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1996

1996 AAEA SELECTED PAPERS :

ABSTRACTS

San Antonio, Texas

July 28 - 31, 1996

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Prepared by

**1996 AAEA Selected Papers Committee
Gary Thompson and Satheesh Aradhyula,
Co-Chairs**

Agricultural Economics, Aspicold #4

July, 1996

Dear AAEA Members,

This is the second year the abstracts of the AAEA Selected Papers are available during the meetings. In April this year for the first time, abstracts of the Selected Papers were placed on our Web Site at <http://ag.arizona.edu/AREC/AAEA/FinalAAEA.html>. We hope this printed version of the abstracts complements the listing you may have found on the Web.

The Web Site listing and this booklet were made possible with the combined efforts of President Vernon Eidman, the AAEA Board, the authors of the Selected Papers, members of the Selected Papers committee, the 187 individuals who reviewed the papers and The University of Arizona.

Gary Thompson and Satheesh Aradhyula, Co-Chairs
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MONDAY, JULY 29, 1996
10:15 - 12:00 Noon
SELECTED PAPERS

SP-2A EFFICIENCY AND EQUITY IN SOLID WASTE MANAGEMENT

Moderator: Laura Osborne, Georgia State University

"Cherry Pickers and Sore Losers: The Economics of Solid Waste Flow Control." Mitch Renkow, North Carolina State University; Andrew G. Keeler, University of Georgia.

The flow control controversy centers on the ability of private firms to handle the cheapest portion of a jurisdiction's solid waste while public entities must serve the entire community. We demonstrate that competition between private firms greatly limits the size of rents that can be captured from such "cherry-picking."

"The Economic Potential for Incorporating Composting into a Regional Waste Management System." George K. Criner, Alan S. Kezis, and Gregory K. White, University of Maine; John P. O'Connor, Washington State University, Ph.D. Student.

A mixed integer linear programming model was developed which minimized waste management costs allowing for regional composting of organics. Based on the analysis, composting enters the least cost waste management system at waste tipping fees of \$75 to \$115 per ton depending upon assumptions made regarding organic collection cost estimates.

"A Hedonic Model of Environmental Equity." Diane Hite, Ohio State University.

Past attempts to uncover evidence that economically disadvantaged groups are unjustly exposed to environmental disamenities have failed to take into account the effects of sorting in real estate markets. Thus, a hedonic pricing model is used to test for systematic bias in real estate markets where environmental disamenities exist.

SP-2B PRICE ANALYSIS IN CATTLE MARKETS

Moderator: Douglas Miller, Iowa State University

"Impacts of Alternative Marketing Methods on the Level and Variability of Transaction Prices within the Fed Cattle Market: An Experimental Simulation Approach." Tracy L. Dowty, Clement E. Ward, Stephen R. Koontz, Derrell S. Peel and James N. Trapp, Oklahoma State University.

Level and variability impacts of alternative marketing methods on fed cattle transaction prices were examined through experimental simulation. Transaction price models were estimated to derive statistical inferences about the relationship between alternative marketing methods and market transaction prices. Results indicate that transaction prices are significantly impacted by alternative marketing methods.

"An Experimental Economics Approach to Analyzing Price Discovery in Forward and Spot Markets: Implications for the Cattle Industry." Joseph L. Krogmeier, Dale J. Menkhaus, Owen R. Phillips and John D. Schmitz, University of Wyoming.

Laboratory experimental methods are used to further the understanding of basic price discovery behavior in both forward and spot markets. Prices converged to a higher behavioral equilibrium under the spot market treatment relative to the forward market treatment. Implications, both for the cattle market and future research, are discussed.

"Determinants of Beef Bull Price Differentials in Kansas." Kevin C. Dhuyvetter, Ted C. Schroeder and Danny D. Simms, Kansas State University.

Bulls represent an important investment for beef cattle producers. Heritable traits determine bull prices. This study estimates market values associated with bull attributes, EPDs, and sale marketing efforts. Price determinants include bull breed, confirmation, muscling, age, birth weight, weaning weight, EPDs, sale order, and pictures in the sales catalog.

SP-2C PRODUCTION TECHNOLOGY AND TECHNOLOGY ADOPTION

Moderator: Eldon Ball, USDA

"From Red to White Meat: The Role of Technology." Lilyan Fulginitti, Iowa State University.

This paper hypothesizes that innovation in white meats explains the decrease in relative prices that has induced consumption changes. Estimates from an input requirement function indicate that technical change has been biased towards poultry production, pointing to changes in supply structure dominating changes in demand structure as a potential explanation.

"Drip Irrigation Technology Adoption in the Florida Tomato Industry: A Double-Hurdle Approach." C. Franklin Casey, University of Florida; William G. Boggess, Oregon State University; Gary D. Lynne, University of Nebraska; Ronald W. Ward, University of Florida.

A double-hurdle model is applied to drip irrigation adoption in the Florida tomato industry. Findings are compared to OLS estimates. The double-hurdle model distinguishes between factors influencing the initial discrete adoption decision from those affecting the intensity of adoption, resulting in better information on which to base policies and programs.

*Abstracts in excess of 50 words were truncated at 50 words.

"Industry Integration Due to Technological Asymmetry and Market Imperfections: An Alternative Explanation Based on Bargaining Theory." Siddhartha Mitra, Sinaia Netanyahu and Richard E. Just, University of Maryland.

