

GABRIEL A. LOZADA

RECENT WORKING PAPERS

Initial Yield as a Forecast of Constant-Duration of Constant-Maturity Bond Portfolio Return near Twice Duration.

A Simple Approach to Choice of a Parameter When Stochastic-Decision-Making Errors have Asymmetric Costs.

The Hotelling Rule for Entropy-Constrained Economic Growth.

A Rule of Thumb for Hedging the Purchase of a Fixed Immediate Annuity in the Near Future.

RECENT COMMUNITY SERVICE

Witness, Utah State House of Representatives, Revenue and Taxation Standing Committee, March 1, 2013. Spoke on House Bill 98, "Severance Tax Revisions," introduced by Rep. Brian King). Presented my research on the effects of severance tax increases on revenue and oil & gas drilling in Utah. <http://le.utah.gov/~2013/minutes/HREV0301.pdf>

Pro Bono Consultant, Utah Rivers Council, 2010-. Provide guidance on economic models of water use and pricing in the context of water conservation and the removal of the property tax subsidy to water in Utah.

Oct. 2013 "Debate over Green River Water Heats Up," KUTV news.

Oct. 8, 2013 "Powell pipeline tab too steep for Kane County, report shows," *Salt Lake Tribune*.

Oct. 2013 "Economists: Powell Pipeline Too Costly For Kane Co." KUTV news.

Oct. 17, 2012 "Powell pipeline bottom line drains legislators' support," *Salt Lake Tribune*.

Oct. 16, 2012 "Lake Powell pipeline could quadruple water costs, U. economists say," KSL news (John Hollenhorst).

Witness, Utah State House of Representatives Revenue and Taxation Standing Committee, February 15, 2011. Spoke on House Bill 112, "Severance Tax Code Revisions," introduced by Rep. Brian King.

Feb. 15, 2011 "Proposal to hike taxes on oil and gas wells flames out: Natural resources: Dem says bill would bring an additional \$26.5M in severance taxes," *Salt Lake Tribune* (Lee Davidson).

Feb. 15, 2011 "Jacked: Utah gave oil and gas companies \$200 million-plus while the rest of us got squeezed at the pump," *Salt Lake City Weekly* (Eric S. Peterson).

Consultant, Utah State Tax Review Commission, 2008. Together with a University of Utah PhD student, Michael Hogue, I wrote "The Effect of Proposed 2009 Tax Changes on Utahs Oil and Gas Industry."

PERSONAL DATA

Date of Birth: April 7, 1959

Place of Birth: Illinois

Home Address:

4345 E. Oak Mountain Circle

Salt Lake City, UT 84108

Phone: (801) 883-0134

Citizenship: United States of America

Business Address:

