**Richard Schmalensee**

**Howard W. Johnson Professor of Management, Emeritus**

**Dean Emeritus, MIT Sloan School of Management**

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**EDUCATION:**

 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

 S.B., Economics, Politics and Science, 1965

 Ph.D., Economics, 1970

**EMPLOYMENT:**

 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

2012- Howard W. Johnson Professor of Management, Emeritus, and

 Professor of Economics, Emeritus

2007-12 Howard W. Johnson Professor of Management

2001-07 John C Head III Dean, MIT Sloan School of Management

1998-00 Dean, MIT Sloan School of Management (Interim, July-October 1998)

1996-98 Deputy Dean, MIT Sloan School of Management

1991-99, Director, MIT Center for Energy and Environmental Policy Research

2008-12

1988-99 Gordon Y Billard Professor of Management

1986- 12 Professor, Department of Economics

1979- 12 Professor, MIT Sloan School of Management

1977-79 Associate Professor, MIT Sloan School of Management

1970 Assistant Professor, MIT Sloan School of Management (Spring)

1967-69 Instructor, MIT Sloan School of Management

 PRESIDENT'S COUNCIL OF ECONOMIC ADVISERS

1989-91 Member

1967 Junior Staff Economist (Summer)

 UNIVERSITY OF CALIFORNIA, SAN DIEGO

1974-77 Associate Professor, Department of Economics

1970-74 Assistant Professor, Department of Economics

**VISITING APPOINTMENTS:**

2008 Executive in Residence, Rady School of Management; U. of California, San Diego (Winter)

2007 Distinguished Visiting Scholar, Tuck School of Business, Dartmouth College (Fall)

1985-86 Visiting Professor, Harvard Business School

1985 Visiting Professor, CORE, University of Louvain, Belgium (Spring)

1980-81 Visiting Scholar, Department of Economics, Harvard University

1973-74 Visiting Associate Professor and Research Fellow, Department of Economics,

 University of Louvain, Belgium

**EDITORIAL SERVICE:**

Editor in Chief, 2005-08; Chairman, Editorial Board, 2008-: *Competition Policy International*

Editorial Board: *Journal of Economics and Management Strategy*, 1992-98

Associate Editor: *Journal of Economic Perspectives*, 1992-98

Associate Editor: *International Journal of Industrial Organization*, 1982-89

Board of Editors: *American Economic Review*, 1982-86

Founding Editor, 1978-89; Co-Editor, 1989-: MIT Press Series, *Regulation of Economic Activity*

Associate Editor, 1977-81; Board of Editors, 1981-89: *Journal of Industrial Economics*

**PROFESSIONAL ASSOCIATIONS:**

American Economic Association: Committee on Government Relations, 2009-12; Executive Committee, 1993-95; Budget Committee, 1993-95; Nominating Committee, 1987; Advisory Committee on Meetings Program, 1986, 1989, 1994

Econometric Society: Chair, Local Arrangements Committee, 1985 World Congress; Chair, Program Committee, 1980 North American Fall Meeting; Program Committee, 1980 World Congress

Second World Congress of Environmental Economists, Program Committee, 2002

**CONSULTATION AND GOVERNMENT SERVICE (SELECTED):**

Global Economics Group, Director, 2011-

National Climate Assessment Development & Advisory Committee, 2011-14

LECG, LLC: Director, 2004-2011

National Academies/National Research Council: Panel on Transportation and a Sustainable Environment, 1994-97; Committee on National Statistics, 1998-2001; Panel on Cost-of-Living Indexes, 1999-2001; Coordinating Committee on the Transition to Sustainability, 2000-2001; Committee on America’s Climate Choices, 2008-2011; Committee for a Study of Freight Rail Transportation and Regulation (Chair), 2014-15; Committee on the Social Cost of Carbon, 2015-

U.S. Environmental Protection Agency: Environmental Economics Advisory Committee, 1992-96, 1998; Clean Air Act Compliance Analysis Council, 1992-98, Chairman 1992-96

Antitrust Division, U.S. Department of Justice, consultant, 1991-92 (1992 Merger Guidelines)

NERA Economic Consulting: Special Consultant 1981-89, 1991-2004

Bureau of Economics, U.S. Federal Trade Commission: consultant, 1972-81 (Antitrust Policy)

**AWARDS AND OTHER PROFESSIONAL ACTIVITIES (SELECTED):**

Associate Scholar, Harvard Environmental Economics Program, 2013-

Director, National Bureau of Economic Research, 2013- (Executive Committee 2018-)

Chicago Booth IGM Economic Experts Panel, 2012-

Distinguished Fellow, Industrial Organization Society, 2012

John Kuszczek Memorial Lecture, Bank of Canada, 2011

Energy Board Member, Bipartisan Policy Center, 2011-13

Stackelberg Lecture, University of Milan, Bicocca, 2010

Keynote Speaker, World Congress of Environmental and Resource Economists, 2010

Director, Resources for the Future, 2009-18 (Chairman, 2014-18)

Master Class, Rafael del Pino Foundation, Madrid, 2009

Carpenter Lecture, Babson College, 2008

J.-J. Laffont Lecture, CRESSE Summer School, Greece, 2008

Member, National Commission on Energy Policy, 2006-2010

Director, International Data Group, 2004-2017

European Investment Bank Lecture, European University Institute, Florence, 2002

Director, MFS Investment Management, 2002-2004

Advisory Council, Tsinghua School of Economics and Management, 2001-07

Fathauer Lecture in Political Economy, University of Arizona, 2000

Director, International Securities Exchange, 2000-2009

Member: International Academy of Management, 1998-

Fellow: American Academy of Arts and Sciences, 1995-

Edward A. Hewett Prize, American Association for the Advancement of Slavic Studies (with P.L. Joskow and N. Tsukanova), 1995

*Revista de Análisis Económico* Lecture, Econometric Society Latin American Meeting, 1994

Director, MIT Press, 1994-2007

Research Associate: National Bureau of Economic Research, 1992-2013

Director: Long Island Lighting Company, 1992-98

Donald Gilbert Memorial Lecture, University of Rochester, 1992

American Council for Capital Formation Center for Policy Research: Board of Directors, 1991-2010;

 Environmental Policy Fellow, 1997-98

Fellow, Econometric Society, 1982-

Invited Speaker, Econometric Society World Congress, 1980

**BOOKS WRITTEN:**

*The Economics of Advertising* (Vol. 80, Contributions to Economic Analysis), Amsterdam: North-Holland, 1972.