This paper shows that horizontal industry integration can arise from transferable asymmetry in technologies and endowments. Vertical industry integration potential follows from market imperfections and concentration. These conditions fit the broiler industry well and offer an explanation in sharp contrast to the usual explanation based on pooling price risk.

"Beef, Pork, Chicken, and Turkey Slaughter Costs: Plant Size and Output Quality Effects, 1963-92." Micheal Ollinger, James MacDonald, Ken Nelson and Chuck Handy, ERS/USDA.

Using plant level data and a translog cost function, the effects of plant size and output quality on beef, pork, chicken, and turkey slaughter costs are analyzed for the 1963-92 period. Results suggest that plant size and output quality (value of output) affect slaughter plant costs.

SP-2D AGGREGATION AND ENDOGENEITY TESTING IN DEMAND ANALYSIS

Moderator: Barry Goodwin, North Carolina State University

"Product Aggregation Bias as a Specification Error in Demand Systems." George C. Davis, Texas A&M University.

Inherent in all demand studies is some form of product aggregation which can lead to product aggregation bias. This article demonstrates a simple procedure for testing product

aggregation bias with a standard likelihood ratio test. An empirical illustration of the procedure is provided.

"Separability in the Inverse Demand System." Mark Brown and Jonq-Ying Lee, Florida Department of Citrus.

A conditional Rotterdam inverse demand system (RIDS) was derived using the weakly separable indirect utility function. Uniform substitute hypothesis was examined in the context of the conditional RIDS. The models examined are applied to data on demand for four types of Florida fresh grapefruit.

"Endogeneity Testing in Turkey Meat Demand." Laura L. Martin, Michigan State University; A. Blake Brown, North Carolina State University.

The Wu-Hausman endogeneity test is used to examine demand specifications for turkey meat. In contrast to general poultry, quantity, not price, is found to be predetermined in demand models that use annual turkey data. Seasonal consumption and long production cycles for turkeys, relative to broilers, may account for this result.

SP-2E POLICIES AND CONTRACTS TO REDUCE NONPOINT SOURCE WATER POLLUTION

Moderator: Gregory Poe, Cornell University

"Lower Partial Moments Safety-First and Water Quality Policies in the Southern High Plains." John A. Lehr and Harry P. Mapp, Oklahoma State University.

A farm level model of lower partial moments safety-first income risk and environmental indexes are used to compare the relative farm level economic and environmental outcomes of groundwater protection policies. The environmental results imply that the effectiveness of policies under safety-first rules may not always be directly discernible.

"Policy Measures to Induce Split Fertilization in Grain Production." Eirik Romstad and Per Kristian Rorstad, Agricultural University of Norway.

Pollution from nature based productions - like agriculture - also depends upon the weather. This paper investigates policies to induce split fertilization. It is demonstrated that the a two-tiered nitrogen fertilizer tax will not work, and that special care needs to be taken in designing the tradable nitrogen fertilizer quota.

**Abstracts in excess of 50 words were truncated at 50 words.*

"Agricultural Production Contracts to Reduce Nitrate Leaching: A Whole-Farm Analysis." Mei-chin Chu, Scott M. Swinton and Sandra S. Batie, Michigan State University.

Ten alternative seed corn contract specifications are evaluated with respect to nitrate leaching and profitability for the processor firm (principal) and contracted grower (agent). A whole-farm optimization and feasibility analysis suggest that contract terms can be used to reduce non-point source pollution.

"Precision Technology and Nonpoint Pollution Control." Madhu Khanna, University of Illinois; David Zilberman, University of California- Berkeley.

Information on observable characteristics of heterogeneous microunits, on physical linkages between production and pollution processes and on the attributes of precision technologies is used to design and examine the efficacy of alternative policies for prevention of nonpoint pollution. Conditions under which pollution control is compatible with increased production are explored.

SP-2F NEW THEORIES AND METHODS IN REGIONAL ECONOMICS

Moderator: John M. Halstead, University of New Hampshire

"When a Big Company Threatens to Leave a Small Town." Maureen Kilkenny and Darin Wolhgemuth, Iowa State University.

When a big employer threatens to leave a small town unless it obtains tax concessions, the dominant strategic choice for the government is usually to comply. But the threat could be a bluff. We analyze this in a game-theoretic, asymmetric information context to provide insight and a testable model.

"Decomposition of Inefficiency Effects: An Application to Rural Nevada Water Systems." Arunava Bhattacharyya, University of Nevada; Subhash C. Ray, University of Connecticut; Thomas R. Harris and Rangesan Narayanan, University of Nevada.

Output efficiency of rural Nevada water utilities are decomposed into a systematic and a random components, by combining Data Envelopment Analysis approach and Stochastic Frontier estimation technique. A cost indirect production technology is specified to incorporate two-step optimization process of local utilities. The random part is specified as pure inefficiency.

"Estimation of Economic-Base in a Rural County Economy: An Example Application of Co-Integration Procedures." Thomas R. Harris, J. Scott Shonkwiler and George E. Ebai, University of Nevada.

One of the most contentious issues in the analysis of a county's export-base is the identification of a region's basic or export activity. This paper shows how cointegration procedures can be utilized in a rural county economy to estimate the county's economic base and long-run multipliers.

SP-2G MICROECONOMIC BEHAVIOR IN THE CONTEXT OF ENVIRONMENTAL POLICIES

Moderator: Farhed Shah, University of Connecticut

"The Anticipation of Environmental Regulation and Preemptory Firm Behavior: A Theoretical Note." Bhavani Shankar, University of Illinois.

