Gilbert, *Rand Journal of Economics*, Spring 1990.

Horizontal Mergers: An Equilibrium Analysis, with Joseph Farrell, *American Economic Review*, March 1990.

Theories of Oligopoly Behavior, in *The Handbook of Industrial Organization*, R. Schmalensee and R.D. Willig (eds.), 1989.

Market Power and Mergers in Durable Goods Industries: Comment, *Journal of Law and Economics*, 1989

The Theory of Business Strategy, *Rand Journal of Economics*, Spring 1989.

Optimal Contracts with Lock-In, with Joseph Farrell, *American Economic Review*, March 1989.

Dynamic Competition with Switching Costs, with Joseph Farrell, *Rand Journal of Economics*, Spring 1988.

Counterfeit-Product Trade, with Gene M. Grossman, *American Economic Review*, March 1988.

Foreign Counterfeiting of Status Goods, with Gene M. Grossman, *Quarterly Journal of Economics*, February 1988.

Dynamic R&D Competition, with Gene M. Grossman, *Economic Journal*, June 1987.

R&D Rivalry with Licensing or Imitation, with Michael L. Katz, *American Economic Review*, June 1987.

Optimal Dynamic R&D Programs, with Gene M. Grossman, *Rand Journal of Economics*, Winter 1986.

Product Compatibility Choice in a Market with Technological Progress, with Michael L. Katz, *Oxford Economic Papers*, Special Issue on the New Industrial Economics, November 1986.

Investment, Moral Hazard, and Occupational Licensing, *Review of Economic Studies*, October 1986.

How to License Intangible Property, with Michael L. Katz, *Quarterly Journal of Economics*, August 1986.

Research Joint Ventures: An Antitrust Analysis, with Gene M. Grossman, *Journal of Law Economics and Organization*, Fall 1986.

Consumer Shopping Behavior in the Retail Coffee Market, with Michael L. Katz, in *Empirical Approaches to Consumer Protection*, Pauline M. Ippolito and David T. Scheffman, eds., Federal Trade Commission, 1986.

Technology Adoption in the Presence of Network Externalities, with Michael L. Katz, *Journal of Political Economy*, August 1986.

Entry Dynamics with Mixed Strategies, with Avinash K. Dixit, in *The Economics of Strategic Planning*, L.G. Thomas, ed., Lexington Press, 1986.

Exchange of Cost Information in Oligopoly, *Review of Economic Studies*, July 1986.

InterLATA Capacity Growth and Market Competition, with Robert D. Willig, in *Telecommunications and Equity: Policy Research Issues*, Proceedings of the Thirteenth Annual Telecommunications Policy Research Conference, James Miller, ed., North Holland, 1986.

Can Unemployment be Involuntary? Reply, with Joseph E. Stiglitz, *American Economic Review*, December 1985.

- On the Licensing of Innovations, with Michael L. Katz, *Rand Journal of Economics*, Winter 1985.
- Normative Issues Raised by International Trade in Technology Services, with Gene M. Grossman, in *Trade and Investment in Service: Canada/U.S. Perspectives*, R.M. Stern (ed.), Ontario Economic Council, 1985.
- Equilibrium Unemployment as a Worker Discipline Device: Reply, with Joseph E. Stiglitz, *American Economic Review*, September 1985.
- Advances in Supervision Technology and Economic Welfare: A General Equilibrium Analysis, with Janusz Ordover, *Journal of Public Economics*, December 1984.
- The General Motors-Toyota Joint Venture: An Economic Assessment, with Janusz A. Ordover, *Wayne Law Journal*, Summer 1985.
- Network Externalities, Competition, and Compatibility, with Michael L. Katz, *American Economic Review*, June 1985.
- Patent Licensing and R&D Rivalry, *American Economic Review Papers and Proceedings*, May 1985.
- Equilibrium Unemployment as a Worker Discipline Device, with Joseph E. Stiglitz, *American Economic Review*, June 1984.
- Informative Advertising with Differentiated Products, with Gene M. Grossman, *Review of Economic Studies*, January 1984.
- Premiums for High Quality Products as Returns to Reputation, *Quarterly Journal of Economics*, November 1983.
- Consumer Protection in the United States, *Zeitschrift für die gesamte Staatswissenschaft, Journal of Institutional and Theoretical Economics*, October 1983.
- A Theory of Factor Mobility, with Gene M. Grossman, *Journal of Political Economy*, October 1982.
- Optimal Pricing of Experience Goods, *Bell Journal of Economics*, Autumn 1983.
- Consumer Information, Product Quality, and Seller Reputation, *Bell Journal of Economics*, Spring 1982.
- Advertising and Welfare: Comment, *Bell Journal of Economics*, Autumn 1980.