*Applied Microeconomics: Problems in Estimation, Forecasting and Decision-Making*, San Francisco: Holden-Day, 1973.

*An Introduction to Applied Macroeconomics* (with E. Kuh), Amsterdam: North-Holland, 1973. Japanese edition, 1975.

*The Control of Natural Monopolies*, Lexington: D.C. Heath (Lexington Books), 1979.

*Markets for Power: An Analysis of Electric Utility Deregulation* (with P. L. Joskow), Cambridge: MIT Press, 1983.

*Economics*, 2nd Ed. (with S. Fischer and R. Dornbusch), New York: McGraw-Hill, 1988. Multiple foreign language editions.

*Paying with Plastic: The Digital Revolution in Buying and Borrowing* (with D.S. Evans), Cambridge: MIT Press, 1999. Second edition, 2005; Chinese edition, 2006; Korean edition, 2011.

*Markets for Clean Air: The U.S. Acid Rain Program* (with A.D. Ellerman, P.L. Joskow, J.P. Montero, and E.M. Bailey), Cambridge: Cambridge University Press, 2000.

*Did Microsoft Harm Consumers? Two Opposing Views* (with D.S. Evans; F.M. Fisher and D.L. Rubinfeld), Washington: AEI Press, 2000.

*Invisible Engines: How Software Platforms Drive Innovation and Create Value* (with D.S. Evans and A. Hagiu), Cambridge: MIT Press, 2006. Korean edition, 2008; Chinese edition, 2010.

*Catalyst Code* (with D.S. Evans), Boston: Harvard Business School Press, 2007. Korean edition, 2008; Polish edition, 2010; Chinese edition, 2011.

*Matchmakers* (with D.S. Evans), Boston: Harvard Business School Press, 2016. French and Korean editions 2017, Chinese and Japanese editions 2018, Vietnamese edition 2019.

**REPORTS CHAIRED**

*The Future of the Electric Grid* (with J.G. Kassakian), Cambridge: MIT Energy Initiative, 2011.

*The Future of Solar Energy*, Cambridge: MIT Energy Initiative, 2015.

*Modernizing Freight Rail Regulation*, Washington: Transportation Research Board, 2015.

**BOOKS EDITED:**

*The Empirical Renaissance in Industrial Economics* (ed., with T. F. Bresnahan), Oxford: Basil Blackwell, 1987.

*Handbook of Industrial Organization, Vols. I & II*  (ed., with R. D. Willig), Amsterdam: North-Holland, 1989.

*Management: Inventing and Delivering Its Future* (ed., with T.A. Kochan), Cambridge: MIT Press, 2003. Chinese and Korean editions, 2004.

*Harnessing Renewable Energy in Electric Power Systems* (ed., with B. Moselle and J. Padilla), Washington/London: RFF Press, 2010.

*The Causes and Effects of Deregulation.* (2 Vols., ed., with P.W. MacAvoy), Cheltenham, UK: Edward Elgar, 2014.

**JOURNAL ARTICLES:**

"Regulation and the Durability of Goods." *Bell Journal of Economics and Management Science*, 1 (Spring 1970): 54-64.

"Consumer's Surplus and Producer's Goods." *American Economic Review*, 61 (September 1971): 682-687.

"A Note on Monopolistic Competition and Excess Capacity." *Journal of Political Economy*, 80 (May/June 1972): 586-591.

"Option Demand and Consumer's Surplus: Valuing Price Changes Under Uncertainty." *American Economic Review*, 62 (December 1972): 813‑824.

"A Note on the Theory of Vertical Integration." *Journal of Political Economy*, 81 (March/April 1973): 442-449.

"Brand Loyalty and Barriers to Entry." *Southern Economic Journal*, 40 (April 1974): 579-588.

"Market Structure, Durability, and Maintenance Effort." *Review of Economic Studies*, 41 (April 1974): 277-287.

"Estimating the Costs and Benefits of Utility Regulation." *Quarterly Review of Economics and Business*, 14 (Summer 1974): 51-64.

"Consumer Behavior versus Economic Theory." *Recherches Economiques de Louvain*, 40 (September 1974): 261-276.

"Alternative Models of Bandit Selection." *Journal of Economic Theory*, 10 (June 1975): 333-342.

"An Experimental Study of Expectation Formation." *Econometrica*, 44 (January 1976): 17-41.

"Another Look at the Social Valuation of Input Price Changes." *American Economic Review*, 66 (March 1976): 239-243.

"Resource Exploitation Theory and the Behavior of the Oil Cartel." *European Economic Review*, 7 (April 1976): 257-279.

"Advertising and Profitability: Further Implications of the Null Hypothesis." *Journal of Industrial Economics*, 25 (September 1976): 45-54.

"A Model of Promotional Competition in Oligopoly." *Review of Economic Studies*, 43 (October 1976): 493-507.

"Is More Competition Necessarily Good?" *Industrial Organization Review*, 4 (1976): 120-121.

"Public Investment Criteria, Insurance Markets, and Income Taxes." *Journal of Public Economics*, 6 (November 1976): 425-445.

"Valuing Changes in Regulated Firms' Input Prices." *Southern Economic Journal*, 43 (January 1977): 1346-1351.

"Using the H Index of Concentration with Published Data." *Review of Economics and Statistics*, 59 (May 1977): 186-193.

"Comparative Static Properties of Regulated Airline Oligopolies." *Bell Journal of Economics*, 8 (Autumn 1977): 565-576.

"Nonconvexity and Optimal Exhaustion of Renewable Resources" (with T. R. Lewis). *International Economic Review*, 18 (October 1977): 535‑552.