It is argued that polluting industries are likely to undertake voluntary abatement in order to appease regulators, thereby affecting the probability of future regulation. Modeling reveals that firm behavior under such circumstances may defy common intuition: for example, a "more favorable" regulatory atmosphere could cause firms to increase voluntary abatement.

"Green Business and Blue Angels: Towards a Theory of Voluntary Overcompliance with Asymmetric Information." Stefanie Kirchhoff, University of Maryland.

This paper presents a model of a monopolist's voluntary overcompliance with legal environmental standards under asymmetric information. Conditions necessary for overcompliance to be profit-maximizing are derived. The effects of a third-party eco-labeling system are analyzed. Firms might have an incentive to lobby for the introduction of such a system.

"Limited Cooperation in International Environmental Agreements." Lany Karp and Sandeep Sacheti, University of California-Berkeley.

Imperfectly competitive markets give governments a rent-shifting objective, in addition to their environmental objectives. We show how the characteristics and the relative importance of environmental and non-environmental externalities affect the amount of cooperation needed to improve members' welfare in an environmental agreement.

"Optimizing Global Warming: An Intermediate Approach." Donna J. Lee, University of Florida; James A. Roumasset, University of Hawaii.

A model of global warming that merges conventions of top-down and bottom-up models is presented. Abatement costs, control benefits, and carbon taxes are derived from a model in which fossil fuels and solar are optimally converted into multiple end-uses and CO₂ by-product. Optimal energy use, CO₂ accumulation, temperature change, and *

**Abstracts in excess of 50 words were truncated at 50 words.*

SP-2H ROLE OF LIVESTOCK IN AGRICULTURAL DEVELOPMENT

Moderator: Christopher Delgado, IFPRI

"Effects of Market Access on Household Dairy Consumption in Coastal Kenya." Gary Mullins, ILRI; Christopher L. Delgado and Peter Gruhn, IFPRI.

Working-Leser Engel functions with household travel time to purchase point characteristics included are computed from two rounds of dairy consumption data from 486 urban and rural households in coastal Kenya in 1991/92. Travel time is shown to be a significant determinant of consumer choice between local and non-local dairy products.

"Precautionary Livestock Holdings: Empirical Evidence from the West Africa Semi-Arid Tropics." Takeshi Sakurai, National Research Institute of Agricultural Economics.

This paper empirically tested the implications of precautionary saving using data from rural Burkina Faso. Household specific crop production risks measured by crop diversification and soil type diversification are significant determinants of household livestock holdings, while rainfall risk is insignificant because it affects both crop and livestock production.

"A Dynamic Programming Model to Optimize Tick-Borne Disease Control for Cattle in Malawi." David C. Hall, Harry M. Kaiser and Robert W. Blake, Cornell University.

A dynamic optimization model was developed to determine optimal net benefits of controlling East Coast fever in Malawi Zebu cattle. The objective function maximized the net present value of mortality savings less treatment costs, subject to herd size, nutritional requirements, and budget constraints. Vaccination resulted in highest net benefits.

"Cattle, Corn and Cooperation: An Empirical Model of Mixed Common-Private Property Systems in Mexico." Nancy A. McCarthy, University of California-Berkeley.

In this paper, we examine a system of mixed land use, where cattle are grazed on common property pastures and corn is cultivated on plots in private usufruct. A model is developed and tested, using data from Mexico. The results indicate that ability to cooperate affects not only stocking rates, *

**Abstracts in excess of 50 words were truncated at 50 words.*

SP-2I THE INFLUENCE OF LAW AND POLICY ON AGRICULTURE AND THE ENVIRONMENT

Moderator: Edmund Tavernier, Rutgers University

"Regulating Nonpoint Source Pollution with Uncertain Policies." Brett W. House, University of California-Davis.

This paper presents an analysis of uncertainty in determining the effectiveness of policies designed to reduce nonpoint source pollution. Utilizing nonlinear programming and

simulated data, uncertain welfare costs from suboptimal policy instruments are assessed for nitrate leaching in crisphead lettuce production for the Salinas Valley, California.

"Measuring Social Costs of Inefficient Combination of Policy Instruments: The Case of the U.S. Agricultural Policy." David S. Bullock, University of Illinois; Klaus Salhofer, University of Resource Sciences-Vienna.

Since most agricultural programs employ two or more policy instruments simultaneously, it is notable that little research exists which evaluates the social costs of combining instruments imperfectly or attempts to find optimal instrument combinations. In our paper we report a simple and feasible method to find optimal policy instrument combinations, *

**Abstracts in excess of 50 words were truncated at 50 words.*

"Protecting the Environment with Agricultural Nuisance Laws." William D. Walker, Michigan State University.

Agricultural pollution is difficult to solve since it is nonpoint pollution produced by often financially strapped farms. Alternatives to traditional regulation are needed. One option is granting exemption from nuisance suits for compliance with environmental standards. Michigan has done so but the idea and its implementation are inadequate.

"Chapter 12-A Hatchet or Silver Spoon? Proposals for Permanent Legislation." Michael A. Taylor, Ohio State University; Jesse J. Richardson and L. Leon Geyer, Virginia Polytechnic Institute and State University.

In 1986 Congress enacted Chapter 12 of the Bankruptcy Reform Act of 1987 in response to the farm crisis existing at that time. The chapter creates special rules for family farm bankruptcies. In 1993, the Act was extended for five years. This paper argues that Chapter 12 lowers transaction cost, *

**Abstracts in excess of 50 words were truncated at 50 words.*

SP-2J PARTICIPATION IN GOVERNMENT PROGRAMS

Moderator: Harry de Gorter, Cornell University

"Factors Affecting a Rice Farmer's Decision on Choice and Level of Program Participation." Jirong Wang, Eric J. Wailes and Gail L. Cramer, University of Arkansas.

