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Education

Ph.D. University of Illinois; Economics, 1997
(Fields: Environmental Economics; Public Finance)
M.S. University of Illinois; Economics, 1994.
B.A. Grinnell College; American Studies and Economics, 1990.

Employment

Executive Director, Center for the Study & Improvement of Regulation (CSIR), Department of Engineering & Public Policy, Carnegie Mellon University. 2003-present.

Affiliated teaching faculty for the program in Engineering & Technology Information Management (2007), the Information Networking Institute (2007), and the Department of Social and Decision Sciences (2006-present), Carnegie Mellon University.

Visiting Faculty, Institute of Transport and Logistic Studies, School of Business, University of Sydney. Summer 2007.

Research Fellow, Engineering & Public Policy, Carnegie Mellon University. 2001-2003.

Adjunct Professor, Department of Agricultural Economics and Economics, Montana State University. 1998-2001.

Research Associate, Political Economy Research Center (PERC), Bozeman, Montana. 1997-2000.

Research Assistant, Office of Commerce Research, University of Illinois. 1994-97.

Teaching Assistant, Department of Economics, University of Illinois. 1991-94.

Research Fields

New Institutional Economics, Law and Economics
Regulation and Public Policy
Natural Resource and Environmental Economics

Publications

“Identifying and Correcting Errors with Odometer Readings from I/M Data: A “Rollover” Problem for the Estimation of Emissions and Technical Change,” Forthcoming in *Transportation Research Record: The Journal of the Transportation Research Board*. (With Vincent Goh and Paul S. Fischbeck).

“Diesels and Hybrids Don’t Mix: Public Perceptions and Actual Driving Behavior of New Diesel and Hybrid Owners,” Forthcoming in *Transportation Research Record: The Journal of the*

Transportation Research Board. (With Paul S. Fischbeck and H. Scott Mathews).

- “An Interactive Forecasting Tool for the Impacts of New Engine Technologies on Fuel Consumption and Emissions,” Forthcoming in *Transportation Research Record: The Journal of the Transportation Research Board*. (With Paul S. Fischbeck and David Rice).
- “Experiments in Technology-Forcing: Comparing the Regulatory Processes of U.S. Automobile Safety and Emissions Regulations,” *International Journal of Technology Policy and Management* (2007) 7(1): 1-14. (With Lester Lave).
- “Implementing Technology-Forcing Policies: The 1970 Clean Air Act and the Introduction of Advanced Emissions Controls.” *Technology Forecasting and Social Change*. (2005) 72:761-778. (With Lester Lave).
- “Using Environmental Bonds to Regulate the Risks of GM Crops: Problems and Prospects.” *Environmental Biosafety Research*. (2003). 2(1): 25-32 (With Siân Mooney).
- “Transaction Costs and the Value of Mining Claims.” *Land Economics* (2001). 77(3): 371-384.
- “The Law and Economics of Reclamation Bonds.” *Resources Policy*. (2000). 26(4): 189-197.
- “The Development of First-Possession Rules in U.S. Mining, 1872-1920: Theory, Evidence, and Policy Implications.” *Resources Policy*. (1998). 24(4): 251-264.

Books

Carbon Capture and Sequestration: Integrating Technology, Monitoring, Regulation, Blackwell Publishing (2007). (Co-Editor with Elizabeth J. Wilson).