"Common Stock Volatility Expectations Implied by Option Premia" (with R. R. Trippi). *Journal of Finance*, 33 (March 1978): 129-147.

"A Note on Economies of Scale and Natural Monopoly in the Distribution of Public Utility Services." *Bell Journal of Economics*, 9 (Spring 1978): 270-276.

"A Model of Advertising and Product Quality." *Journal of Political Economy*, 87 (June 1978): 485-504.

"Life-Cycle Costing for Consumers of Energy-Conserving Devices" (with S. S. Penner and M. R. Brambley). *Energy*, 3 (July/August 1978): 415‑419.

"Entry Deterrence in the Ready-to-Eat Breakfast Cereal Industry." *Bell Journal of Economics*, 9 (Autumn 1978): 305-327. Reprinted in *Market Strategy and Structure* (J.M.A. Gee and G. Norman, eds.), London: Harvester Wheatsheaf, 1992, pp. 84-111.

"Market Structure, Durability, and Quality: A Selective Survey." *Economic Inquiry*, 17 (April 1979): 177-198.

"On the Use of Economic Models in Antitrust: The ReaLemon Case." *University of Pennsylvania Law Review*, 127 (April 1979): 994-1050. Reprinted in *Antitrust Law and Economics* (O. E. Williamson, ed.), Houston: Dame, 1980, pp. 97-153.

"Nonconvexity and Optimal Harvesting Strategies for Renewable Resources" (with T. R. Lewis). *Canadian Journal of Economics*, 12 (November 1979): 677-691.

"Appropriate Government Policy Toward Commercialization of New Energy Supply Technologies." *Energy Journal*, 1 (April 1980): 1-40.

"Advertising and Aggregate Consumption: An Analysis of Causality" (with R. Ashley and C. W. J. Granger). *Econometrica*, 48 (July 1980): 1149‑1168.

"On Oligopolistic Markets for Nonrenewable Natural Resources" (with T. R. Lewis). *Quarterly Journal of Economics*, 95 (November 1980): 475‑491.

"Qualitative Asymptotic Synthesis in Simple Optimal Control Problems." *Economic Letters*, 5 (1980): 349-352.

"Output and Welfare Implications of Monopolistic Third-Degree Price Discrimination." *American Economic Review*, 71 (March 1981): 242‑247.

"Risk and Return on Long-Lived Tangible Assets." *Journal of Financial Economics*, 9 (June 1981): 185-205.

"Monopolistic Two-Part Pricing Arrangements." *Bell Journal of Economics*, 12 (Autumn 1981): 445-466.

"Economies of Scale and Barriers to Entry." *Journal of Political Economy*, 89 (December 1981): 1228-1238.

"Commodity Bundling by Single-Product Monopolies." *Journal of Law and Economics*, 25 (April 1982): 67-71.

"Antitrust and the New Industrial Economics." *American Economic Review*, 72 (May 1982): 24-28.

"Cartel Deception in Markets for Nonrenewable Resources" (with T. R. Lewis). *Bell Journal of Economics*, 13 (Spring 1982): 263-271.

"Another Look at Market Power." *Harvard Law Review*, 95 (June 1982): 1789-1816.

"Product Differentiation Advantages of Pioneering Brands." *American Economic Review*, 72 (June 1982): 349-365. ("Errata," *AER*, 73 (March 1983): 250).

"George Stigler's Contributions to Economics." *Scandinavian Journal of Economics*, 85 (March 1983): 77-86.

"Advertising and Entry Deterrence: An Exploratory Model." *Journal of Political Economy*, 91 (August 1983): 636-653.

"The Impact of Scale and Media Mix on Advertising Agency Costs" (with A. J. Silk and R. Bojanek). *Journal of Business*, 56 (October 1983): 453-475.

"Gaussian Demand and Commodity Bundling." *Journal of Business*, 57 (January 1984): S211-S230.

"Estimating Effective Concentration in Deregulated Wholesale Electricity Markets" (with B. W. Golub). *RAND Journal of Economics*, 15 (Spring 1984): 12-26.

"Imperfect Information and the Equitability of Competitive Prices." *Quarterly Journal of Economics*, 99 (August 1984): 441-460.

"Adversary Hydro Relicensing Applications: Using Economic Efficiency Criteria" (with P. L. Joskow). *Public Utilities Fortnightly*, 114 (20 December 1984): 22-28.

"Econometric Diagnosis of Competitive Localization." *International Journal of Industrial Organization*, 3 (March 1985): 57-70.

"Do Markets Differ Much?" *American Economic Review*, 75 (June 1985): 341-351.

"Estimated Parameters as Independent Variables: An Application to the Costs of Electric Generating Units" (with P. L. Joskow). *Journal of Econometrics*, 31 (April 1986): 275-305.

"Incentive Regulation for Electric Utilities" (with P. L. Joskow). *Yale Journal on Regulation*, 4 (Fall 1986): 1-49.

"The Empirical Renaissance in Industrial Economics: An Overview" (with T. F. Bresnahan). *Journal of Industrial Economics*, 35 (June 1987): 371‑378.

"Collusion versus Differential Efficiency: Testing Alternative Hypotheses." *Journal of Industrial Economics*, 35 (June 1987): 399-425.

"Ease of Entry: Has the Concept Been Too Readily Applied?" *Antitrust Law Journal*, 56 (1987): 41-51.

"The Performance of Coal-Burning Electric Generating Units in the United States: 1960-1980" (with P. L. Joskow). *Journal of Applied Econometrics*, 2 (April 1987): 85-109.

"Horizontal Merger Policy: Problems and Changes." *Journal of Economic Perspectives*, 1 (Fall 1987): 41-54.

"Competitive Advantage and Collusive Optima." *International Journal of Industrial Organization*, 5 (December 1987): 351-367.

"Industrial Economics: An Overview." *Economic Journal*, 98 (September 1988): 643-681. Reprinted in *Surveys in Economics*, Vol. 2 (A.J. Oswald, Editor), Oxford: Basil Blackwell, 1991, pp. 51-89.

