

VITAE
C. Richard Shumway
February 2020

CURRENT TITLE: Emeritus Regents Professor, School of Economic Sciences
Washington State University, Pullman, WA 99164-6210
(208) 310-3568; Email: shumwaycr@gmail.com

EDUCATION: Ph.D., University of California, Davis
M.S., University of California, Davis
B.S., University of California, Davis

PROFESSIONAL AND ACADEMIC APPOINTMENTS:

Regents Professor, School of Economic Sciences, Washington State University
Chair and Professor, Agricultural & Resource Economics, Washington State University
Professor, Agricultural Economics, Texas A&M University
Assistant Professor, Economics, North Carolina State University
Captain, U.S. Department of Army
Agricultural Economist, U.S. Department of Agriculture

PROFESSIONAL AWARDS AND RECOGNITION:

Fellow, Agricultural and Applied Economics Association
Fellow, Western Agricultural Economics Association
Award for Lifetime Achievement, Southern Agricultural Economics Association
Outstanding Ph.D. Alumni Award, UC Davis Agricultural and Resource Economics
WSU Distinguished Professor of Agricultural and Resource Economics
Award for Publication of Enduring Quality, Agricultural and Applied Economics Association
Quality of Research Discovery Award, Agricultural and Applied Economics Association (twice)
Published Research Award, Western Agricultural Economics Association (4 times)
Faculty Distinguished Achievement Award in Research, Texas A&M University
Excellence in Team Research Award, Texas A&M University System
Excellence in Graduate Teaching Award, TAMU Agricultural Economics Graduate Student Association
USDA CSREES Partnership Award for Innovative Program Models
Editor and Editorial Council, *Journal of Agricultural and Resource Economics*
Associate Editor, *American Journal of Agricultural Economics*
Editorial Board, *Applied Economics*
Elected President, Agricultural and Applied Economics Association
Elected President, Western Agricultural Economics Association
Elected Speaker, Texas A&M University Faculty Senate
Visiting Scholar, Department of Economics, Harvard University

TEACHING AND ACADEMIC ACTIVITIES:

Taught microeconomic theory (intermediate and graduate levels), production and consumption economics (senior and graduate levels), capstone (senior), econometrics (senior and graduate levels), farm management (intermediate level), research methodology (graduate level). Research advisor to 30 Ph.D. and 17 Masters students.

RESEARCH INTERESTS:

Research focuses on the economics of taxation, renewable energy, technical change, and relationships between environmental and international policy and decisions of multiple-product agricultural firms.

PUBLICATION LIST

Number: Journal Articles – 151, total number – 315.

Journal Articles:

- Lee, D. B.W. Cowan, and C.R. Shumway. "Non-Neutral Marginal Innovation Costs, Omitted Variables, and Induced Innovation." *Agricultural and Resource Economics Review* (2020): forthcoming.
- Sabasi, D., C.R. Shumway, and G.M. Astill. "Off-Farm Work and Technical Efficiency on U.S. Dairies." *Agricultural Economics* (2019):1-15, <https://doi.org/10.1111/agec.12497>.
- Sabasi, D. and C.R. Shumway. "Climate Change, Health Care Access, and Regional Influence on Components of U.S Agricultural Productivity." *Applied Economics* 50,57 (2018):6149-6164. <https://doi.org/10.1080/00036846.2018.1489504>.
- Yang, S. and C.R. Shumway. "Asset Fixity under State-Contingent Production Uncertainty." *European Review of Agricultural Economics* 45,5 (2018):831-56. <https://doi.org/10.1093/erae/jby016>.
- Liu, B., C.R. Shumway, and J.K. Yoder. "Lifecycle Economic Analysis of Biofuels: Accounting for Economic Substitution in Policy Assessment." *Energy Economics*, 67 (September 2017):146-58.
- Walters, C.G., C.R. Shumway, and D.R. Huggins. "Impacts of Terrain Attributes on Economics and the Environment: Costs of Reducing Potential Nitrogen Pollution in Wheat Production." *Agricultural Economics*, 48,2 (March 2017):143-52.
- Astill, G.M. and C.R. Shumway. "Profits from Pollutants: Economic Feasibility of Integrated Anaerobic Digester and Nutrient Management Systems." *Journal of Environmental Management* 184,2 (Dec 15, 2016):353-62. <http://dx.doi.org/10.1016/j.jenvman.2016.10.012>.
- Skolrud, T.D., G.I. Galinato, S.P. Galinato, C.R. Shumway, and J.K. Yoder. "The Role of Federal Renewable Fuel Standards and Market Structure on the Growth of the Cellulosic Biofuel Sector." *Energy Economics*, 58 (August 2016):141-51.
- Yang, S. and C.R. Shumway. "Dynamic Adjustment in U.S. Agriculture under Climate Change." *American Journal of Agricultural Economics* 98,3 (April 2016):910-24. <https://doi.org/10.1093/ajae/aav042>
- Shumway, C.R., B.M. Fraumeni, L.E. Fulginiti, J.D. Samuels, and S.E. Stefanou. "U.S. Agricultural Productivity: A Review of USDA Economic Research Service Methods." *Applied Economic Perspectives and Policy* 38,1 (2016):1-29 (senior authorship equally shared).
- Liu, B. and C.R. Shumway. "Substitution Elasticities between GHG Polluting and Nonpolluting Inputs in Agricultural Production: A Meta-Regression." *Energy Economics* 54 (Feb 2016):123-32.
- Shumway, C.R., B.W. Cowan, and D. Lee. "Testing the Induced Innovation Hypothesis: Accounting for Innovation Creation and Innovation Implementation Incentives." *AgBioForum* 18,3 (2015):303-11.
- Cowan, B.W., D. Lee, and C.R. Shumway. "The Induced Innovation Hypothesis and U.S. Public Agricultural Research." *American Journal of Agricultural Economics* 97,3 (April 2015):727-42 (senior authorship equally shared). <https://doi.org/10.1093/ajae/aau090>
- Walters, C.G., C.R. Shumway, H.H. Chouinard, and P.R. Wandschneider. "Asymmetric Information and Profit Taking in Crop Insurance." *Applied Economic Perspectives and Policy* 37,1 (March 2015):107-29.
- Weligamage, P., C.R. Shumway, and K.A. Blatner. "Water Access, Farm Productivity, and Farmer