Book Chapters and Invited Papers

- “Carbon Capture and Sequestration in Context: Technology, Regulation, and Social Acceptance,” in *Carbon Capture and Sequestration: Integrating Technology, Monitoring, Regulation*. (2007) (With Elizabeth J. Wilson).
- “Geologic Sequestration Under Current U.S. Regulations: Problems and Prospects,” in *Carbon Capture and Sequestration: Integrating Technology, Monitoring, Regulation*. (2007) (With Elizabeth J. Wilson).
- “Risk Assessment and Management for Geologic Sequestration of Carbon Dioxide,” in *Carbon Capture and Sequestration: Integrating Technology, Monitoring, Regulation*. (2007) (With Elizabeth J. Wilson).
- “CAFE Increases: Missing the Elephant in the Living Room,” Related Publication 04-11. AEI-Brookings Joint Center for Regulatory Studies. (2004). (With Lester Lave).
- “The Economics of CAFE Reconsidered: A Response to CAFE Critics and A Case for Fuel Economy Standards,” Regulatory Analysis 03-10. AEI-Brookings Joint Center for Regulatory Studies. (2003). (With Lester Lave).
- “Federal Flood Policies: 150 Years of Environmental Mischief.” In *Government vs. Environment*. Edited by D.R. Leal and R.E. Meiners. Lanham, MD: Rowman and Littlefield Press. (2002).
- “Property Rights and Technological Innovation: Legal Remedies and Pollution Abatement in

U.S. Mining.” In *The Technology of Property Rights*. Edited by T. L. Anderson and P. Hill. Lanham, MD: Rowman and Littlefield Press. (2001). (With Timothy J. LeCain).

“Costs and Benefits of Interior's Proposed Initiative to Revise and Update Regulations Governing Hardrock Mining Operations (43 CFR 3809).” *9th Annual Proceedings of the Mineral Economics and Management Society*. (2000).

“The Origins of the Federal Wilderness System.” In *Political Environmentalism*. Edited by T. L. Anderson. (2000) Stanford, CA: Hoover Institution Press.

Papers Under Review

“An Interactive Tool to Compare and Communicate Traffic Safety Risks: Traffic STATS,” January 2007. (With Paul S. Fischbeck, Barbara Gengler, and Randy S. Weinberg).

“Quantifying Risk Regulations for Empirical Research in Administrative Law: The Case of US Transportation Fuels,” December 2005. (With David E. Stickers and Paul S. Fischbeck).

Working Papers

“Using GIS to Explore Environmental Justice Issues: The Case of U.S. Petroleum Refineries,” August 2006. (With Jun Hyun Park and Paul S. Fischbeck).

“Effectiveness of Energy Conservation Programs: Evaluation of Low-Income Household Weatherization from the Perspective of a Pennsylvania Natural Gas Utility,” November 2006. (With Amelia MacSleyne and Paul S. Fischbeck).

“Examining Determinants of Automobile Emissions through Data Mining I&M Records” February 2006. (With Ya-Mei Yang and Paul S. Fischbeck).

“The Political Economy of Setting Risk Regulations: An Empirical Study of U.S. Transportation Fuels,” October 2005. (With David E. Stickers and Paul S. Fischbeck).

“When Do Stakeholders Participate in the Rulemaking Process? The Case of Federal Risk Regulations of Transportation Fuels.” November 2005 (With David E. Stickers and Paul S. Fischbeck).

“Public Policies for the Remediation of Abandoned Mine Sites,” November 2005.

“Estimating the Environmental and Health Impacts of Introducing Light-Diesels in Southern California,” July 2004. (With Sarah L. Rees and Paul S. Fischbeck).

“Institutional and Industrial Developments in Western Mining, 1872-1920.” December 1998.

Dissertation

Institutions, Property Rights, and Transaction Costs in the Hardrock Mining Industry, 1866-1996. Committee: Lee J. Alston, Chair; Richard J. Brazee; Thomas Ulen.

Funded Research

An Interactive Tool to Compare and Communicate Traffic Safety Risks. March 2005-March 2006. Funding of \$135,000 from the AAA Foundation for Traffic Safety. Co-P.I. with Paul Fischbeck and Randy Weinberg.

Technology-Forcing Regulations and Regulatory Overlap in the US Auto Industry: Studies of

Emissions, Fuel Economy, and Safety Regulations. Funding of \$85,000 from the A.W. Mellon Foundation. Co-P.I. with Lester Lave. June 2002-August 2004.