Department of Economics

University of Utah

Salt Lake City, UT 84112

Phone: (801) 581-7650

FAX: (801) 585-5649

E-mail: lozada@economics.utah.edu

EDUCATION

Ph.D., Economics, Stanford University, 1987

M.A., Economics, Stanford University, 1984

M.S., Engineering-Economic Systems, Stanford University, 1983

B.S., Physics, Louisiana State University (Baton Rouge), 1981

B.A., Economics, Louisiana State University (Baton Rouge), 1981

DISSERTATION

Title: Equilibrium in Exhaustible Resource Industries

Principal Advisor: Peter Hammond

Committee Members: David Starrett, Lawrence Lau, James Sweeney

TEACHING FIELDS

Resource and Environmental Economics

Microeconomics

Dynamic Economics

Mathematical Economics

Economic Development

RESEARCH FIELDS

Resource Economics

Microeconomics

Dynamic Economics

ACADEMIC POSITIONS

- Associate Professor, Department of Economics, University of Utah, 1998–present.
Introduction to Environmental Studies (a team-taught course)
Natural Resource and Environmental Economics (introductory level)
Intermediate Microeconomic Theory
Natural Resource and Environmental Economics (master’s level)
Mathematics for Economists (first-year Ph.D. level)
Microeconomic Theory (first-year Ph.D. level)
Natural Resource and Environmental Economics (advanced Ph.D. level)
- Assistant Professor, Department of Economics, University of Utah, 1993–1998.
For courses taught, see above.
- Assistant Professor, Department of Economics, Texas A&M University, 1987–1993.
Intermediate Microeconomic Theory
Economics of Resource Scarcity
- Ciriacy-Wantrup Fellow, Energy and Resources Group, University of California at Berkeley, 1991–1992.
- Instructor, Department of Economics, Texas A&M University, 1986–1987.
Principles of Microeconomics
Intermediate Microeconomic Theory
- Teaching Assistant, Department of Economics, Stanford University.
Graduate Microeconomics, Autumn 1984
Economic Development, Winter 1985
- Teaching Assistant, Department of Physics, Louisiana State University, Spring 1981.
Instructor, Freshman Physics Lab (Newtonian Mechanics, Thermodynamics)

HONORS AND GRANTS

- Associated Students of the University of Utah Student Choice Teaching Award, April 2002.
- Ciriacy-Wantrup Fellowship in Resource Economics, University of California at Berkeley, 1991–92
- Summer Research Grant, Texas A&M University, College of Liberal Arts, 1990
- International Institute for Applied Systems Analysis, full scholarship to Young Scientists’ Summer Program, Laxenburg, Austria, 1983
- National Science Foundation Graduate Fellowship, Stanford University, 1981–84
- Valedictorian, Louisiana State University, 1981
- Phi Beta Kappa

PUBLICATIONS AND FORTHCOMING PUBLICATIONS

- “Entropy, Free Energy, Work, and other Thermodynamic Variables in Economics.” *Ecological Economics*, January 2006, vol. 56 no. 1, pp. 71–78.
- “Constructing Age-Dependent Portfolios.” *Journal of Personal Finance*, 2004, vol. 3 no. 4, pp. 59–75.
- “Entropy and the Economic Process.” In Cutler J. Cleveland, ed., **Encyclopedia of Energy**, 2004, Volume 2, 471–478. Amsterdam: Elsevier.
- “Review of Malte Faber, John Proops, and Stefan Speck’s *Capital and Time in Ecological Economics: Neo-Austrian Modelling*.” *Zeitschrift für Nationalökonomie*, 2001, vol. 74 no. 2, pp. 215–220.
- T. Randolph Beard and Gabriel A. Lozada, **Economics, Entropy and the Environment: The Extraordinary Economics of Nicholas Georgescu-Roegen**. 1999. Cheltenham, United Kingdom: Edward Elgar.
- “The Role of Entropy and Energy in Natural Resource Economics.” In J. M. Goudy and Kozo Mayumi, eds., **Bioeconomics and Sustainability: Essays in Honor of Nicholas Georgescu-Roegen**. 1999. Cheltenham, United Kingdom: Edward Elgar.
- “Existence of Equilibria in Exhaustible Resource Industries: Nonconvexities and Discrete Time.” *Journal of Economic Dynamics and Control*, January 1996, pp. 433–444.
- “Resource Depletion, National Income Accounting, and the Value of Optimal Dynamic Programs.” *Resource and Energy Economics*, August 1995, pp. 137–154.
- “Georgescu-Roegen’s Defense of Classical Thermodynamics Revisited.” *Ecological Economics*, July 1995, pp. 31–44.
- “Existence and Characterization of Discrete-Time Equilibria in Extractive Industries.” *Resource and Energy Economics*, September 1993, pp. 249–254.
- “The Conservationist’s Dilemma,” *International Economic Review*, August 1993, pp. 647–662.
- “A Defense of Nicholas Georgescu-Roegen’s Paradigm.” *Ecological Economics*, June 1991, pp. 157–160.
- “Georgescu-Roegen’s Critique of Statistical Mechanics Revisited.” In J. C. Dragan, E. K. Seifert, and M. C. Demetrescu, editors, **Entropy and Bioeconomics: Proceedings of the First International Conference of the European Association for Bioeconomic Studies**, Rome, Italy: Nagard (1993), pp. 389–398.
- Leonardo Auernheimer and Gabriel A. Lozada, “On the Treatment of Anticipated Shocks in Models of Optimal Control with Rational Expectations: An Economic Interpretation.” *American Economic Review*, March 1990, pp. 157–169.
- G. Randolph Rice and Gabriel A. Lozada, “The Effects of Unemployment and Inflation on the Income Distribution: A Regional View.” *Atlantic Economic Journal*, July 1983, pp. 12–21.