Working Papers, Research Memoranda, Work in Progress

[Unilateral Effects Analysis After Oracle](#), Roundtable Discussion (multiple participants), *Antitrust Magazine*, Spring 2005.

[The Role of Innovation in Competitive Analysis](#), Chair's Showcase Program (multiple participants), *Antitrust Source*, July 2005.

[Linux Adoption in the Public Sector: An Economic Analysis](#), 2003, with Hal R. Varian.

[Competition Policy and Innovation](#), Prepared for the Directorate for Science, Technology, and Industry, OECD, STI Working Paper No. 2002/11, April 2002, www.oecd.org/sti.

U.S. Government Information Policy, with Hal R. Varian, prepared for the Office of the Assistant Secretary of Defense (Command, Control, Communications and Intelligence), U.S. Department of Defense, August 1997.

Economic Models of Counterfeiting, with Gene M. Grossman, Report to the U.S. Department of Labor, International Labor Affairs Bureau, January 1988.

Book Reviews

Review of *Bandwagon Effects in High-Technology Industries* by Jeffrey H. Rohlfs, in the *Journal of Economics*, 2003.

Review of *Will E-Commerce Erode Liberty? Review of Code and Other Laws of Cyberspace*, by Lawrence Lessig, in the *Harvard Business Review*, May/June 2000.

Review of *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration*, by John Sutton, in the *Journal of Economic Literature*, 1993.

Review of *Controlling Industrial Pollution: The Economics and Politics of Clean Air*, by Robert W. Crandall, in the *Journal of Economic Literature*, June 1984, pp. 625-627.

Other Professional Activities

Member, Budget and Interdepartmental Relations Committee, Berkeley Division of the Academic Senate, University of California, 2004-2007.

Member, University of California, Committee on Academic Personnel, 2006-2008.

Member, Economic Evidence Task Force, Antitrust Section, American Bar Association, 2005-2006.

Member, Program Committee, American Economic Association Annual Meetings, 2006.

Member, Market Surveillance Committee, California Independent System Operator, 1997-2000, see <http://www.caiso.com/>.

Member, Advisory Board, *Journal of Economic Perspectives*, 1999-2002.

Member, Advisory Board, *Antitrust and Regulation Abstracts*, 1998-2002.

Member, Advisory Board, *Journal of Network Industries*, 1999-2001.

Vice-Chair, Economics Committee, Antitrust Section, American Bar Association, 1995 - 1998.

Editor, *Journal of Economic Perspectives*, 1993 - 1995.

President, Industrial Organization Society, 1995 - 1996.

Member, Defense Science Board Task Force on Antitrust Aspects of Defense Industry Consolidation, U.S. Department of Defense, 1993 - 1994.

Co-Editor, *Journal of Economic Perspectives*, 1986 - 1993.

Associate Editor, *Quarterly Journal of Economics*, 1984 - 1987.

Associate Editor *Rand Journal of Economics*, 1984 - 1986.

Director, John M. Olin Program for the Study of Economic Organization and Public Policy, Princeton University, 1988 - 1989

Associate Director, John M. Olin Program for the Study of Economic Organization and Public Policy, Princeton University, 1987 - 1988.

Honors, Fellowships, and Research Grants

Runner-Up, Teaching Prize, MBA Program, Haas School of Business, U.C. Berkeley, 1999-2000.

National Science Foundation Research Grant #SES-9209509, Technology Transitions with Network Externalities, 1992-1994, (with Joseph Farrell).

National Science Foundation Research Grant #SES-8821529, The Evolution of Network Industries, 1989-1991, (with Joseph Farrell).

Center for Advanced Study in the Behavioral Sciences, Stanford California, Research Fellowship, 1989-1990.

National Science Foundation Research Grant #SES-8606336, Issues of Industrial Organization in International Trade, 1986-1988, (with Gene M. Grossman).

Alfred P. Sloan Foundation Research Fellowship, 1985-1987.

National Science Foundation Research Grant #SES-8408622, Technological Competition and International Trade, 1984-1986, (with Gene M. Grossman).

National Science Foundation Research Grant #SES-8207337, Signals of Product Quality, 1982-1984.

National Science Foundation Graduate Fellowship, 1977-1980.

University of California Fellowship, 1976-1977.

Phi Beta Kappa and Sigma Xi, M.I.T., 1976.

Affiliations

American Economic Association

American Bar Association

Consulting Activities

Senior Consultant, Charles River Associates, 1998 – 2009.

Principal and Co-Founder, The Tilden Group, LLC, 1996 - 1998.

Extensive experience working with private parties and government agencies on matters involving antitrust, regulation, intellectual property, measurement of damages, and general business litigation. Additional information and references available upon request.