Tool Development

Development team of TrafficSTATS (with Paul Fischbeck, Randy Weinberg, and Barbara Gengler). www.aaafoundation.org/trafficstats

Received international media attention. Interviewed or quoted by major media outlets including the Associated Press (AP story picked up by more than 200 newspapers), NPR (*Weekend Edition* and *Marketplace*), ABC News, St. Louis Post-Dispatch, WTAE-TV Pittsburgh, and others.

Teaching

Carnegie Mellon University, 2002-present

- Managerial and Engineering Economics, (M.S. program in Engineering & Technology Innovation Management; M.S. in Information Networking program for Athens Information Technology in Athens, Greece)
- Policy Analysis II (for Social & Decision Sciences (SDS))
- Capstone Undergraduate Project Research (for SDS and Engineering & Public Policy)
 - *Hybrids and Diesels in the American Automobile Fleet: 2005-2020* (Spring 2005)
 - *U.S. Oil Refineries: Spatial Dimensions of Economics, Regulatory Policy & Environmental Justice* (Fall 2005)
- Public Policy and Regulation (SDS & EPP)
- Regulation: Theory and Policy (Department of Economics)

Montana State University, 1998-2001

- The Economic Way of Thinking (micro and macro), 60-240 students per section
- Microeconomics

University of Illinois, 1991-1994

- Business Statistics (instructor) and Introductory Macro (teaching assistant) Included on *Incomplete List of Teachers Ranked Excellent by their Students*, Spring 1994, Fall 1993, and Spring 1992.

Ph.D. Committees (all at Carnegie Mellon)

David E. Stickers *Risk Regulation of Transportation Fuels: An Analysis of Stakeholder Behavior and Regulatory Outcomes*. Completed 2004. Co-Chair with Paul S. Fischbeck.

Elizabeth J. Wilson *Managing the Risks of Geologic Carbon Sequestration: A Regulatory and Legal Analysis*. Completed 2004.

Jaegul Lee, *Impacts of government regulation on innovation, using patent data of U.S. automotive emissions controls*. Completed 2005.

Sarah L. Rees, *Two Case Studies in Air Quality: Performance of the Federal Reference Method for Fine Particulate Matter and Air Quality Impacts of Light Duty Diesel Vehicles* (on leave).

Sarah J. Ryker, *Chemical mixtures in U.S. drinking water--Technical and policy approaches to risk assessment and regulation*. Proposal defended 2006.

Amelia MacSleyne, *Assessing the Effectiveness of Energy Conservation Programs using Micro-Level Data*. Proposal defended 2006.

Britney McCoy, *Upset Emissions and Environmental Justice Issues Surrounding U.S. Oil Refineries*.

Melissa Chan, *Life Cycle Analysis of Pittsburgh Coal Seam Extraction*.

Student Research Supervision

- Kanishka Maheshwari, Glen Bischoff, Amarpal Singh Banger, and Edward Mok, AAA *Foundation for Traffic Safety Project Research Team*. Client for Information Systems program, Fall 2005- Spring 2006.
- David Rice, An Interactive Decision Tool to Forecast the Effects of New Vehicle Technology on Emissions and Fuel Consumption.

Projects Funded by Carnegie Mellon Graduate Small Project Help (GUSH) or Student Undergraduate Research Grant (SURG)

- Ya-Mei Yang, Data mining state I&M records. (GUSH)
- Ng Shihong and Vincent Goh, Examining vehicle emissions and fuel economy using Colorado I-M data. (SURG)
- Derek Leong, Hedonic Price Modeling for New and Used Automobiles. (SURG)
- Ariel Brio, Risk Regulations in the United States and the European Union: Reality and Perceptions. (SURG).
- Sagar Shah, Estimating Price Distributions for the U.S. Vehicle Fleet: Why Isn't (Measuring) Quality Job 1? (SURG)
- Robert Kaminski, What is driving pickup truck travel risk? (SURG)

Public Policy Comments

Testimony before U.S. Senate Committee on Environment and Public Works, Subcommittee on Fisheries, Wildlife, and Water. Hearing on the *Good Samaritan Abandoned or Inactive Mine Waste Remediation Act (S. 1787)* June 21, 2000.

www.senate.gov/comm/environment_and_public_works/general/stm1_106.htm#06-21-00

Comments on the Department of the Interior's proposed initiative to revise and update regulations governing hardrock mining operations (43 CFR 3809). Mercatus Center Regulatory Studies Program, George Mason University. February 2000.