- Welfare: Sri Lanka's Kirindi Oya Irrigation System." *Agricultural Economics* 45, 5 (September 2014):649-61.
- Skolrud, T.D. and C.R. Shumway. "A Fourier Analysis of the U.S. Dairy Industry." *Applied Economics* 45,14 (2013):1887-95.
- Melhim, A. and C.R. Shumway. "Cost Economies in the Presence of Agricultural Contracts." *Applied Economics*. 45,7 (2013):921-32.
- Zheng, Q. and C.R. Shumway. "Washington Biofuel Feedstock Crop Supply under Output Price and Quantity Uncertainty." *Energy Policy* 48 (September 2012):515-25.
- Walters, C.G., C.R. Shumway, H.H. Chouinard, and P.R. Wandschneider. "Crop Insurance, Land Allocation, and the Environment." *Journal of Agricultural and Resource Economics* 37,2 (August 2012):301-20.
- Melhim, A. and C.R. Shumway. "Enterprise Diversification in U.S. Dairy: Impact of Risk Preferences on Scale and Scope Economics." *Applied Economics* 43,26 (2011):3849-62.
- Liu, Y., C.R. Shumway, R. Rosenman, and V.E. Ball. "Productivity Growth and Convergence in U.S. Agriculture: New Cointegration Panel Data Results." *Applied Economics* 43,1 (2011):91-102.
- Bishop, C.P., C.R. Shumway, and P.R. Wandschneider. "Agent Heterogeneity in Adoption of Anaerobic Digestion Technology: Integrating Economic, Diffusion, and Behavioral Innovation Theories." *Land Economics* 86,3 (August 2010):585-608 (senior authorship equally shared).
- Liu, Y. and C.R. Shumway. "Induced Innovation and Marginal Cost of New Technology." *Economics Letters*. 105,1 (Oct 2009):106-09.
- Bishop, C.P. and C.R. Shumway. "The Economics of Dairy Anaerobic Digestion with Co-Product Marketing." *Applied Economic Perspectives and Policy* 31,3 (Fall 2009):394-410.
- Melhim, A., E.J. O'Donoghue, and C.R. Shumway. "Do the Largest Firms Grow and Diversify the Fastest? The Case of U.S. Dairies." *Applied Economic Perspectives and Policy* 31,2 (Summer 2009):284-302 (senior authorship equally shared).
- Benson, A. and C.R. Shumway. "Environmental Regulation and Innovation Offsets in the Bluegrass Seed Industry" *Review of Agricultural Economics* 31,2 (Summer 2009):231-46.
- Liu, Y. and C.R. Shumway. "Testing Expected Utility Maximization Under Price and Quantity Risk with a Heterogeneous Panel." *Applied Economics* 41,9 (2009):1105-1119.
- Melhim, A. E. O'Donoghue, and C.R. Shumway. "What Does Initial Farm Size Imply about Growth and Diversification?" *Journal of Agricultural and Applied Economics* (April 2009):193-206.
- Skolrud, T.D., E.J. O'Donoghue, C.R. Shumway, and A. Melhim. "Identifying Growth and Diversification in Washington Agriculture." *Choices* 24 (1st Quarter 2009):45-48. Online: <http://www.choicesmagazine.org/magazine/article.php?article=64>.
- Liu, Y. and C.R. Shumway. "Induced Innovation in U.S. Agriculture: Time-series, Econometric, and Nonparametric Tests." *American Journal of Agricultural Economics* 91,1 (Feb 2009):224-36.
- Skolrud, T.D., E. O'Donoghue, C.R. Shumway, and A. Melhim. "Firm Growth, Consolidation, and Diversification: Washington Dairy Industry." *Choices* 22(2nd Quarter 2007):125-28. Online version: <http://www.choicesmagazine.org/2007-2/grabbag/2007-2-07.htm>.
- Raper, K.C., H.A. Love, and C.R. Shumway. "Distinguishing the Source of Market Power." *American*

Journal of Agricultural Economics 89,1 (February 2007):78-90.

Liu, Q. and C.R. Shumway. "Geographic Aggregation and Induced Innovation in American Agriculture." *Applied Economics*, 38,6 (April 2006):671-82.

Liu, Q. and C.R. Shumway. "Testing Aggregation Consistency Across Geography and Commodities." *Australian Journal of Agricultural and Resource Economics* 48,3 (September 2004):463-86.

Baker, D.A., C.R. Shumway, C.T. Gaskins, and A. Linton. "Selecting AI Beef Sires for Maximum Profit." *The Professional Animal Scientist* 20 (August 2004):336-43.

Nkunzimana, S., H.A. Love, and C.R. Shumway. "Mexican Agricultural Trade under The GATT." *Applied Economics* 35,4 (March 2003):449-59.