PROFESSIONAL SERVICE: REVIEWING RESPONSIBILITIES FOR JOURNALS

Referee for Asian Consumer and Family Economics Association (2003); *American Economic Review* (1998); *Ecological Economics* (two in 2002, 2001, 1999, 1994, two in 1992, 1991); *Economic Inquiry* (1999); *Economic Journal* (1994); *Environment and Development Economics* (2003, 1998); *Environmental and Resource Economics* (2003); *European Economic Review* (1994); *Energy Journal* (1989); *International Economic Review* (1997, 1996, 1994, two in 1992, 1991); *Journal of Economic Dynamics and Control* (1999, 1995, 1990); *Journal of Environmental Economics and Management* (2006, two in 2003, 2001, 2000, 1999, 1998, two in 1997, 1996, 1995, 1994, 1993, 1991); *Oxford Economic Papers* (1994); *Resource and Energy Economics* (two in 2001, 1992); *Review of Economic Studies* (1989); *Scandinavian Journal of Economics* (2000). Book publishers: Pearson (2009), reviewed Peter Berck and Gloria Helfand's *The Economics of the Environment*. McGraw-Hill/Irwin (2006), reviewed B. Douglas Bernheim and Michael Whinston's "Microeconomics."

PAPER PRESENTATIONS AND DISCUSSIONS

Resource Modeling Association, 2001 World Conference on Natural Resource Modeling, Logan, Utah, June 27–30, 2001. Presented "The Competitive Order of Exploitation of Different Deposits of an Exhaustible Natural Resource."

Program on Economy, Justice and Society, "Conference on Intergenerational Justice," University of California at Davis, May 19–20, 2000. Discussed "Net Investment is Negative at the Peak in Consumption's Path" by John M. Hartwick and Ngo Van Long.

Canadian Resource and Environmental Economics Study Group's Ninth Annual Conference, Edmonton, Alberta, Canada, October 2–3, 1999. Discussed "A Purse from a Sow's Ear? Multi-product Regulation and the Privatization of a Fishery" by Diane P. Dupont, R. Quentin Grafton, James Kirkley, and Dale Squires.

Seminar, Department of Agricultural and Resource Economics, University of California at Davis, April 1997. Presented "Microeconomic Sustainability, Macroeconomic Sustainability, and the Meaning of Net National Product."

Sixth Canadian Conference on Environmental and Natural Resources Economics, Montreal, Quebec, Canada, October 5–6, 1996. Presented "Microeconomic Sustainability, Macroeconomic Sustainability, and the Meaning of Net National Product."

Fifth Canadian Conference on Environmental and Natural Resources Economics, Vancouver, British Columbia, Canada, September 30–October 1, 1995. Discussed "Fisheries, Uncertainty, and the Precautionary Approach to Resource Management" by Colin W. Clark, Timothy Lauck and Gordon R. Munro.

Fourth Canadian Conference on Environmental and Natural Resources Economics, Calgary, Alberta, Canada, September 30–October 2, 1994. Presented "Optimality and the Open Access Schooling Fishery."

Third Canadian Conference on Environmental and Natural Resources Economics, Ottawa, Ontario, Canada, October 1–October 3, 1993. Presented “Recent Results on the Nonexistence of Equilibrium in Extractive Industries with Nonconvex Technology.”

Western Economic Association, San Francisco, California, July 9–July 13, 1992. Presented “Mine Depreciation in GNP: An Optimal Value Function Approach.”

European Association for Bioeconomic Studies, Rome, Italy, November 28–30, 1991. Presented “Georgescu-Roegen’s Critique of Statistical Mechanics Revisited.” (Invited Paper, Expenses Paid.)

Western Economic Association, San Diego, California, June 29–July 3, 1990. Presented “Non-convexities and Discrete Time in Extractive Industries.”

International Society for Ecological Economics, World Bank, Washington, DC, May 21–23, 1990. Presented “Limitations on the Scope of Neoclassical Resource Economics.”

SUPERVISION OF THESES AND DISSERTATIONS

Supervisor for the future Ph.D. dissertation of:

Hyeon Kim (on environmental policy instruments’ incentives for technological adoption).