"Perceptual Maps and the Optimal Location of New Products: An Integrative Essay" (with J.‑F. Thisse). *International Journal of Research in Marketing*, 5 (1988): 225-249.

"Intra-Industry Profitability Differences in U.S. Manufacturing: 1953-1983." *Journal of Industrial Economics*, 37 (June 1989): 337-357.

"An Expository Note on Depreciation and Profitability under Rate-of-Return Regulation." *Journal of Regulatory Economics*, 1 (September 1989): 293-298.

"Good Regulatory Regimes." *RAND Journal of Economics*, 20 (Autumn 1989): 417-436.

"Continuity and Change in the Economics Industry." *Economic Journal*, 101 (January 1991): 115-121. Reprinted in *The Future of Economics* (J.D. Hey, ed.), Oxford: Basil Blackwell, 1992, pp. 115-121.

"Sunk Cost and Market Structure: A Review Article." *Journal of Industrial Economics*, 40 (June 1992): 125-134.

"Comparing Greenhouse Gases for Policy Purposes." *Energy Journal*, 14 (1993): 245-255.

"Symposium on Global Climate Change." *Journal of Economic Perspectives*, 7 (Fall 1993): 3-10.

"Competition Policy in Russia During and After Privatization" (with P.L. Joskow and N. Tsukanova). *Brookings Papers on Economic Activity, Microeconomics*, 1994: 301-374. [Awarded the 1995 Edward A. Hewett Prize by the American Association for the Advancement of Slavic Studies.]

"Economic Aspects of Payment Card Systems and Antitrust Policy Toward Joint Ventures" (with D.S. Evans). *Antitrust Law Journal*, 63 (Spring 1995): 861-901.

"The Benefits of Releasing the Bell Companies from the Interexchange Restrictions" (with P.S. Brandon). *Managerial and Decision Economics*, 16 (July-August 1995): 349-364.

"Privatization in Russia: What Should Be a Firm?" (with P.L. Joskow). *International Journal of the Economics of Business*, 2 (1995): 297-327. Reprinted in *Transaction Cost Economics: Recent Developments* (C. Menard, ed.), Brookfield, VT: Edward Elgar, 1997, pp. 86-126.

"What Have We Learned About Privatization and Regulatory Reform?" *Revista de Análisis Económico*, 10 (November 1995): 21-39. (Remarks in Roundtable Discussion, pp. 303-312.)

“Is There a Role for Benefit-Cost Analysis in Environmental Health and Safety Regulation?” (with K.J. Arrow, M.L. Cropper, G.C Eads, R.W. Hahn, L.B. Lave, R.G. Noll, P.R. Portney, M. Russell, V.K. Smith, and R.N. Stavins). *Science*, 272 (12 April 1996): 221-222. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999. pp. 319-324.

“World Carbon Dioxide Emissions: 1950-2050” (with T.M. Stoker and R.A. Judson). *Review of Economics and Statistics*, 80 (February 1998): 15-27.

“The Political Economy of Market-Based Environmental Policy: The US Acid Rain Policy” (with P.L. Joskow). *Journal of Law and Economics*, 41 (April 1998): 37-83. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999, pp. 603-645.

“Some Economic Principles for Guiding Antitrust Policy Towards Joint Ventures” (with H. Chang and D.S. Evans). *Columbia Business Law Review*, 1998 (1998): 223-329.

“An Analysis of the Welfare Effects of Long-Distance Market Entry by an Integrated Access and Long-Distance Provider” (with P.J. Hinton, J.D. Zona, and W.E. Taylor). *Journal of Regulatory Economics*, 13 (March 1998): 183-196.

“An Interim Evaluation of Sulfur Dioxide Emissions Trading” (with P.L. Joskow, A.D. Ellerman, J.-P. Montero, and E.M Bailey). *Journal of Economic Perspectives*, 12 (Summer 1998): 53-68. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999, pp. 455-471.

“The Market for Sulfur Dioxide Emissions” (with P.L. Joskow and E.M Bailey). *American Economic Review*, 88 (September 1998): 669-685.

“Household Gasoline Demand in the United States” (with T.M. Stoker). *Econometrica*, 67 (May 1999): 645-662.

“Economic Development and the Structure of the Demand for Commercial Energy” (with R.A. Judson and T.M. Stoker). *Energy Journal*, 20 (1999): 29-57.

 “Bill Baxter in the Antitrust Arena: An Economist’s Appreciation.” *Stanford Law Review*, 51 (May 1999): 1317-1332.

“Antitrust Issues in Schumpeterian Industries.” *American Economic Review*, 90 (May 2000): 192-196.

“An Analysis of the Government’s Economic Case in *U.S. v. Microsoft*” (with D.S. Evans and A.L. Nichols). *Antitrust Bulletin*, 46 (Summer 2001), pp. 163-251. Reprinted in *Microsoft, Antitrust and the New Economy: Selected Essays* (D.S. Evans, ed.), Boston: Kluwer: 2002.

“Payment Systems and Interchange Fees,” *Journal of Industrial Economics*, 50 (June 2002): 103-122.

“Sunk Costs and Antitrust Barriers to Entry,” *American Economic Review*, 94 (May 2004): 471-475.

“A Survey of the Economic Role of Software Platforms in Computer-Based Industries,” *CESIfo Economic Studies*, 51 (2005): 189-224. (Reprinted, with minor changes, as “Software Platforms.” In *Industrial Organization and the Digital Economy* (G. Illig and M. Peitz, eds.). Cambridge: MIT Press, 2006, pp. 31-70.)

“*United States v. Microsoft:* Did Consumers Win?” (with D.S. Evans and A.L. Nichols). *Journal of Competition Law and Economics*, 1 (September 2005): 497-539

“The Industrial Organization of Markets with Two-Sided Platforms” (with D.S. Evans), *Competition Policy International*, 3 (Spring 2007): 151-179. Also in W.D. Collins, ed., *Issues in Competition Law and Policy*, Chicago: American Bar Association, 2008, pp. 667-693.

“Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of *FRAND* Commitments” (with A. Layne-Farrar and A.J. Padilla), *Antitrust Law Journal*, 74 (2007): 671-706.

“Standard-Setting, Innovation Specialists, and Competition Policy,” *Journal of Industrial Economics*, 57 (September 2009): 526-52.

“Failure to Launch: Critical Mass in Platform Businesses” (with D.S. Evans), *Review of Network Economics*, 9 (December 2010), Issue 4, Article 1 (26 pages).

“Jeffrey Rohlfs’ 1974 Model of Facebook: An Introduction,” *Competition Policy International*, 7 (Spring 2011): 301-12.

“Why is Platform Pricing Generally Highly Skewed?” *Review of Network Economics*, 10 (December 2011), Issue 4, Article 1, 11 pages.

“Evaluating Policies to Increase the Generation of Electricity from Renewable Energy,” *Review of Environmental Economics and Policy*, 6 (Winter 2012): 45-64.

“’On a level with Dentists?’ Reflections on the Evolution of Industrial Organization.” *Review of Industrial Organization*, 41 (November 2012): 157-79.

“From ‘Green Growth’ to Sound Policies: An Overview,” *Energy Economics*, 34 (Supplement 1, November 2012): S2-S6.

“The SO2 Allowance Trading System: The Ironic History of a Grand Policy Experiment,” (with R.N. Stavins), *Journal of Economic Perspectives*, 27 (Winter 2013): 103-22.

“An Instant Classic: Rochet & Tirole, Platform Competition in Two-Sided Markets,” *CPI Journal,* 10:2 (Autumn 2014): 175-180.

“Pricing the Razor: A Note on Two-Part Tariffs,” *International Journal of Industrial Organization*, 42 (September 2015): 19-22.

“The Future of Solar Energy: A Personal Assessment,” *Energy Economics*, 52: Supplement 1(December 2015): S142-S148.

“The Performance of U.S. Wind and Solar Generators,” *Energy Journal*, 37:1 (January 2016): 123-151.

“The Staggers Act at 35: Railroad Economics and Regulation” (with W.W. Wilson), *Review of Industrial Organization*, 49:2 (2016): 127-131.

“Modernizing U.S. Freight Rail Regulation” (with W.W. Wilson), *Review of Industrial Organization*, 49:2 (2016): 135-159.

“Socialism for Red States in the Electric Utility Industry,” *Journal of Competition Law and Economics*, 12:3 (September 2016), 477-494.

“Reforming the U.S. Coal Leasing Program” (with K. Gillingham et al), *Science*, 354: 3616 (December 2, 2016), 1096-1098.

"Lessons Learned from Three Decades of Experience with Cap-and-Trade" (with R. Stavins), *Review of Environmental Economics and Policy*, 11: 1(Winter 2017): 59-79.

“The Design of Environmental Markets: What Have We Learned from Experience with Cap and Trade?” (with R. Stavins), *Oxford Review of Economic Policy*, 33:4 (Winter 2017): 572-588.

“Applying the Rule of Reason to Two-Sided Platform Businesses” (with D.S. Evans), *University of Miami Business Law Review*, 26: 1 (April 2018), 15 pp. Available at <https://repository.law.miami.edu/umblr/vol26/iss2/3>.

 “Puzzles and Surprises in Employment and Productivity in U.S. Manufacturing After the Great Recession,” *International Productivity Monitor*, No. 35 (Fall 2018): 1-23.

“Policy Evolution under the Clean Air Act” (with R.N. Stavins), *Journal of Economic Perspectives*, 33:4 (Fall 2019): forthcoming.

**CHAPTERS IN BOOKS:**

"Advertising and Economic Welfare." In *Advertising and the Public Interest* (S. F. Divita, ed.), Chicago: American Marketing Association, 1974, pp. 82-97.

"Promoting Competition in Tomorrow's Markets for Solar Energy Systems." In *The Solar Market: Proceedings of the Symposium on Competition in the Solar Energy Industry*, U.S. Federal Trade Commission, Washington, D.C.: U.S. Government Printing Office, 1978, pp. 119-135.

"Cartel and Oligopoly Pricing of Nonreplenishable Natural Resources" (with T.R. Lewis). In *Dynamic Optimization and Mathematical Economics* (P. T. Liu, ed.), New York: Plenum, 1980, pp. 133-156.

"The New Industrial Organization and the Economic Analysis of Modern Markets." In *Advances in Economic Theory* (W. Hildenbrand, ed.), Cambridge: Cambridge University Press, 1982, pp. 253-285.

"Optimal Use of Renewable Resources with Nonconvexities in Production" (with T.R. Lewis). In *Essays in the Economics of Renewable Resources* (J. Mirman and D.F. Spulber, eds.), Amsterdam: North-Holland, 1982, pp. 95-111.

"Advertising and Market Structure." In *New Developments in the Analysis of Market Structure* (J. E. Stiglitz and G. F. Mathewson, eds.), Cambridge: MIT Press, 1986, pp. 373-396.

"Standards for Dominant Firm Conduct: What Can Economics Contribute?" In *The Economics of Market Dominance* (D. Hay and J. Vickers, eds.), Oxford: Basil Blackwell, 1987, pp. 61-88.

"Advertising." In *The New Palgrave*, Vol. 1 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 34-36.

"Industrial Organization." In *The New Palgrave*, Vol. 2 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 803-808.

"George Stigler's Contributions to Microeconomics and Industrial Organization." In *The New Palgrave*, Vol. 4 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 499-500.

"The Potential of Incentive Regulation." In *The Market for Energy* (D. Helm, J. Kay, and D. Thompson, eds.), Oxford: Clarendon Press, 1989, pp. 178-187.

"Inter-Industry Studies of Structure and Performance." In *Handbook of Industrial Organization*, Vol. 2 (R. Schmalensee and R. D. Willig, eds.), Amsterdam: North-Holland, 1989, pp. 951-1009.