Williams, G.W., C.R. Shumway, and H.A. Love. "Returns to Soybean Producers from Investments in Promotion and Research." *Agricultural and Resource Economics Review* 31,1 (April 2002): 97-111

Leigh, D.E., R.G. Huffaker, and C.R. Shumway. "A Long Road to Merger of Existing Programs at Washington State University." *American Journal of Agricultural Economics* 84,3 (August 2002): 854-59 (not refereed)

Shumway, C.R. and G.C. Davis. "Does Consistent Aggregation Really Matter?" *Australian Journal of Agricultural and Resource Economics* 45,2 (June 2001):161-94 (senior authorship equally shared).

Love, H.A., J.J. Porras, and C.R. Shumway. "Measuring the Effectiveness of Non-Price Export Promotion Using a Supply-Side Approach." *Empirical Economics* 26:2 (2001):367-89 (senior authorship equally shared)

Shumway, C.R. "Professional Lessons Worth Retelling?" *Journal of Agricultural and Applied Economics*. 33(August 2001):223-26 (not refereed)

Williams, S. P. and C. R. Shumway, "Trade Liberalization and Agricultural Chemical Use: United States and Mexico." *American Journal of Agricultural Economics* 82,2 (February 2000):183-199.

Davis, G. C., N. Lin, and C. R. Shumway. "Aggregation without Separability: Tests of the United States and Mexican Agricultural Production Data." *American Journal of Agricultural Economics* 82,1 (February 2000):214-30.

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Lim, H., C.R. Shumway, and H.A. Love. "Research Contributions from the Soybean Checkoff Program." *Journal of Agricultural and Resource Economics* 25(July 2000):128-146 (senior authorship equally shared)

Lim, H. and C. R. Shumway. "Modeling Mexican Agricultural Production." *Empirical Economics* 24:3 (1999):509-28 (senior authorship equally shared)

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Williams, S. P. and C. R. Shumway. "Aggregation of Data and Profit Maximization in Mexican Agriculture." *Applied Economics* 30,2 (February 1998):235-44.

- Shumway, C. R. "Values, Changing Forces, Choices, and the Profession." *American Journal of Agricultural Economics* 80,5 (December 1998):887-97 (presidential address - not refereed).
- Saha, A., and C. R. Shumway. "Refutable Implications of the Firm Model Under Risk." *Applied Economics* 30,4 (April 1998):441-48.
- Williams, S. P. and C. R. Shumway. "Testing for Behavioral Objective and Aggregation Opportunities in U.S. Agricultural Data." *American Journal of Agricultural Economics* 80,1 (February 1998):195-207.
- Lim, H. and C. R. Shumway. "Technical Change and Model Specification: U. S. Agricultural Production." *American Journal of Agricultural Economics* 79,2 (May 1997):543-54.
- Fernandez-Cornejo, J. and C. R. Shumway. "Research and Productivity in Mexican Agriculture." *American Journal of Agricultural Economics* 79,3 (August 1997):738-53.
- Saha, A., C. R. Shumway, and A. Havenner. "The Economics and Econometrics of Damage Control." *American Journal of Agricultural Economics* 79,3 (August 1997):773-85 (senior authorship equally shared)
- Anderson, D. P., T. Chaisantikulawat, A. T. K. Guan, M. Kebbeh, N. Lin, and C. R. Shumway. "Choice of Functional Form for Agricultural Production Analysis." *Review of Agricultural Economics* 18,2 (May 1996):223-31 (senior authorship equally shared)
- Davis, G. C. and C. R. Shumway. "To Tell the Truth about Interpreting the Morishima Elasticity of Substitution." *Canadian Journal of Agricultural Economics* 44,2 (1996):173-82.
- Asunka, S., and C. R. Shumway. "Allocatable Fixed Inputs and Jointness in Agricultural Production: More Implications." *Agricultural and Resource Economics Review* 25(October 1996):143-48
- Shumway, C. R., E. G. Smith, and J. W. Richardson. "Impact of Target Prices and Payment Limits on the Supply Function." *Review of Agricultural Economics* 17,2 (May 1995): 185-91 (senior authorship equally shared)
- Shumway, C. R. "Recent Duality Contributions in Production Economics." *Journal of Agricultural and Resource Economics* 20,1 (July 1995): 1-17
- Zhu, S., P. N. Ellinger, and C. R. Shumway. "The Choice of Functional Form and Estimation of Banking Inefficiency." *Applied Economics Letters* 2,10 (1995): 375-79
- McIntosh, C. S., and C. R. Shumway. "Evaluating Alternative Price Expectation Models for Multiproduct Supply Analysis." *Agricultural Economics* 10,1 (January 1994): 1-11
- Saha, A., C. R. Shumway, and H. Talpaz. "Joint Estimation of Risk Preference Structure and Technology Using Expo-Power Utility." *American Journal of Agricultural Economics* 76,2 (May 1994): 173-84
- C. R. Shumway, and R. R. Chesser. "Pesticide Tax, Cropping Patterns, and Water Quality in South Central Texas." *Journal of Agricultural and Applied Economics* 26,1 (July 1994): 224-40
- Chamberlain, P. J., and C. R. Shumway. "Benefits of Reducing Nutrient Variation in Fertilizer Mixes." *Journal of Agribusiness* 12,2 (Fall 1994): 95-110
- Ornelas, F.S., C. R. Shumway, and T. Ozuna. "Using the Quadratic Box-Cox for Flexible Functional Form Selection and Unconditional Variance Computation." *Empirical Economics* 19,4 (1994): 639-45