Book Reviews

J.S. Holliday *Rush for Riches: Gold Fever and the Making of California*. Berkeley: University of California Press, 1999; and *A Golden State: Mining and Economic Development in Gold Rush California*. Edited by James J. Rawls and Richard J. Orsi. Berkeley: University of California Press, 1999. Reviewed together in *Journal of Economic History*. December 1999.

Larry Lankton, *Beyond the Boundaries: Life and Landscape at the Lake Superior Copper Mines*,

1840-1875. Reviewed in *Journal of Economic History*. September 1998.

Invited and Conference Presentations

- 2007 “Alternative Metrics for Measuring Traffic Safety Risks,” Risk Center Seminar, Carnegie Mellon University.
- “Using GIS to Explore Environmental Justice Issues: The Case of U.S. Petroleum Refineries,” The State of Environmental Justice in America, Howard University Law School. With Paul Fischbeck, Jun Hyun Park, and Britney McCoy.
- “An Interactive Tool to Compare and Communicate Traffic Safety Risks: Traffic STATS,” Presentation at *Transportation Research Board Annual Meeting*, Washington, DC. With Paul Fischbeck.
- “Identifying and Correcting Errors with Odometer Readings from I/M Data: A “Rollover” Problem for the Estimation of Emissions and Technical Change,” Poster at *Transportation Research Board Annual Meeting*, Washington, DC.
- “Diesels and Hybrids Don’t Mix: Public Perceptions and Actual Driving Behavior of New Diesel and Hybrid Owners,” Poster at *Transportation Research Board Annual Meeting*, Washington, DC.
- “An Interactive Forecasting Tool for the Impacts of New Engine Technologies on Fuel Consumption and Emissions,” Poster at *Transportation Research Board Annual Meeting*, Washington, DC.
- 2006 “Model to Select More Valuable Weatherization Investments Before an On-Site Audit,” *Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Pittsburgh, PA. With Amelia MacSleyne and Paul Fischbeck.
- “An Interactive Tool to Compare Traffic Risks,” INFORMS Annual Meeting. With Paul Fischbeck.
- “Interactive Decision Tool to Forecast Impacts of Technological Change in the Passenger Vehicle Fleet,” INFORMS Annual Meeting. With Paul Fischbeck.
- “Environmental Bonds and the Problem of Long-Term Carbon Sequestration,” *International Society for the New Institutional Economics*, Boulder, CO.
- “Quantifying Risk Regulation of Transportation Fuels,” Colorado School of Mines.
- 2005 “The Use of Science and Uncertainty to Support the Development of Risk Regulations: An Empirical Analysis of U.S. Transportation Fuels,” *Society for Risk Analysis*, Orlando, FL.
- “What Do the Data Tell Us about Risk Regulations? Examining the Rulemaking Process for U.S. Transportation Fuels.” Graduate School of Public and International Affairs, University of Pittsburgh.
- 2004 “What Do the Data Tell Us about Risk Regulations? Examining the Rulemaking Process for U.S. Transportation Fuels.” program in Environmental and Resource Economics (pERE), University of Illinois.