Michael Hogue (on explaining oil & natural gas production decisions at the level of the individual well)

Supervisor for Kuo-Liang “Matt” Chang’s Ph.D. dissertation “A Sustainable Fishery Management Study: The Yellowfin Tuna Fishery in the Western and Central Pacific Ocean,” 2007.

Supervisor for Hyochang “Henry” Lee’s Ph.D. dissertation “The Economics and Optimal Management of the Brine Shrimp Resource in the Great Salt Lake,” 2006.

Committee Member for Jinyoung Soh’s Ph.D. dissertation “Fractional vs. 100% Reserve Banking: Endogenous Moral Hazard,” 2004.

Committee Member for Carl Belliston’s Ph.D. dissertation “Patent Rights and Patent Infringement Remedies: Working Toward a Unified Theory,” 2004.

Committee Member for Won Zoe Shin’s Ph.D. dissertation “Knowledge Diffusion, Economic Growth, and Industrialization: A Study of the Korean Industrialization Process,” 2003.

Supervisor for Julie Ann Suhr Nelson’s Ph.D. dissertation “Framing and Levels of Abstraction in Economic Theory with an Application to Public Land Management,” 2002.

Supervisor for Kristina Kushnir’s Ph.D. dissertation “Oil Auctions in Russia,” 2000.

Committee Member for Anupam Tyagi’s Ph.D. dissertation “Distributive Fairness and Environmental Sustainability: Theoretical Framework with Application to the Climate Change Negotiations,” 2000.

Supervisor for Shan Huang Cavanaugh's Ph.D. dissertation "Are the Cheapest-to-deliver Ten-Year Treasury Notes Squeezed due to their Futures Trading on the Chicago Board of Trade?" 1999.

Supervisor for Kuo-Liang Chang's M.S. thesis "Land Reform in Taiwan," 1998.

Supervisor for Jerome E. Bennett's M.S. thesis "An Economic Environmental Responsibility: Used Tires," 1998.

Committee Member for Alex Steenstra's Ph.D. dissertation "The Economics of Indian Water Rights: Efficiency, Equity, and Ecology," 1997.

Committee Member for Yousef Abouzelof's M.S. thesis "Investment in Physical Facilities: A Case Study of a Thermal Energy Storage Tank," 1997.

Committee Member for Po-Sheng Ko's Ph.D. dissertation "Dynamics of Industrial Structure in a Small Semi-Open Economy," 1996.

Committee Member for Jaeho Yoon's Ph.D. dissertation "The Structure of the Aggregate Travel Demands in the US and the Netherlands: An Application to Predict Modal Shares Under the Goal of the Sustainable Development Program," 1995.

Committee Member for Ching-wen Chang's M.S. thesis "The Externalities on the Back of the Gross National Product: The Impingement of Overdrawing Underground Water in Taiwan," 1995.

Committee Member for Paul Mulder's political science M.A. thesis "Bargaining Outcomes and the Dynamics of the Two-Level Game: Toward an Understanding of the Negotiations Leading up to the Montreal Protocol," 1995.

UNIVERSITY SERVICE

Chair, College of Social and Behavioral Science Retention, Promotion, and Tenure Committee (2011–2012).

Member, University of Utah Retention, Promotion, and Tenure Standards Committee (2008–2011).

Primary Faculty Liaison, OSH Third Floor Renovation, 2009. Worked with architect to design floor plan of new space for the Economics Department; participated in close supervision of renovation contractor (weekly intervals or more frequently); initiated and monitored post-renovation repairs to aging heating and air conditioning system.

Chair, University of Utah Annuities and Salaries Committee (2005–2006). (Wrote several analyses critical of another committee's proposed parental leave policy. Coordinated faculty initiatives on Roth 403(b) implementation, improving Long-Term Care insurance, putting retirement information on Human Resource's web site, and extending the U's Flexible Spending Account year from 12 to 14.5 months. Also worked to make the Administration reveal its relative-to-peer-institutions salaries by rank and Department referred to in my 2003–2004 experience.)

Member, University of Utah Retirement RFP and Selection Committee (2005–2006). (I helped design the RFP to add providers to TIAA-CREF, educating the other Committee members about how to choose investment managers according to the latest research in Finance. This education continued during the screening phase and the firms’ oral presentations, and culminated in adding Vanguard funds to the options available to University of Utah employees, which I am pleased with.)