- Love, H. A., and C. R. Shumway. "Nonparametric Tests for Monopsonistic Market Power Exertion." *American Journal of Agricultural Economics* 76,5 (December 1994): 1156-62 (invited paper - not refereed)
- Ornelas, F.S., and C. R. Shumway. "Supply Response and Impact of Government-Supported Crops on the Texas Vegetable Industry." *Agricultural and Resource Economics Review* 22,1 (April 1993): 27-36
- Lim, H., C. R. Shumway, and T. J. Honeycutt. "Disaggregated Output Supply and Pesticide Policy." *Review of Agricultural Economics* 15,2 (May 1993): 233-54
- Shumway, C. R. "Production Economics: Worthwhile Investment?" *Agricultural Economics* 9,2 (August 1993): 89-108
- Shumway, C. R., and H. Lim. "Functional Form and U.S. Agricultural Production Elasticities." *Journal of Agricultural and Resource Economics* 18,2 (December 1993): 266-76
- Ornelas, F.S., and C. R. Shumway. "Multidimensional Evaluation of Flexible Functional Forms for Production Analysis." *Journal of Agricultural and Applied Economics* 25,2 (December 1993): 106-18
- Lim, H., and C. R. Shumway. "Separability in State-Level Agricultural Technology." *American Journal of Agricultural Economics* 74,1 (February 1992): 120-31
- Howard, W. H., R. W. Blake, T. O. Knight, C. R. Shumway, and M. A. Tomaszewski. "Estimating the Effectiveness of Extension Information Systems Using Farm Trials and Subjective Probabilities." *Agricultural Economics* 7,1 (June 1992):77-90
- Villezca, P. A., and C. R. Shumway. "Multiple-Output Production Modeled with Three Functional Forms." *Journal of Agricultural and Resource Economics* 17,1 (July 1992): 13-28
- Villezca, P. A., and C. R. Shumway. "State-Level Output Supply and Input Demand Elasticities for Agricultural Commodities." *Journal of Agricultural Economics Research* 44,1 (1992):22-34
- Lim, H., and C. R. Shumway. "Profit Maximization, Returns to Scale, and Measurement Error." *Review of Economics and Statistics* 74(August 1992): 430-38
- Fawson, C., and C. R. Shumway. "Endogenous Regional Agricultural Production Technologies." *Applied Economics* 24,11 (November 1992): 1263-73
- Polson, R. A., and C. R. Shumway. "Production Relationships in South Central Agriculture." *Southern Journal of Agricultural Economics* 24,2 (December 1992): 121-36 (senior authorship equally shared)
- Young, K. D., and C. R. Shumway. "Cow-Calf Producers' Perceived Profit Maximization Objective: A Logit Analysis." *Southern Journal of Agricultural Economics* 23,1 (July 1991):129-36
- Shumway, C. R., and P. E. Gottret. "Numeraire Choice in Normalized Quadratic Functional Forms." *Applied Economics* 23,10 (October 1991):1597-1602
- McIntosh, C. S., and C. R. Shumway. "Multiproduct Production Choices and Policy Response." *Western Journal of Agricultural Economics* 16,1 (December 1991):291-303
- Jegasothy, K., C. R. Shumway, and H. Lim. "Production Technology and Input Allocations in Sri Lankan Multicrop Farming." *Journal of Agricultural Economics* 41,1 (January 1990):33-46

- Fawson, C., C. R. Shumway, and R. L. Basmann. "Agricultural Production Technologies with Systematic and Stochastic Technical Change." *American Journal of Agricultural Economics* 72,1 (February 1990):182-99
- Young, K. D., C. R. Shumway, and H. L. Goodwin. "Profit Maximization -- Does It Matter?" *Agribusiness* 6,3 (May 1990):237-53.
- Shumway, C. R., W. P. Alexander, and H. Talpaz. "Texas Field Crops: Estimation with Curvature." *Western Journal of Agricultural Economics* 15,1 (July 1990):45-54
- Polson, R. A., and C. R. Shumway. "Structure of South Central Agricultural Production." *Southern Journal of Agricultural Economics* 22,2 (December 1990):153-63
- Shumway, C. R. "Testing Structure and Behavior with First and Second-Order Taylor Series Expansions." *Canadian Journal of Agricultural Economics* 37,1 (March 1989):95-109
- Howard, W. H., and C. R. Shumway. "Nonrobustness of Dynamic Dual Models of the U.S. Dairy Industry." *Northeastern Journal of Agricultural and Resource Economics* 18,1 (April 1989):18-25
- Talpaz, H., W. P. Alexander, and C. R. Shumway. "Estimation of Systems of Equations Subject to Curvature Constraints." *Journal of Statistical Computation and Simulation* 32,4 (July 1989):201-14
- Howard, W. H., and C. R. Shumway. "Technical Change and Applications of Dynamic Duality to Agriculture: Reply." *American Journal of Agricultural Economics* 71,3 (August 1989):805 (not refereed)
- Krafka, B. D. L., C. R. Shumway, and D. W. Reed. "Space Allocation in Ornamental Foliage Greenhouses." *Journal of Environmental Horticulture* 7 (September 1989):95-98
- Shumway, C. R., and W. P. Alexander. "Agricultural Product Supplies and Input Demands: Regional Comparisons." *American Journal of Agricultural Economics* 70,1 (February 1988):153-61
- Fawson, C., and C. R. Shumway. "A Nonparametric Investigation of Agricultural Production Behavior for U.S. Subregions." *American Journal of Agricultural Economics* 70,2 (May 1988):311-17
- Shumway, C. R., R. R. Saez, and P. E. Gottret. "Multiproduct Supply and Input Demand in U.S. Agriculture." *American Journal of Agricultural Economics* 70,2 (May 1988):330-37
- Blake, R. W., C. R. Shumway, G. P. Rickard, M. A. Tomaszewski, and J. M. LaBore. "Profit-Maximizing Dairy Sire Selection Package." *Southern Journal of Agricultural Economics* 20,1 (July 1988):141-44.
- Shumway, C. R. "Estimation of Multicrop Production Functions: Comment." *American Journal of Agricultural Economics* 70,3 (August 1988):729-32
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- Shumway, C. R., R. D. Pope, and E. K. Nash. "Allocatable Fixed Inputs and Jointness in Agricultural Production: Implications for Economic Modeling: Reply." *American Journal of Agricultural Economics* 70,4 (November 1988): 950-52 (not refereed)
- Holmann, F. J., R. W. Blake, and C. R. Shumway. "Economic Evaluation of Fourteen Methods of Estrous Detection." *Journal of Dairy Science* 70,1 (January 1987):186-94