This study discusses the specification and determination of factors that influence a rice farmer's decision to participate in a commodity program. A two-stage regression model (multinomial logit and selection regression) is defined and empirically estimated using the USDA Farm Costs and Returns Survey for rice producers in 1992.

"Modelling Land Allocation with Random Crop Returns and Government Program Participation." Nabil M. Chaherli, International Center for Agricultural Research in the Dry Areas.

A model of land allocation with government program participation is presented in the context of a mean-variance framework. It is used to show the impact of planting flexibility provisions, base acreage, farm returns and risk aversion behavior on crop selection decisions. An empirical application of the land allocation model shows *

**Abstracts in excess of 50 words were truncated at 50 words.*

"Aggregate Effects of Base Building." Fred C. White, University of Georgia.

This paper develops an analytical model to measure the benefits and costs of base building. The results indicate that the benefits derived from base building are small relative to the added costs of the government programs. However, small

adjustments in the base building requirements could lower government costs substantially.

SP-2K PEST CONTROL MODELS AND PROGRAMS

Moderator: Michael Duffy, Iowa State University

"Deterministic Dynamic Weed Management Models: Steady State Solutions." Wei Wei, Douglas L. Young and David A. Hennessy, Washington State University.

This paper develops deterministic dynamic single crop and three-crop rotational weed control models with multiple weeds and herbicides. The assumption of steady state admits a solution as easy as solving a deterministic static model. No more herbicide was recommended for conservation tillage than for conventional tillage.

"Estimating the Demand for Urban Pest Control Programs." Karen Jetter, University of California-Davis.

This analysis estimates the demand for different programs to control newly discovered pests in urban areas using a combined contingent valuation/contingent ranking approach. This approach provides estimates of the complete demand for urban pest control and the marginal willingness to pay for the polluting, non-polluting and productivity effects of both chemical and biological methods.

"Economic Analysis of Environmental Benefits of Integrated Pest Management." Jeffrey D. Mullen, George W. Norton and Dixie W. Reaves, Virginia Polytechnic Institute and State University.

A method is provided for economic assessment of environmental benefits of integrated pest management. Effects of IPM on environmental risks posed by pesticides are assessed and society's willingness to pay to reduce those risks is estimated. When the method is applied to the Virginia Peanut IPM program annual benefits are *

*Abstracts in excess of 50 words were truncated at 50 words.

"The Cotton Acreage Effects of Integrated Pest Management: A County Level Time-Series, Cross-Section Analysis." Chris Dumas and Rachael Goodhue, University of California-Berkeley.

The success of the Boll Weevil Eradication Program is believed to be one factor underlying the recent increase in cotton acreage in the Southeast. Our results show that, as expected, the initial eradication phase of the program decreased cotton acreage, and the second maintenance phase increased cotton acreage.

SP-2L EXPORT PROMOTION, THE ENVIRONMENT, AND INTERNATIONAL TRADE

Moderator: Patricia Lindsey, Oregon State University

"Effectiveness of Non-Price Promotion of U.S. Agricultural Trade." H. Alan Love, Juan J. Porras and C. Richard Shumway, Texas A&M University.

This paper evaluates returns to export promotional programs such as the controversial Market Promotion Program. Kohli's profit maximization (GNP function) approach is used to model two agricultural trade sectors - farm production and food processing. The Market Promotion Program is very likely not cost effective from a taxpayer's point of *

*Abstracts in excess of 50 words were truncated at 50 words.

"Export Promotion and the Impact of Market Structure: U.S. Frozen Concentrated Orange Juice." Bernard Armah and Timothy Park, University of Georgia.

The impact of U.S. export promotion programs for frozen concentrated orange juice was evaluated using a model of imperfect competition incorporating pricing to market and export promotions. Estimated symmetry restrictions derived from the export-pricing decisions of a multi-market monopolist were consistent with a model of market power.

"Trade Liberalization in Manufacturing and the Environment." Michel Potier, OECD Environment Directorate; John Beghin, North Carolina State University.

This paper summarizes new findings from economic theory and empirical evidence on the environmental impact of trade liberalization in manufacturing. The paper focuses on specific findings for recent trade agreements (Uruguay Round and NAFTA) for specific industries (chemicals, electronics, metals, automobiles, and textiles and clothing) and countries.

"Environmental Regulation and Trade: Panel Analysis of U.S. Manufacturing." K. Han and J. B. Braden, University of Illinois.

This paper examines the effects of environmental regulation on the competitiveness of U.S. manufacturing sectors. The empirical results indicate that the effects are significant but declining with time. The effects are not clearly correlated with proportionate pollution control costs, however, so comparisons with international competition are needed.

SP-2M POLICY MODELING OF RESOURCE ISSUES

Moderator: Edward Bradley, University of Wyoming

"The Economics of Private Voluntary Organizations and Collective Action in Deer Management." Karin Steffens and A. Allan Schmid, Michigan State University.

Game theory and other approaches have been used to characterize problems involving high exclusion-cost goods which also have the characteristic that marginal cost of an additional user is zero over some range. These analytical tools have made valuable contributions to understanding voluntary organizations and collective action. Resource systems for which *

*Abstracts in excess of 50 words were truncated at 50 words.