"Empirical Models of Rivalrous Behavior." In *Industrial Structure in the New Industrial Economics* (G. Bonanno and D. Brandolini, eds.), Oxford: Oxford University Press, 1990, pp. 138-167.

"Economías del Tamaño Empresarial y Poder de Mercado" and "Innovación y Posición Competitiva." In *Concentración Empresarial y Competitividad: España en la C.E.E.* (Xavier Vives and Jordi Gual, eds.), Barcelona: Ariel Economía, 1990, pp. 55-67 and 119-131.

"Agreements Between Competitors." In *Antitrust, Innovation, and Competitiveness* (T. M. Jorde and D. J. Teece, eds.), Oxford: Oxford University Press, 1992, pp. 98-118.

"How Should We Address Economic Costs of Climate Change?" In *Global Climate Change: The Economic Costs of Mitigation and Adaptation* (J.C. White, ed.), New York: Elsevier, 1991, pp. 73-76.

"The Costs of Environmental Protection." In *Balancing Economic Growth and Environmental Goals*, Washington: American Council for Capital Formation Center for Policy Research, 1994, pp. 55-80. (Italian translation: "I costi della protezione abientale," *Energia*, 15 (December 1994): 30-48.)

“What Does Stabilizing Greenhouse Gas Concentrations Mean?” (with H.D. Jacoby and D.M. Reiner). In *Critical Issues in the Economics of Climate Change* (B.P. Flannery and C.A.B. Grezo, eds.), London: IPIECA, 1997, pp. 225-244.

“Tradable Emissions Rights and Joint Implementation for Greenhouse Gas Abatement: A Look Under the Hood.” In *The Impact of Climate Change Policy on Consumers: Can Tradable Permits Reduce the Cost?* (C.E. Walker, M.A. Bloomfield, and M. Thorning, eds.), Washington: American Council for Capital Formation, 1998, pp. 39-55.

“Greenhouse Policy Architectures and Institutions.” In *Economics and Policy Issues in Climate Change* (W.D. Nordhaus, ed.), Washington: Resources for the Future, 1998, pp. 137-158.

“Joint Venture Membership: Visa and Discover Card (1993)” (with D.S. Evans). In *The Antitrust Revolution, 3rd Ed.* (J. Kwoka and L. White, eds.), Oxford: Oxford University Press, 1998, pp. 286-309.

“The Economics of the Microsoft Case: A Post-Trial Primer” (with D.S. Evans). In *Trial and Error: United States v. Microsoft* (P. Beckner and E.R. Gustafson, eds.), Washington: Citizens for a Sound Economy, 2001, pp. 70-86.

“Some Economic Aspects of Antitrust Analysis in Dynamically Competitive Industries” (with D.S. Evans). In *Innovation Policy and the Economy*, Vol. 2 (A. Jaffe, J. Lerner, and S. Stern, eds.), Cambridge: MIT Press, 2002, pp. 1-49.

“Introduction” (with T.A. Kochan). In *Management: Inventing and Delivering Its Future* (T.A. Kochan and R. Schmalensee, eds.), Cambridge: MIT Press, 2003, pp. 1-13.

“Has the Consumer Harm Standard Lost its Teeth?” (with H.H. Chang and D.S. Evans). In *High-Stakes Antitrust: The Last Hurrah?* (R.W. Hahn, ed.), Washington: Brookings Institution Press, 2003, pp. 72-116.

“The Economics of Interchange Fees and Their Regulation: An Overview” (with D.S. Evans). In *Interchange Fees in Credit and Debit Card Industries: What Role for Public Authorities?* Kansas City: Federal Reserve Bank of Kansas City, 2005, pp. 77-120.

 “Thoughts on the Chicago Legacy in Antitrust.” In *Where the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust* (R. Pitofsky, ed.), New York: Oxford University Press, 2008, pp. 11-23.

“Innovation and Evolution of the Payments Industry” (with D.S. Evans). In *Moving Money* (R.E. Litan and M.N. Baily, eds.), Washington: Brookings Institution, 2009, pp. 36-76.

“Epilogue.” In *Post-Kyoto International Climate Policy: Implementing Architectures for Agreement* (J.E. Aldy and R.N. Stavins, eds.), Cambridge: Cambridge University Press, 2010, pp. 889-898.

“Toward a Low-Carbon Future in Electricity?” (with B. Moselle and J. Padilla). In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF Press, 2010, pp. 1-4.

 “Renewable Electricity Generation in the United States.” In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF Press, 2010, pp. 209-232.

“Epilogue – Whither Renewable Generation?” (with B. Moselle and J. Padilla). In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF Press, 2010, pp. 328-333.

“The Future of the (U.S.) Electric Grid,” (with H.D. Jacoby and J.G. Kassakian). In *Handbook of Energy and Climate Change* (R. Fouquet, ed.), Cheltenham, UK: Edward Elgar, 2013, pp. 125-139.

“Deregulation: Introduction and Overview.”(with P.W. MacAvoy) In *The Causes and Effects of Deregulation.* (2 Vols., P.W. MacAvoy and R. Schmalensee, eds.), Cheltenham, UK: Edward Elgar, 2014, pp. ix-xv.

“The Antitrust Analysis of Multi-Sided Platform Businesses,” (with D.S. Evans). In *Oxford Handbook of International Antitrust Economic*s (R.D. Blair and D.D. Sokol, eds.), Oxford: Oxford University Press, 2015, pp. 404-447.

”The Future of the U.S. Electric Grid,” in *Perspectives on Complex Global Challenges* (E. Paté-Cornell, W.B. Rouse, and C.M. Vest, eds.). Hoboken, NJ: Wiley, 2016, pp. 73-79.

“Microsoft v. Motorola (2015),” (with H.H. Chang), in *The Antitrust Revolution, 7th Ed.* (John E. Kwoka, Jr. and Lawrence J White, eds.). Oxford: Oxford University Press, 2019, pp. 294-311.