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- Blake, R. W., C. R. Shumway, and R. T. McMahon. "Opportunity Cost of Type Score for Alternative Milk-to-Type Holstein Sire Selection Policies." *Journal of Dairy Science* 70,6 (June 1987):1267-73
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- Shumway, C. R. "Subjectivity in Ex Ante Research Evaluation." *American Journal of Agricultural Economics* 63,1 (February 1981):169-73
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Shumway, C. R. "Lessons Relevant for Profession Now and in Future." Organized symposium paper presented by new lifetime achievement award recipients at the Southern Agricultural Economics Association meetings, Fort Worth, TX, January 2001

Shumway, C. R. and G. C. Davis. "Does Consistent Aggregation Really Matter?" Alan Lloyd Fellow paper presented at the Australian Agricultural and Resource Economics Society meetings, Sydney, Australia, January 2000

Shumway, C. R. "Values, Changing Forces, Choices, and the Profession." Presidential address presented at the American Agricultural Economics Association meetings, Salt Lake City, UT, August 1998

Shumway, C. R. "Production Duals on Review." Presented at the American and Western Agricultural Economics Association meetings, San Diego, CA, August 1994. Abstract: *Journal of Agricultural and Resource Economics* 19(December 1994):446

Love, H. A., and C. R. Shumway. "Nonparametric Tests for Monopsonistic Market Power Exertion." Presented at the American and Western Agricultural Economics Association meetings, San Diego, CA, August 1994

Shumway, C. R. "Production Economics -- Worthwhile Investment?" Presented at the American and Western Agricultural Economics Association meetings, Vancouver, BC, August 1990

Shumway, C. R. "Output, Input, and Productivity Measurement in U. S. Agriculture, 1948-79: Comment." Presented at the Economic Research Service - IR6 Conference on Agricultural Productivity, Washington, D.C., March 1988.

Shumway, C. R. "Supply Relationships in the South -- What Have We Learned?" Presented at the Southern Agricultural Economics Association meetings, Orlando, FL, February 1986

Shumway, C. R. "Statistical Base for Agricultural Productivity Research: Review and Critique." Presented at the Resources for the Future Workshop on Agricultural Productivity, Washington, DC, July 1984

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Karp, L. S. and C. R. Shumway. "Issues and Methods in Estimating Adjustment Costs." Presented at the Northeastern and American Agricultural Economics Association meetings, Ithaca, NY, August 1984

Shumway, C. R. "Discussion: Testing Productivity Models for Canadian and U.S. Agriculture Sectors." Presented at the American Economic Association meetings, Dallas, TX, December 1984

Shumway, C. R. "Subjectivity in *Ex Ante* Research Evaluation." Presented at the Symposium on Methodology for Evaluation of Agricultural Research, Minneapolis, MN, May 1980

- Ospina, E. and C. R. Shumway. "Impact of Corn Price on Beef Product Mix and Prices." Presented at the Western Agricultural Economics Association meetings, Las Cruces, NM, July 1980
- Shumway, C. R. "Survey of Promising Developments in Supply Response Measurement: Some Further Thoughts." Presented at the Symposium on New Directions in Econometric Modeling and Forecasting in U.S. Agriculture, Washington, DC, June 1979
- Shumway, C. R. "Use of Models for Economic Interpretations." Presented at Texas Forage Work Group meetings, Overton, TX, November 1978
- Shumway, C. R. "Discussion: Managing Teaching, Research and Extension Programs During the Next Decade." Presented at the Southern Agricultural Economics Association meetings, Mobile, AL, February 1976
- Shumway, C. R. "Models and Methods Used to Allocate Resources in Agricultural Research: A Critical Review." For the Conference on Resource Allocation and Productivity in International Agricultural Research, Airlie House, VA, January 1975
- Shumway, C. R. "Cooperative Farm Management Research and Extension -- The Joint Appointment Approach." Presented at the Southern Farm Management Research and Extension Committee meetings, Houston, TX, April 1974
- Maher, P. M., W. E. Souder, N. R. Baker, C. R. Shumway, and A. H. Rubenstein. "Quantitative Decision Models: A Longitudinal Study on a Process of Adoption." Presented at the Academy of Management meetings, Boston, MA, September 1973
- Souder, W. E., P. M. Maher, N. R. Baker, C. R. Shumway, and A. H. Rubenstein. "An Organization Intervention Approach to Implementing R&D Project Selection Models." Presented at the Research Conference on Implementation of OR/MS Models: Theory, Research and Application, Graduate School of Business, University of Pittsburgh, PA, November 1973
- Baker, N. R., C. R. Shumway, W. E. Souder, P. M. Maher, and A. H. Rubenstein. "An Interactive Model for Budget Allocations." Presented at the American Educational Research Association meetings, Columbus, OH, November 1972
- Baker, N. R., C. R. Shumway, P. M. Maher and W. E. Souder. "An R&D Project Selection and Budget Allocation Model for Large, Decentralized Research Organizations." Presented at the 12th American Meeting of the Institute of Management Science, Detroit, MI, October 1971