"Short-Run Welfare Gains in a Simulated Water Market: The Effects of Market Scope and of Property Rights Endowments." Lynda J. Lo and Theodore M. Horbulyk, University of Calgary.

Quadratic programming is used to reallocate surface water entitlements and to compare (static optimum) levels of social welfare, thereby simulating new markets for water on four river sub-basins in southern Alberta. There are four scenarios providing alternative definitions of market scope and a comparison of three property rights regimes.

"Evaluation of Alternative Offshore Fisheries Management Policies in Taiwan." Chin-Hwa Sun, National Taiwan Ocean University.

This study estimates the maximum sustainable yield of the offshore fisheries in Taiwan. Results suggest that there exists overfishing phenomenon since 1973 and the effective fishing effort needs to be further reduced. Several alternative management policies were suggested and the dynamic simulation of fisheries resources was also provided.

"The Effect of Modeling Substitute Activities on Recreational Benefit Estimates: Is More Better?" Carol A. Jones, NOAA; Frank Lupi, Michigan State University.

The range of activities for which data are collected in many standard datasets for recreational fishing are limited by the mission of the funding agencies. In a nested multinomial logit

model of recreational fishing, we show that the welfare results for various policies are highly sensitive to the range of *

*Abstracts in excess of 50 words were truncated at 50 words.

MONDAY, JULY 29, 1996
1:30 - 3:15 P.M.
SELECTED PAPERS

SP-3A STRUCTURAL CHANGE AND PRODUCTIVITY

Moderator: Lilyan Fulginiti, Iowa State University

"Structural Change, Capital Fixity and Investment in the Food Processing Industry." Catherine Morrison, University of California-Davis.

The U.S. food processing industry has recently experienced great structural change. One important aspect of these changes is the explosion of investment in high-tech capital. This paper uses a cost-based dynamic production theory model to evaluate the motivations and results of this expansion. The results show that high-tech investment causes *

*Abstracts in excess of 50 words were truncated at 50 words.

"Structural Change and Factor Demand Relationships in the U.S. Textile Mill Sector." Shu Yang and Barry K. Goodwin, North Carolina State University.

This analysis evaluates structural change and factor demand relationships in U.S. textile mill sector. The results, confirmed by two statistical tests, imply significant structural change. The most striking elements of change involve the demand for labor, which has become much more responsive to prices as employment has fallen by 60%.

"The Productivity of New York Dairy Farms." Loren W. Tauer, Cornell University.

The productivity of individual dairy farms, decomposed into efficiency and technological change components, was measured annually from 1985 through 1993 from distance functions estimated using nonparametric programming methods. Over half of the farms failed to increase productivity sufficiently to offset the decreased ratio of output to input prices.

"Firm-Level Productivity Growth Decomposition: A Non-Parametric Malmquist Approach." Q. Zeyuan, N. G. Kalaitzandonakes and D. Wellman, University of Missouri.

This study investigates the components of productivity growth in Missouri crop and dairy production over a fifteen year period through non-parametric Malmquist procedures. Scale economies contribute minimally to productivity growth while technical efficiency improvements contribute only towards crop productivity. Technical change is the primary driving force of productivity growth.

SP-3B HEALTH, NUTRITION INFORMATION AND PUBLIC POLICY

Moderator: Rodolfo Nayga, Jr., Rutgers University

"Choices Of Valuing Life In Cost/Benefit Analysis: The Case of Foodborne Disease." Jean Buzby, University of Kentucky; James MacDonald, Ohio State University; Stephen Crutchfield and Tanya Roberts, ERS/USDA.

Executive Order 12991 requires cost/benefit analysis (CBA) for regulations with an impact over \$100 million. Food safety CBA fluctuate widely depending on the value of statistical life (VOSL) used. A sensitivity analysis using different VOSL increases estimates of U.S. foodborne disease from \$4.3-\$8.1 billion/year to \$10.9-\$53.8 billion.

"Health-Claim Information and Consumer Awareness of Diet-Disease Relationships." Alan S. Levy, Mario F. Teisl and Brenda M. Derby, USFDA.

Some argue that industry use of health claims to market food products increased consumer awareness of diet-disease relationships. However, awareness increases occurred prior to most market activity, and awareness declined during the time of increased market activity. In turn, health-claim information may not serve a significant education function.

"Valuing Nutrition Information Results from a Willingness-to-Pay Experiment." Mario F. Teisl and Alan S. Levy, USFDA.

We estimate the welfare gains associated with passage of the Nutrition Labeling and Education Act (NLEA). Prior to NLEA, only half of the U.S. food supply exhibited nutrition labels, whereas all packaged food products currently exhibit labels. Our lower-bound (upper-bound) willingness-to-pay estimate is \$0.5 (\$1.5) billion.

"Health Information and Consumer Participation: The Case of Fresh Milk Consumption in the U.S." Jun Zuo and Wen S. Chern, Ohio State University.

A consumer participation model for whole vs. lower fat milk is developed to estimate the effects of health information. Due to presence of cointegration, the alternative empirical specifications with correction for endogeneity and serial correlation are presented. The estimated results show that both fat and cholesterol information and calcium information *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-3C THE EFFECTS OF WATER ALLOCATIONS AND POLICIES ON ENVIRONMENTAL QUALITY

Moderator: Jay Coggins, University of Minnesota

"Assessing Water Allocation Tradeoffs in the American West: Endangered Fish Versus Irrigated Agriculture." Marca Weinberg, University of California-Davis; Michael R. Moore, University of Michigan; Aimee Mulville, Yale University.