**OTHER PUBLICATIONS:**

"The Computer Model of Energy Production without Fast Breeder Reactors" and "The Computer Model of Fast Breeder Demands and Prices" (with P. W. MacAvoy). Appendices E and F in P.W. MacAvoy, *Economic Strategy for Developing Nuclear Breeder Reactors*, Cambridge: MIT Press, 1969, pp. 186-199.

"Theory, Fact, and Policy: A Reply to Professor Barten." *Recherches Economiques de Louvain*, 41 (March 1975): 63-66.

*Measuring External Effects of Solid Waste Management* (with R. Ramanthan, W. Ramm, and D. Smallwood). Washington, D.C.: U.S. Environmental Protection Agency, Socioeconomic Environmental Studies Series, 1975.

"Option Demand and Consumer's Surplus: Reply." *American Economic Review*, 65 (September 1975): 737-739.

"Advertising, Concentration, and Profits: Comment." In *Issues in Advertising: The Economics of Persuasion* (D. C. Tuerck, ed.), Washington, D.C.: American Enterprise Institute, 1978, pp. 280-284.

"Remarks." In *The Conglomerate Corporation* (R. D. Blair and R. F. Lanzillotti, eds.), Cambridge: Oelgeschlager, Gunn & Hain, 1981, pp. 365-368.

"Income-Distributional Concerns in Regulatory Policymaking: Comment." In *Studies in Public Regulation* (G. Fromm, ed.), Cambridge: MIT Press, 1981, pp. 112-117.

"Comment on Beales, Craswell, and Salop." *Journal of Law and Economics*, 24 (December 1981): 541-544.

Review of C. C. von Weizsacker, *Barriers to Entry*. *Journal of Economic Literature*, 21 (June 1983): 562-564.

"Comments." In *Telecommunications Access and Public Policy* (A. Baughcum and G. R. Faulhaber, eds.), Norwood, N.J.: Ablex, 1984, pp. 76-80.

Review of D. J. Teece, ed., *The Competitive Challenge*. *Journal of Economic Literature*, 26 (December 1988): 1779-1780.

"Regulation and Antitrust in the Bush Administration." *Antitrust Law Journal*, 58 (1989): 475-480.

"Comment on Katz and Ordover." *Brookings Papers on Economic Activity: Microeconomics*, 1990: 194-197.

"Commentary." In *Environmental Policy and the Cost of Capital*, Washington: American Council for Capital Formation Center for Policy Research, 1990, pp. 104-7.

"Comment on Mannering and Winston." *Brookings Papers on Economic Activity: Microeconomics*, 1991: 107-110.

"A Comprehensive and Balanced Energy Policy." *Environmental Forum*, 8 (May/June 1991): 41-42.

"Commentary." In *U.S. Environmental Policy and Economic Growth: How Do We Fare?* Washington: American Council for Capital Formation Center for Policy Research, 1992, pp. 48-51.

*The Economics of the Payment Card Industry* (with D.S. Evans). Cambridge: National Economic Research Associates, Inc., 1993.

Review of J. Broome, *Counting the Cost of Global Warming*; William R. Cline, *The Economics of Global Warming*; and Alan S. Manne and Richard G. Richels, *Buying Greenhouse Insurance: The Economic Costs of CO2 Limits*. *Journal of Economic Literature*, 32 (June 1994): 738-741.

"Green Costs and Benefits: The Buck Stops Where?" In *Environment Strategy America 1994/95* (W.K. Reilly, ed.), London: Campden, 1994, pp. 16-17.

Review of R. Wilson, *Nonlinear Pricing*. *Journal of Political Economy*, 102 (December 1994): 1288-1291.

"Commentary." In *Strategies for Improving Environmental Policy and Increasing Economic Growth*, Washington: American Council for Capital Formation, Center for Policy Research, 1995, 32-35.

“A Guide to the Antitrust Economics of Networks” (with D.S. Evans). *Antitrust Magazine,* 10 (Spring 1996): 36-40.

"Ways I Have Worked." *The American Economist*, 40 (Fall 1996): 37-43. Reprinted in *Passion and Craft: How Economists Work* (M. Szenberg, ed.), Ann Arbor: University of Michigan Press, 1998, pp. 243-255.

“Commentary.” In *Climate Change Policy, Risk Prioritization, and Economic Growth*, Washington: American Council for Capital Formation Center, for Policy Research, 1997, pp. 65-69.

“Kyoto’s Unfinished Business” (with H.D. Jacoby and R.G. Prinn). *Foreign Affairs*, 77 (July/August 1998): 54-66. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York, Norton: 1999, pp. 517-526.

“Comment on ‘Competition, Information, and Development,’ by Jean-Jacques Laffont.” In *Annual Bank Conference on Development Economics 1998* (B. Pleskovic and J.E. Stiglitz, eds.), Washington: The World Bank, 1999, pp. 262-266.

“Commentary.” In *Climate Change Policy: Practical Strategies to Promote Economic Growth and Environmental Quality* (C.E. Walker, M.A. Bloomfield, and M. Thorning, eds.), Washington: American Council for Capital Formation, Center for Policy Research, 1999, pp. 33-38.

“A Monopolist would *Still* Charge More for Windows: A Comment on Werden” (with B. Reddy, D.S. Evans, and A. Nichols). *Review of Industrial Organization*, 18 (May 2001): 263-268.

“A Monopolist would *Still* Charge More for Windows: A Comment on Werden’s Reply” (with B. Reddy, D.S. Evans, and A. Nichols). *Review of Industrial Organization*, 18 (May 2001): 273-274.

“Comments” (On Robert E. Litan and Carl Shapiro, “Antitrust Policy in the Clinton Administration”). In *American Economic Policy in the 1990s* (J.A. Frankel and P.R. Orzag, eds.), Cambridge: MIT Press, 2002, pp. 493-499.

“Lessons from the Microsoft Case.” European Investment Bank Lecture Series, Florence: European University Institute, 2002.

“Interchange Fees: A Review of the Literature.” In *The Payment Card Economics Review, Vol. 1*, Cambridge: payingwithplastic.org/National Economic Research Associates, 2003, pp. 25-44.