Chair, University of Utah Annuities and Salaries Committee (2004–2005). (President Young and the Academic Senate back my previous year’s initiative to add e.g. Vanguard to the Utah System of Higher Education’s nonelective and elective retirement plans.)

Member, University of Utah Annuities and Salaries Committee (2003–2004). (I began an initiative to end TIAA-CREF’s monopoly of the nonelective (401(a)) retirement savings of faculty members of all Utah public universities.)

Member, University of Utah Annuities and Salaries Committee (2003–2004). (I began an initiative to end TIAA-CREF’s monopoly of the nonelective (401(a)) retirement savings of faculty members of all Utah public universities. I also reported to the Department secret Administration data recalculated by another Committee member showing full professors in Economics to have the lowest relative-to-peer-institutions salaries of any rank in any department in the entire University of Utah, and showing our assistant and associate professors almost as low.)

Member, University of Utah Faculty Budget and Planning Committee (2003–2004).

Member, University of Utah Graduate Council (1999–2001).

Director of Graduate Studies, Dept. of Economics (1998–2000).

Member, Economics Department Ph.D. committee (1993–present).

Member, Environmental Studies Steering Committee (Daniel McCool, Department of Political Science, chair) (1994–2011).

Member, College of Social and Behavioral Sciences Curriculum Committee (1996–7, 1999–2002, 2008–present).

Economics Department Library Representative (1994–2002).

LESS-RECENT COMMUNITY SERVICE

Member, Site Selection Committee for the Second World Congress of Environmental and Resource Economists (held in late June 2000). Committee Chair: Charles W. Howe, Department of Economics and Program on Environment and Behavior, University of Colorado at Boulder. Fall 1999.

Member, Emissions Trading Scoping Group, Division of Air Quality, Department of Environmental Quality, State of Utah, 1997.

Letter, “Copying Files Safely,” published in “User-to-User,” Neil J. Rubenking, ed., *PC Magazine*, April 14, 1992, p. 365.

CITATIONS BY OTHERS as of 2008

- Jörnsten, Kurt, and Jan Ubøe (no date), “Efficient Statistical Equilibria in Markets.” Working Paper, Norwegian School of Economics and Business Administration, Bergen, Norway. <http://www.nhh.no/for/dp/2005/0205.pdf>
- Gillett, SL (2006), “Entropy and its misuse, I. Energy, free and otherwise,” *Ecological Economics* 56/1: 58–70.
- Ropke, I (2005), “Trends in the development of ecological economics from the late 1980s to the early 2000s,” *Ecological Economics* 55/2: 262–290.
- Fischer, C (2005), “Competition in markets for depletable resources with setup costs,” *Environmental and Resource Economics* 30/3: 243–257.
- Baumgärtner, Stefan (2004), “Thermodynamic Models [Chapter 6, pp. 102–129] and Thermodynamics of Waste Generation [Chapter 2].” In J. Proops and P. Safonov, eds., *Modelling in Ecological Economics*. Cheltenham, UK: Edward Elgar.
- Khalil, EL (2004), “The three laws of thermodynamics and the theory of production,” *Journal of Economic Issues* 38/1: 201–226.
- Ayres, RU (2004), “On the life cycle metaphor: where ecology and economics diverge,” *Ecological Economics* 48/4: 425–438.
- Holland, SP (2003), “Set-up costs and the existence of competitive equilibrium when extraction capacity is limited,” *Journal of Environmental Economics and Management* 46/3: 539–556.
- Ramos-Martín, Jesús (2003), “Empiricism in Ecological Economics: A Perspective from Complex Systems Theory,” *Ecological Economics* 46/3 (October): 387–398.
- Butterfield, DW (2003), “Resource depletion under uncertainty: implications for mine depreciation, Hartwick’s Rule and national accounting,” *Resource and Energy Economics* 25/3: 219–238.
- Zavarce, Harold (2003), “Inconsistencia Fiscal y Shock Petrolero: El caso da la regla Cambiaria.” Serid Documentos de Trabajo, Gerencia de Investigaciones Económicas, Banco Central de Venezuela, number 42. Abril.
- Holland, SP (2003), “Extraction capacity and the optimal order of extraction,” *Journal of Environmental Economics and Management* 45/3: 569–588.
- Ramos-Martín, Jesús (2003), “Empirismo en Economía Ecológica: Una Visión desde la Teoría de los Sistemas Complejos,” *Revista de Economía Crítica* Number 1:75–93.
- Cairns, RD (2002), “Green national income and expenditure,” *Canadian Journal of Economics/Revue Canadienne d’Économique* 35/1: 1–15.
- Baumgärtner, Stefan (2002), “Thermodynamics and the Economics of Absolute Scarcity: Why and how thermodynamics is relevant for ecological, environmental and resource economics.” Presented at the Second World Congress of Environmental and Resource Economists, June 24–27, Monterey, California.
- Ramos-Martín, Jesús, and John Proops (2001), “Empiricism in Ecological Economics: Can There be a Predictive Ecological Econometrics?.” Presented at the EC High Level Scientific Conference, “Frontiers 1: Fundamental Issues of Ecological Economics,” Cambridge, UK, July 4–7.
- Davis, GA (2001), “The credibility of a threat to nationalize,” *Journal of Environmental Economics and Management* 42/2: 119–139.
- Cairns, RD (2001), “Capacity choice and the theory of the mine,” *Environmental and Resource Economics* 18/1: 129–148.
- Cairns, RD (2000), “Accounting for resource depletion: A microeconomic approach,” *Review of Income and Wealth* Issue 1: 21–31.
- Liodakis, George (2000), “Environmental implications of international trade and uneven development: Toward a critique of environmental economics,” *Review of Radical Political Economics* 32/1 (March 2000): 40–79.
- Gowdy, JM, and AF Carbonell (1999), “Toward consilience between biology and economics: the contribution of Ecological Economics,” *Ecological Economics* 29/3: 337–348.
- Rowthorn, B, and G Brown (1999), “When a high discount rate encourages biodiversity,” *International Economic Review* 40/2: 315–332.