This research analyzes potential water allocation conflicts between irrigated agriculture and endangered fish in western rivers. Geographic and statistical analyses of county-level data for 17 western states describe a pattern of mutual dependence on limited water resources. Statistical results indicate a significant and positive relationship between the number of ESA-listed.

"Policy Implications of Win-Win Opportunities for Improving Groundwater Quality in Irrigated Areas." Raymond J. Supalla, Saeed Ahmad and Roger Selley, University of Nebraska.

Alternative production practices and public policies for reducing nitrate pollution from irrigated agriculture were analyzed. Several management practices were identified which would simultaneously improve the environments and increase net returns. Education was found to be an effective public policy, but incentives and regulations were of limited value.

"Nonuniform Regulation of Groundwater Quality." Gareth Green, Washington State University; David Sunding, University of California-Berkeley.

A theoretical model of agricultural production under conditions of nonuniform groundwater quality is developed. Various uniform and nonuniform groundwater quality regulatory policies are empirically evaluated. It is found that nonuniform policies are more efficient than uniform policies by a substantial amount, and that price mechanisms out-perform direct controls.

"Market Water Transfers as a Water Quality Policy: A Case Study of the Malheur River Basin, Oregon." Jeffery D. Connor and Gregory M. Perry, Oregon State University.

This research evaluates the economic feasibility of water trade as a groundwater quality policy using a spatially differentiated hydrologic-economic model. Results indicate that at current prices, water markets are likely to induce small reductions in groundwater nitrate concentrations. Full compliance with EPA water quality standards is unlikely even at high *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-3D PRODUCTION ECONOMICS AND MEXICAN AGRICULTURE

Moderator: Jim Mjelde, Texas A & M University

"Testing for Behavioral Objective and Aggregation Opportunities in Mexican Agricultural Data." Shon P. Williams and C. Richard Shumway, Texas A&M University.

This paper reports nonparametric test results for behavioral objective and aggregation level of Mexican agricultural production. Evidence does not refute the hypothesis that producers behave collectively as though they are a price-taking profit-maximizing firm. The empirical results also support exhaustive aggregation of input categories but much less aggregation of outputs.

"Mexican Agricultural Productivity, 1940-1990." Jorge Fernandez-Comejo, ERS/USDA; C. Richard Shumway, Texas A&M University.

Agricultural Productivity (TFP) and longrun effects of research and international technology transfer on TFP are examined. TFP increased 2.5 percent annually from 1940-1990. A one-percent rise in research investment in Mexico increases TFP 0.17 percent, and an increase in U.S. TFP translates into a similar increase in Mexican TFP.

"Farmer Experimentation with Velvetbean as a Green Manure in Mexico: Who Profits?" Meredith J. Soule, International Centre for Research in Agroforestry.

Experimentation with a velvetbean intercrop with maize and its farm-level profitability are analyzed using a sample selection regression model. Profitability gains from using velvetbean were highest for farmers who were using neither chemical fertilizer or herbicides. Wide-scale adoption of velvetbean by farmers who have access to purchased inputs is unlikely.

"Time Series Analysis of Mexican Agricultural Production." Hongil Lim and C. Richard Shumway, Texas A&M University.

Mexican crop and livestock relationships are examined using duality and time series econometrics. A mixture of differenced and cointegrated model specifications are warranted for output supply and input demand equations. Test results are sensitive to choice of functional form. The quadratic and generalized Leontief forms are preferred over the translog.

SP-3E DEMAND FOR AWAY-FROM-HOME AND PREPARED FOOD

Moderator: Helen Jensen, Iowa State University

"U.S. Food-Away-From-Home Consumption: Household-Level And Aggregate Time Series Analyses Compared." Frank Fu-Sung Chiang, National Taiwan Ocean University; W. Keith Bryant, Cornell University.

This study examined the effects of selected factors on Food-Away-From-Home (FAFH) consumption by using both the cross-sectional approach and the aggregate time series approach and used the micro results from the household-level analysis

in an attempt to explain the aggregate U.S. FAFH consumption trend.

"At-Home And Away-From-Home Food Expenditure Relations—A Two-Stage Switching Regression Approach." Vicki A. McCracken, Hongqi Shi and Coleen McCracken, Washington State University.

A two-stage switching regression method was used to estimate a household food expenditure system in order to correct the potential selectivity bias, using 1987/88 National Food Consumption Survey (NFCS) data. It is concluded that food-at-home and food-away-from-home food expenditure relations cannot be separated during the estimation process.

"Demand for Fast Food Across Metropolitan Areas." James K. Binkley and James Eales, Purdue University.

City data is used to estimate the demand for fast food and related restaurant fare. Demographic and income differences across cities are found to be less important than market characteristics like population density and outlets per person. Prices are important for fast food, but some in an unexplainable direction.

"Demand for Prepared Meals by U.S. Households." John L. Park, Food Industry Management Program-Cornell University; Oral Capps, Jr., Texas A&M University.

Using the 1987-88 NFCS, a Heckman two-stage procedure was used to estimate the demand for prepared meals by U.S. households. Households headed by younger, more educated, and time-constrained managers were more likely to purchase prepared meals. Income elasticities ranged from .07 to .13, while own-price elasticities ranged from -.23 to *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-3F NATURAL RESOURCES AND HOUSEHOLD MODELS

Moderator: Michael Morris, CIMMYT - Economics

"Public Choice, Private Choice and Soil Degradation in Southern Mali." Timothy Dalton, Purdue University.