Selected Papers:

- Sabasi, D. and C.R. Shumway. "Climate Change, Health Care Access, and Regional Influence on Components of U.S. Agricultural Productivity." Presented at NC1034 Regional Research Conference, Tampa, FL, February 2016.
- Shumway, C.R., S.E. Stefanou, J.M. MacDonald, and V.E. Ball. "Measurement of US Agricultural Productivity: What Follows the External Review?" Organized Symposium presentations at the Agricultural and Applied Economics Association meetings, San Francisco, CA, July 2015.
- Yang, S. and C.R. Shumway. "Asset Fixity under State-Contingent Production Uncertainty." Presented at the Agricultural and Applied Economics Association meetings, San Francisco, CA, July 2015.
- Sabasi, D. and C.R. Shumway. "Technical Change, Efficiency, and Total Factor Productivity Growth in U.S. Agriculture." Presented at the Agricultural and Applied Economics Association meetings, Minneapolis, MN, July 2014.
- Yang, S. and C.R. Shumway. "Dynamic Adjustment in U.S. Agriculture under Climate Uncertainty."

Presented at the Agricultural and Applied Economics Association meetings, Minneapolis, MN, July 2014.

Skolrud, T.D., G.I. Galinato, S.P. Galinato, C.R. Shumway, and J.K. Yoder. "The Role of Market Structure and Federal Renewable Fuel Standards in the Growth of the Cellulosic Biofuel Sector." Presented at the Western Agricultural Economics Association meetings, Colorado Springs, CO, June 2014.

Weligamage, P., W.R. Butcher, K.A Blatner, C.R. Shumway, and M. Giordano. "Non-User Benefits Emanating from Enhanced Water Flow to Yala Protected Area Complex." Presented at the International Water Management Institute Conference, Colombo, Sri Lanka, June 2009. Paper: http://www.iwmi.cgiar.org/Publications/Other/PDF/SLWC_Volume-2-Latest.pdf.

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Walters, C.G., C.R. Shumway, H.H. Chouinard, and P.R. Wandschneider. "The Effects of Asymmetric Information from the Use of Transitional yields in Crop Insurance." Presented at the American Agricultural Economics Association meetings, Portland, OR, July 2007. Paper: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=26455&ftype=.pdf

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Liu, Y. and C.R. Shumway. "Induced Innovation and Marginal Cost of New Technology." Presented at the NC-1034 Impact Analysis and Decision Strategies for Agricultural Research Conference, Berkeley, CA, March 2007.

Liu, Y. and C.R. Shumway. "Induced Innovation in the Agricultural Sector: Evidence from a State Panel." Presented at the American Agricultural Economics Association meetings, Long Beach, CA, July 2006. Paper: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=21450&ftype=.pdf

Liu, Y. and C.R. Shumway. "Empirical Tests of the Refutable Implications of Expected Utility Maximization under Risk." Presented at the American Agricultural Economics Association meetings, Providence, RI, July 2005. Paper: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=16677&ftype=.pdf

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- Shumway, C.R. "Implementation Issues – Graduate-Level Distance Education in Agricultural and Resource Economics for Middle- and Low-Income Economies." Presented in Organized Symposium at the American Agricultural Economics Association meetings, Long Beach, CA, July 2002
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- Saha, A. and C.R. Shumway. "Refutable Implications of the Firm Model Under Risk." Presented at the Western Agricultural Economics Association meetings, Rapid City, SD, July 1995. Abstract: *Journal of Agricultural and Resource Economics* 20(December 1995):403.
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Hwang, J. D. and C. R. Shumway. "Decision Risk Analysis for Research and Development." Presented at the U.S. Army Operations Research Symposium, Durham, NC, May 1972.

Selected Posters:

Lee, D., C.R. Shumway, and B.W. Cowan. "Non-Neutral Marginal Research Costs and the Induced Innovation Hypothesis." Presented at the Agricultural and Applied Economics Association meetings, San Francisco, CA, July 2015.

Melhim, A., C.R. Shumway, and V.A. McCracken. "Cost Economies under Risk Aversion with Price and Production Uncertainties: The Case of U.S. Dairy." Presented at the American Agricultural Economics Association meetings, Milwaukee, WI, July 2009.

Zheng, Q. and C.R. Shumway. "US Biofuel Feedstock Supply Under Output Price and Quantity Uncertainty." Presented at the American Agricultural Economics Association meetings, Milwaukee, WI, July 2009.

SUPPLEMENTARY VITA MATERIAL:

Courses Taught:

Production and Consumption Economics (graduate level), 2012-present
Economics Capstone (senior level), 2012-present
Microeconomic Analysis II (graduate level), 2011-2014
Microeconomic Theory (intermediate level), 1972, 2007-2009
Applied Statistical Methods in Agricultural Economics (senior-graduate level), 2004, 2005, 2007
Introduction to Farm and Ranch Management, 2003-2006
Economic Theory V (graduate level, team taught), 2004
Econometrics II (graduate level), 1999-2001
Production and Consumption Economics (graduate level, team taught), 1997
Quantitative Techniques for Decision Making in Agriculture (graduate level), 1996, 1997
Production Economics II (graduate level), 1975-1996 (team taught 1975-1981)
Production Economics I (graduate level, team taught), 1994
Neoclassical theory short course (graduate level, team taught), 1993
Research Methodology (graduate level), 1974-1979, 1987, 1991
Economics of Agribusiness (senior level, team taught), 1989-1991
Applied Econometric Methods in Agriculture (graduate level, team taught), 1984-1986
Production Economics (senior level), 1980-1985
Graduate Seminar, 1976

External Grants:

United Nations, International Fund for Agricultural Development, "Impact Evaluation of the Sri Lanka Dry Zone Livelihood Support and Partnership Programme." 2013. PI: C. R. Shumway.