“The Retailer Class Action Antitrust Case Against the Card Associations” (with H.H. Chang and D.S. Evans). In *The Payment Card Economics Review, Vol. 2*, Cambridge: payingwithplastic.org/National Economic Research Associates, Winter 2004, pp. 123-141.

“El Debate Sobre las Tasas de Intercambio: Una Visión de Conjunto” (with D.S. Evans). *Papeles de Economia Española*, Número Extraordinario, 2006, pp. 2-17.

“Where’s the ‘B’ in B-Schools?” *Business Week*, November 27, 2006, p. 118.

“Pick your Pricing” (with D.S. Evans). *Chief Executive*, July/August 2007.

“New Risks, New Products, and New Regulations: Insurance for the 21st Century,” *ICFAI Journal of Risk and Insurance*, 4 (July 2007): 7-18.

“Economic Analysis of Class Certification,” *Global Competition Policy*, June 2008, Release 2. Available at <http://www.globalcompetitionpolicy.org/index.php?&id=1184&action=907>.

“Should New Merger Guidelines Give UPP Market Definition?” *GCP: The Antitrust Chronicle,* December 2009, Release 1. Available at <https://www.competitionpolicyinternational.com/dec-091/>

"Comment on "Pharmaceutical Price Discrimination and Social Welfare" (by Frank R. Lichtenberg)," *Capitalism and Society*, 5 (2010), Issue 1, Article 5. DOI: 10.2202/1932-0213.1067. Available at: <http://www.bepress.com/cas/vol5/iss1/art5>

“The Net Effects of the Proposed Durbin Fee Reductions on Consumers and Small Business” (with D.S. Evans and R.E. Litan). *The Lydian Journal*, Issue 5, March 2011, Available at <http://www.pymnts.com/journal/>

“AT&T/T-Mobile: Does Efficiency Really Count?” (with H. Chang and D.S. Evans), *CPI Antitrust Chronicle*, 10 (October 2011), Article 2, 5 pages. Available at <https://www.competitionpolicyinternational.com/file/view/6564>.

“Gridlock in 2030?” (with T.D. Heidel and J.G. Kassakian), *Public Utilities Fortnightly*, 150 (January 2012): 22-28.

“Policy Challenges and Technical Opportunities on the U.S. Grid” (with T.D. Heidel and J.G. Kassakian), *IEEE Power & Energy Magazine*, May/June 2012, 30-37.

“Summary for Policy Makers” (with M. Webster), in *Report from Growing Concerns, Possible Solutions: The Interdependency of Natural Gas and Electricity Systems*, Cambrdige: MIT Energy Initiative, June 2014, pp. 2-6. Available at <http://mitei.mit.edu/system/files/2014-MITEI-Report-Growing-Concerns-Possible-Solutions.pdf>.

“Comment on ‘Market and Management Failures’ (by Pankaj Ghemawat),” *Capitalism and Society*, Vol. 12, Issue. 1 (May 2017), Article 6.

“Brief of Dr. David S. Evans and Prof. Richard Schmalensee as Amici Curiae in Support of Appellants-Cross Appellees.” In the matter of *U.S. Airways v. Sabre* before the Second Circuit Court of Appeals (Case 17-960), filed July 26, 2017.

“Multi-Sided Platforms” (with D.S. Evans), In *The New Palgrave Dictionary of Economics, Online Editio*n (S.N. Durlauf and L.E. Blume, eds.). London: Macmillan, forthcoming.

“Network Effects: March to the Evidence, Not to the Slogans” (with D.S. Evans), *CPI Antitrust Chronicle*, August 2017. Available at <https://www.competitionpolicyinternational.com/wp-content/uploads/2017/09/CPI-Evans-Schmalensee.pdf>. Reprinted as “Debunking the ‘Network Effects’ Bogeyman,” *Regulation* 40 (4, Winter 2017/18): 36-39.

“Lessons Learned from Cap-and-Trade Experience” (with R.N. Stavins), in R.N. Stavins and R.C. Stowe, eds., *Market Mechanisms and the Paris Agreement*, Harvard Project on Climate Agreements, October 2017, pp. 21-23. Available at https://www.belfercenter.org/sites/default/files/files/publication/2017-10\_market-mechanisms-paris\_v5.pdf

“Brief for *Amici Curiae* Prof. David S. Evans and Prof. Richard Schmalensee in Support of Respondents.” In the matter of *State of* *Ohio, et al., v. American Express Company, et al.* before the U.S. Supreme Court (Case 16-1454), filed January 23, 2018.

“Ignoring Two-Sided Business Reality Can Also Hurt Plaintiffs” (with D.S. Evans). *CPI Antitrust Chronicle*, Spring 2018. Available at <https://www.competitionpolicyinternational.com/ignoring-two-sided-business-reality-can-also-hurt-plaintiffs/>.

“Two-Sided Red Herrings” (with D.S. Evans), *CPI Antitrust Chronicle*, Fall 2018. Available at <https://www.competitionpolicyinternational.com/two-sided-red-herrings/>

“Handicapping the High-Stakes Race to Net Zero,” *Milken Institute Review*, v. 20, n. 3, (Third Quarter 2018), pp. 34-45.

“Learning from Thirty Years of Cap & Trade” (with R.N. Stavins), *Resources*, Issue 201 (May 2019), 13-20.

“The Role of Market Definition in Assessing Anticompetitive Harm in Ohio v. American Express” (with D.S. Evans), *CPI Antitrust Chronicle*, Spring 2019. Available at <https://www.competitionpolicyinternational.com/the-role-of-market-definition-in-assessing-anticompetitive-harm-in-ohio-v-american-express/>

**WORKING PAPERS**

“On the Efficiency of Competitive Energy Storage,” MIT Center for Energy and Environmental Policy Research, Working Paper WP-2019-09, June.

“Strengths and Weaknesses of Traditional Arrangements for Electricity Supply,” MIT Center for Energy and Environmental Policy Research, Working Paper WP-2019-16, October.

October 2019