Crop production is rapidly depleting soil macro-nutrients in southern Mali. A household model is developed to account explicitly for production dynamics and soil physical processes. The model explains how small grain cultivar development and price policy can influence farmer incentives and optimal soil degradation rates.

"Land Quality and the Inverse Relationship between Farm Size and Productivity: A Panel Data Analysis of Paraguayan Farm Households." Pedro V. Olinto, University of Wisconsin.

This paper uses panel data methods to control for unobserved land quality effects on farm productivity. Under a fixed-effects specification there is still a strong evidence of an inverse relationship between farm size and productivity among a sample of Paraguayan farm households. We conclude that unobserved land quality cannot explain *

*Abstracts in excess of 50 words were truncated at 50 words.

"Testing for Market Failure in Rural Household Models." Martin Valdivia, University of Minnesota.

A test is proposed for the importance of rural labor and credit market imperfections, due to the existence of asymmetric information, on households' behavior. The econometric analysis cannot reject the hypothesis of credit-unconstrained rural households, but offers strong support for the presence of labor market imperfections in rural Peru.

"Marginal and Fixed Transactions Costs in an Agricultural Household Model: A Theoretical Framework for the Analysis of Market Participation Decisions and Price Response." Nigel Key, University of California-Berkeley.

This paper presents a general agricultural household model incorporating marginal and fixed transaction costs. The decision to buy, sell, or remain autarkic in all markets is modeled as an explicit household decision. Household supply and demand equations are derived for both types of transaction costs.

SP-3G CONTINGENT VALUATION OF NATURAL RESOURCES

Moderator: John Halstead, University of New Hampshire

"An Analysis of Intrastate and Interstate Differences in Beach-Use Values." Richard W. Dunford and Robert B. Fowler, Triangle Economic Research.

This paper analyzes dichotomous-choice valuation responses from over 5,700 in-person interviews conducted at 17 California and Florida beaches. The results reveal different use values for different types of beaches and beaches in different geographic locations within the two states, but no difference in aggregate beach-use values for the two states.

"Willingness-to-Pay Estimates Using the Iterated Referendum Contingent Valuation Format: A Test for Validity in a Bayesian Framework." Donald McLeod, University of Wyoming; Olvar Bergland, Agricultural University of Norway; David E. Ervin, Oregon State University.

The Iterated Referendum Contingent Valuation format yields more precise welfare estimates yet questions remain about its unbiasedness. A Bayesian model of respondent decision making indicates the occurrence of updating between iterated valuations. Nonparametric testing of the welfare estimates reveals that the model incorporating updating differs from the standard model.

"WTP Certainty Intervals and the Disparity between Contingent Valuation Elicitation Formats: Application of a Multiple Bounded Discrete Choice Approach." Gregory L. Poe, Cornell University; Michael P. Welsh, Hagler Bailly, Inc.

This paper uses a multiple bounded discrete choice elicitation approach to explore the hypothesis that uncertainty in preferences contributes to differences in values obtained from alternative contingent valuation elicitation formats. Dichotomous choice responses correspond to the upper end of an ambivalence zone, while payment card responses are more conservative.

SP-3H SUGAR, COTTON AND DAIRY POLICY

Moderator: P. Lynn Kennedy, Louisiana State University

"The Dairy Assessment Refund Program: What Do Differential Milk Taxes Do and to Whom?" Daniel A. Sumner and Norbert L. W. Wilson, University of California-Davis.

The dairy assessment refund scheme that has been operating since 1991 creates complex farm growth incentives, but likely has little impact on aggregate milk production. Empirical analysis shows that participation in the program is negatively related to milk-per-cow, milk-per-farm, and changes in the price of milk.

"Competitiveness of Regional Sugar Production Under Alternative Production Conditions and Policies." Won W. Koo and Richard Taylor, North Dakota State University.

A mathematical programming model was developed for the U.S. sugar industry to evaluate regional comparativeness in producing sugar under alternative sugar policies. Relaxing the sugar program increases sugar production in the beet sugar producing regions and decreases in cane sugar producing regions mainly because sugar beet production is more competitive.

"The Cost of Slippage: The Case of Upland Cotton in Georgia." Chia-lin Chen, Council of Agriculture, Taiwan; Christopher S. McIntosh, Michael E. Wetzstein and Fred C. White, University of Georgia.

A methodology is employed which jointly considers yield and acreage slippage. An application is then provided for measuring and calculating government costs from total slippage associated with Georgia cotton production. Government costs are shown to be 2.79 to 50.88 percent higher because of slippage.

SP-3J DIFFERENT APPROACHES TO MODELING BEHAVIOR IN SPACE AND TIME

Moderator: Lydia Zepeda, University of Wisconsin

"Fuzzy Multiple Attribute Decision Making (MADM): A Tool for Agricultural and Resource Economics." Elizabeth G. Dunn, James M. Keller and Leonie A. Marks, University of Missouri.

Fuzzy sets and fuzzy logic can be incorporated into multiple attribute decision making (MADM) methods as a means to integrate multidisciplinary research on complex issues and to improve the handling of mixed, noncommensurate, and ambiguous data. The fuzzy MADM approach is applied to the problem of selecting sustainable farming systems.

"A GIS and Transportation Optimization Model Approach to Determining Highway and Rural Road Commodity Flows." John R. Ellis, Ken L. Casavant and Eric L. Jessup, Washington State University.