U.S. Department of Agriculture, ERS, "Review of the ERS Agricultural Productivity Measurement Program." 2013-14. PI: C. R. Shumway.

U.S. Department of Agriculture, NIFA, "Effectiveness of a Pacific Northwest Revenue-Neutral Carbon Tax in the Context of the Federal Biofuel Policy." 2012-15. PI: G.I. Galinato, Co-PIs: S.P. Galinato, C.R. Shumway, J.K. Yoder.

U.S. Department of Agriculture, NIFA, "US Dairy Adoption Of Anaerobic Digestion Systems Integrating Multiple Emerging Clean Technologies: Climate, Environmental, and Economic Impacts." 2012-15. PI: C.S. Frear, Co-PIs: M. Garcia-Perez, H. Collins, C.O. Stockle, C.R. Shumway, C.E. Kruger

U.S. Department of Agriculture, ERS, "NORC Data Enclave Access to Study What Drives Conversion from Conventional to Organic Agriculture", 2012-14, PI: C.R. Shumway

Washington Department of Natural Resources, "Analysis of Farmland Cash Rental Rates in Washington State." 2012-13. PI: M. Brady, C.R. Shumway

U.S. Department of Agriculture, ERS, "Pilot Project to Study a Data Enclave in ARMS." 2007-09, PI: C.R. Shumway.

U.S. Department of Agriculture, CSREES, "Alternative Nitrogen Sources For Grass Seed Production In the Post-Ammonium Nitrate Era." 2006-08. PI: R. Koenig.

U.S. Department of Agriculture, NRCS, "High Quality Fiber and Fertilizer as Co-Products from Anaerobic Digestion", 2004-07, PI: S. Chen, Co-PIs: C. MacConnell, J. Harrison, C.R. Shumway.

Farming and the Environment Foundation, "Kellogg Farming and Environment Policy Forum," 2003-2006, Leader: T.I. Wahl.

Farm Foundation, "Implementation of Distance Delivery of Graduate Education in Agricultural Economics." 2002, PI: C.R. Shumway.

Farm Foundation, "Feasibility Study for Distance Delivery of Graduate Education in Agricultural Economics for Developing and Transitional Economies." 2001, PI: C.R. Shumway.

Farm Foundation and AAEA Foundation, "Exploring the Feasibility of Distance Delivery of Graduate Education in Agricultural Economics: An Initial Step." 2000, PI: C.R. Shumway.

Cooperative State Research, Education, and Extension Service, National Research Initiative Competitive Grants Program. "Imperfectly Competitive Trade in Forest Products." 1997-99, PIs: H.A. Love, D.M. Burton, C.R. Shumway.

Grain Inspection, Packers and Stockyards Administration, "Empirical Measurement of Monopsony Market Power Exertion in the Beef Packing Industry." 1997-98, PI: H.A. Love, Co-PIs: C.R. Shumway, D.M. Burton.

United Soybean Board, "Return on Investment in Soybean Research and Market Development," 1996-97, PI: G.W. Williams, Co-PIs: C.R. Shumway, H.A. Love.

Economic Research Service, "Supply Response, Factor Productivity, Environmental and Food Safety Implications of NAFTA," 1992-97, PI: C.R. Shumway.

Economic Research Service, "An Evaluation of the Impact of Agricultural Policy on the Environment and on Resource Use." 1991-93, PI: C.R. Shumway.

Economic Research Service, "The Influence of Agricultural Programs on Regional Input Demand and Output Supply Relationships." 1988-91, PI: C.R. Shumway.

Texas Agricultural Analytical Service, "Costs and Benefits of Reducing Investigational Allowance of Fertilizer." 1987, PI: C.R. Shumway.

Economic Research Service, "Estimation of Agricultural Production, Intercommodity Supply and Input Demand Relationships." 1983-86, PI: C.R. Shumway.

Center for Education and Research in Free Enterprise, "Intercommodity Supply Effects in Agriculture." 1981, PI: C.R. Shumway.

United States-Israel Agricultural Research and Development Fund, "Multi-Product Agricultural Supply Response Estimation in Israel and the United States." 1979-82, PI: C.R. Shumway.

Farm Foundation, "Multiproduct Supply Response Workshop," College Station, Texas, March 1979, PI: C.R. Shumway.

Cooperative State Research Service, National Research Initiative Competitive Grants Program. "Biological Efficiency and Economic Viability of Forage-Beef Cattle Production Systems," 1976-79, PI: T.C. Cartwright.

Total number - 22

Value - \$2.4M

External Program Reviews:

Department of Agribusiness, California State Polytechnic University, San Luis Obispo, 2006.

Department of Economics, Brigham Young University, Provo, UT, 2000.

Department of Agricultural Economics and Agribusiness, Louisiana State University, Baton Rouge, LA, June 1995.

Departments of Agricultural Economics and Agricultural Education and School of Home Economics, University of Nevada, Reno, NV, March 1987.

Department of Agricultural and Resource Economics, University of Maryland, College Park, MD, June 1987.