- “The Political Economy of Setting Risk Regulations: An Empirical Study of U.S. Transportation Fuels.” *International Society for the New Institutional Economics*, Tucson, AZ.
- “Regulations and the Development of Cleaner Vehicles: From the Catalytic Converter to the Clean Diesel.” Empirical Methods Seminar, LBJ School of Public Policy, University of Texas.
- 2003 “Experiments in Technology-Forcing: Comparing the Regulatory Processes of US Automobile Safety and Emissions Regulations.” *7th Annual International Conference on Technology Policy and Innovation*, Monterrey, Mexico.
- “Environmental Regulations and the Development of Cleaner Vehicles: The 1970 Clean Air Act and Beyond.” Allegheny College Campus Lecture. Meadville, Pennsylvania.
- 2002 “Technology Forcing: Two Case Studies from the 1970 Clean Air Act Amendments.” Center for the Study of the Human Dimensions of Global Change, Carnegie Mellon University.
- “A Law and Economics Perspective on Abandoned Mines Cleanups,” *EPA Hardrock Mining 2002: Issues Shaping the Industry*. Denver, Colorado.
- 2000 “Costs and Benefits of Interior's Proposed Initiative to Revise and Update Regulations Governing Hardrock Mining Operations (43 CFR 3809).” *Mineral Economics and Management Society*. Boulder, Colorado.
- 1999 “Property Rights and Technological Innovation: Court Decisions and Pollution Abatement in U.S. Mining,” Political Economy Forum. Pray, Montana.
- “Enforcement of Environmental Regulations through Bonding: The Case of Hardrock Mining.” *Western Economics Association International Meetings*, San Diego, California.
- 1997 “The Origins of the Federal Wilderness System: An Empirical Study in the New Institutional Economics,” *Southern Economic Association Meetings*, Atlanta, Georgia.
- “Transaction Costs and the Value of Mining Claims, 1872-1920,” *Economic History Association Meetings*, New Brunswick, NJ; and Montana State University.
- 1996 “Land-Management Preferences and the Value of Title to Mining Claims,” program in Environmental and Resource Economics (pERE) workshop, University of Illinois.
- Legal Institutions and the Enforcement of Environmental Regulations,” pERE workshop.
- 1995 “Public and Private Costs of Federal Mineral Land Allocation,” Economic History Workshop, University of Illinois.

Honors

- Pan-Hellenic Role Model*, Carnegie Mellon Sorority Community, 2006.
- Graduate Fellow*, PERC, Spring 1997.
- Western Coal and Transportation Association Award* for outstanding dissertation in natural resource economics. May 1997.
- Environmental and Resource Economics Scholar*, program in Environmental and Resource Economics (pERE), University of Illinois. Fall 1996.

Reviewer and Journal Referee

- National Science Foundation Economics Program (2004)
- Health Canada Policy Research Program, *Regulations in a Changing World* (2004)
- Journal referee: *Quarterly Journal of Economics and Finance*, *Business History Review*, *Journal of Evolutionary Economics*, *Risk Analysis*, *Management Science*, *Contemporary Economic Policy*.

Professional Memberships

American Economics Association

International Society for New Institutional Economics

Association of Public Policy and Management

Miscellaneous Articles

The Mining Law of 1872: Digging a Little Deeper. Policy Series Paper PS-11. Bozeman, MT: Political Economy Research Center. December 1997.

“Don’t Target the 1872 Mining Law as Vehicle to Protect Environment.” *The Salt Lake Tribune*, April 12, 1998; (also published as “We should reform the Mining Law of 1872, not trash it.” *The Great Falls Tribune*, April 12, 1998.)

“The Mining Law of 1872: Digging Deeper.” *PERC Reports* 16(1) 8-9.

“Base Closings Don’t Have to Spell Disaster.” *Illinois Business Review*. Summer 1996. 53(2):12-15.

“The Economics of Pollution Reduction and Sulfur Dioxide Emissions Permits.” *Illinois Business Review*. Fall 1995. 52(3):11-14.

“Update on the Study of the Economy of Rantoul, Illinois.” *Illinois Business Review*. Spring 1995. 52(1):3-5.