- Hartwick, JM, and NV Long (1999), "Constant consumption and the economic depreciation of natural capital: The nonautonomous case," *International Economic Review* 40/1: 53–62.
- Cairns, RD, and GA Davis (1998), "On using current information to value hard-rock mineral properties," *Review of Economics and Statistics* 80/4: 658–663.
- Krautkraemer, JA (1998), "Nonrenewable resource scarcity," *Journal of Economic Literature* 36/4: 2065–2107.
- Smith, JW, and G Sauer-Thompson (1998), "Civilization's wake: Ecology, economics and the roots of environmental destruction and neglect," *Population and Environment* 19/6: 541–575.
- Diaz, A, and TM Harchaoui (1997), "Accounting for exhaustible resources in the Canadian System of National Accounts: Flows, stocks and productivity measures," *Review of Income and Wealth* Issue 4: 465–485.
- Hartwick, JM (1997), "Paying down the environmental debt," *Land Economics* 73/4: 508–515.
- Norton, BG, and MA Toman (1997), "Sustainability: Ecological and economic perspectives," *Land Economics* 73/4: 553–568.
- Sollner, F (1997), "A reexamination of the role of thermodynamics for environmental economics," *Ecological Economics* 22/3: 175–201.
- Ellis, Michael A., and Leonardo Auernheimer (1996), "Stabilization under capital controls," *Journal of International Money and Finance* 15/4 (August):523–533.
- Fisher, Anthony C., and Larry S. Karp (1993), "Nonconvexity, Efficiency and Equilibrium in Exhaustible Resource Depletion," *Environmental and Resource Economics* 3:1 (February): 97–106.
- Norgaard, Richard B. (1992), "Sustainability as intergenerational equity: Economic theory and environmental planning," *Environmental Impact Assessment Review* 12/1-2 (March-June): 85–124.
- Highfill, Jannett, and Michael McAsey (1991), "An Optimal Control Problem in Economics," *International Journal of Mathematics and Mathematical Sciences* 14/3:537–544.
- Khaili, Elias L. (1991), "Entropy law and Nicholas Georgescu-Roegen's paradigm: A reply," *Ecological Economics* 3/2 (July): 161–163.