Consulting:

Consultant to Academy for Educational Development, Arnold & Porter*, Battelle Laboratories, Churchill Leonard*, Cicero Group, City of Brady TX*, Education Direction, Fain Sheldon Anderson & VanDerhoef*, F.M. Henderson Associates, Gordon Murray Tilden*, Hagens Berman*, Holland & Hart*, Howrey Simon Arnold & White*, International Institute for Tropical Agriculture, International Maize and Wheat Research Center, Karr Tuttle & Campbell*, Mississippi State Legislature, National Academy of Sciences, Northwestern University, Progrexion, United Brands Co.*, U.S. Department of Agriculture, U.S. Forest Service, U.S. General Accounting Office. Organizations noted with an asterisk involved work related to litigation.

International Experience:

Kenya, NAAEA distance education advisor (2001)

Australia, Australian Agricultural and Resource Economics Society – Alan Lloyd Fellow (2000)

Sri Lanka, USAID short-term economic advisor (1983)

Israel, BARD research collaboration (1982)

Invited Lectures:

Agricultural Research Service
Brigham Young University
Cooperative State Research Service
Economic Research Service (4)
Kansas State University
Michigan State University

Texas Agricultural Experiment Station
Texas Agricultural Analytical Service
University of California, Davis (3)
University of Connecticut
University of Georgia (2)
University of Maine

North Carolina State University (2)
 Ohio State University
 Oklahoma State University
 Oregon State University
 Prairie View A&M
 Rutgers University
 Southern Connecticut State College
 Agriculture New South Wales, AUST
 Prosser Research & Extension Center

University of Maryland (2)
 University of Massachusetts
 University of Missouri
 University of Nebraska (2)
 University of New Hampshire
 University of Peradeniya, Sri Lanka
 Washington State University
 University of New England, AUST

Students Directed:

Daegoon Lee (co-chair)	PhD	2017
Darlington Sabasi	PhD	2016
Gregory Astill	PhD	2016
Tristan Skolrud (co-chair)	PhD	2015
Sansi Yang	PhD	2015
Boying Liu (co-chair)	PhD	2015
Almuhanad Melhim	PhD	2009
Tristan Skolrud	MA	2009
Cory Walters	PhD	2008
Clark Bishop	MA	2007
Yucan Liu	PhD	2007
Qinghua Liu	PhD	2003
Dustin Baker (co-chair)	MA	2002
Ni Lin	PhD	1998
Salvator Nkuzimana (co-chair)	PhD	1998
Shon P. Williams	PhD	1997
Janice Stroud (co-chair)	PhD	1996
Juan J. Porras (co-chair)	MS	1995
Rayanne R. Chesser	MS	1992
Pedro A. Villezca	PhD	1991
Fermin Ornelas	PhD	1991
Hemamali Dharmaratne	MS	1990
Hong I. Lim	PhD	1989
Rudolph A. Polson	PhD	1989
Katherine D. Young	PhD	1989
Wayne H. Howard	PhD	1987
Jane C. Hopkins (co-chair)	PhD	1987
Christopher S. McIntosh	PhD	1987
Brenda L. Krafka	MS	1986
Kandiah Jegasothy	PhD	1985
Kun H. John	MS	1985
Roberto R. Saez (co-chair)	PhD	1983
Marsha L. Wilcox	MS	1983
Federico J. Holmann	MS	1983
Agus Muljadi	MS	1983
William O. Ajayi	MS	1983
Jose G. Puerto	MAgr	1982
Elizabeth K. Nash (co-chair)	MS	1981
Alberto Reyes	MS	1980
Ernest Bentley	PhD	1979
Randall A. Merrell	MAgr	1979
Aditi Angirasa	PhD	1979
Enrique Ospina	PhD	1978
Robert C. Green	PhD	1978
Anne A. Chang	PhD	1978

Tesfaye Gebremeskel	PhD	1977
Ernest Bentley	ME	1974

Listed in:

Who's Who in America (2008, 2014)
 Who's Who in American Education (2007-08, 1995)
 Biltmore Who's Who Executive and professional Registry, 2007
 AcademicKeys Who's Who in Agriculture Higher Education, 2006
 Empire Who's Who Among Executives and Professionals in Education, 2006/2007
 Who's Who Among America's Teachers, 2002, 2005/2006
 Ricafimento International (1999)
 Outstanding People of the 20th Century (1999)
 Dictionary of International Biography (1998, 2000)
 Five Hundred Leaders of Influence (1997)
 Who's Who in the South and Southwest (1994, 1997)
 International Directory of Distinguished Leadership (1991, 1997, 1998)
 Men of Achievement (1996)
 Who's Who in the World (1996)
 Personalities of America (1990)
 The Most Prominent Educators of Texas (1983)
 Personalities of the South (1975-76)
 American Men and Women of Science, Social & Behavioral Sciences (12th edition)
 Outstanding Young Men of America (1972)

Awards Received by Student Advisees:

Juan J. Porras, AAEA Masters Thesis Award - Honorable Mention, 1996
 Rudolph A. Polson, Southwest Economic Association Outstanding Graduate Student Paper Award, 1989
 Elizabeth K. Nash, AAEA Masters Thesis Award - Honorable Mention, 1982
 Elizabeth K. Nash, WAEA Masters Thesis Award - Honorable Mention, 1982
 Elizabeth K. Nash, TAMU Outstanding Graduate Student Award, 1981

Faculty Senate:

Elected member, Texas A&M University Faculty Senate, 1984-90, 1995-98
 Chair, Bylaws Committee, 1996-97
 Chair, Core Curriculum Oversight Subcommittee, 1988-89
 Elected Speaker, 1987-88
 Elected Secretary-Treasurer, 1986-87
 Chair, Personnel and Welfare Committee, 1985-86