Procedures for combining the use of a Geographic Information System with a traditional least cost minimization model are presented within a study examining grain commodity flows from farm to final market and the resulting impact on roads. Impacts of two alternative policy scenarios are examined for a sample county.

"Vertical Coordination in the Western Canadian Cattle Industry." W. J. Brown, University of Saskatchewan; K. A. Karantinis, Wageningen Agricultural University; T. I. McNinch, University of Saskatchewan.

The Western Canadian Cattle Industry has undergone serious structural reorganization. A risk analysis shows that some types of vertical coordination can be attractive to backgrounding farmers. Reliance on open market transactions, even when they are allowed to hedge in the futures market, is not always an attractive alternative.

"A Time-Series Method for Spatial Correlation Analysis: A Framework and an Application in Crop Loss Assessment." Agapi Somwaru and Haiping Luo, ERS/USDA.

A time-series method is developed to estimate time-consistent spatial correlation zones of corn deviations under the Group Risk Plan for crop insurance. The size, location, and occurring probability of corn loss correlation zones provide information for yield prediction models, reinsurance design and ratemaking, and yield-based futures trading.

SP-3K TRADE POLICY

Moderator: Thomas Wahl, Washington State University

"Regional Impact of Change in Dairy Trade Policies on the Northeast U.S. and Central Canada Dairy Sectors." Maurice Doyon, James Pratt and Andrew Novakovic, Cornell University.

This study explores two dairy trade scenarios between Quebec, Ontario and the Northeast U.S. In simulation I, the U.S. is allowed to unilaterally export yogurt and frozen desserts to Canada. Simulation II reflects a total free trade environment. In both simulations, the Canadian farm milk value decreases significantly.

"Sectoral and Economywide Impacts of Eliminating the Export Enhancement Program." Kenneth Hunson, and Stephen Vogel, ERS/USDA; Sherman Robinson, International Food Policy Research Institute.

We use a computable general equilibrium model to explore the impacts of eliminating the Export Enhancement Program on farm sector income and consumer welfare, and explore the sensitivity of our results to different assumptions about supply and demand elasticities. Eliminating the program lowers farm sector income but increases consumer welfare.

"Some Criteria for Selecting Tariff Policies: Ad valorem or Specific?" Yong-Kee Lee, YeungNam University, South Korea.

Economic effects of ad valorem and specific tariffs are compared. The effects on the change in total imports depend on the current import composition of a product category consisting of two close substitutes (high and low qualities), and are responsive to price difference between two qualities and cross-price elasticities.

"Cooperation or Pest Invasion: Strategic Trade Policies Using Phytosanitary Regulations." Lori Lynch, University of California-Berkeley.

Countries impose trade restrictions to protect agriculture from exotic pests/diseases with scientific justification or to protect growers. Hitchhiking pests are entering new regions regardless of regulations. A strategic trade model is presented in which a government employs import restriction and/or subsidizes foreign pest control to maximize societal welfare.

SP-3L INTERNATIONAL TRADE AND THE ENVIRONMENT
Moderator: Daniel Pick, ERS/USDA

"Trade and Environmental Impacts of Economic Integration in the Western Hemisphere." Marinos Tsigas, Virginia Polytechnic Institute and State University; Denice Gray, Cornell University; Barry Krissoff, ERS/USDA.

Trade policy integration in the Western Hemisphere may benefit all countries, despite losses in environmental quality in some. Trade policy integration coupled with harmonization of environmental regulations may increase the gains from freer trade. Too stringent environmental regulations, however, are likely to diminish the gains from trade policy integration.

"Environmental Regulations and Trade Liberalization: Who Wins, Who Loses?" Patricia J. Lindsey, Oregon State University; Mary Bohman, University of British Columbia.

Using an empirically based simulation model, welfare effects of environmental regulations and trade liberalization and their incidence across countries and groups within a country are explored in the context of NAFTA for a selected set of markets. In these markets producers typically gain from regulation at the expense of consumers.

"Coordination Issues in Trade and Environmental Policy Reforms." John Beghin, North Carolina State University; David Roland Hoist, Mills College and OECD Development Centre; Dominique van der Mensbrugge, OECD Development Centre.

This paper explores coordination and second-best policy issues affecting trade and environmental linkages. Optimum policy interventions are derived and sufficient conditions are established for welfare-improving piecemeal reforms of trade and environmental policies. Pollution originates in both domestic consumption and production and is a domestic public bad.

"The Impact of Environmental Regulations on Trade in Cereal Grains." E. Wesley F. Peterson and Siva Rama K. Valluru, University of Nebraska.

Equations incorporating measures of factor endowments and a variable representing the stringency of environmental regulations are used to explain grain trade patterns. The results suggest that patterns of net grain trade are explained well by national factor endowments and do not appear to be significantly affected by environmental regulations.

SP-3M NEW COMPUTATIONAL TECHNIQUES IN ESTIMATING ECONOMIC MODELS

Moderator: Gerry Parise, American Express Company

"Efficient Sampling via Gaussian Quadrature." Channing Amdt and Paul V. Preckel, Purdue University.

Data collection by survey is an expensive process. We develop a non-random sampling approach that, under certain conditions, yields superior estimates of means, variances and skewness terms compared to random samples of the same size. The approach appears particularly well suited to expenditure surveys in developing countries.

"Exploiting Population Characteristics in Estimating County Level Conditional Yield Densities." Alan P. Ker, The University of Arizona.

Hermitian expansions in RM will tend to separate when relevant explanatory variables are omitted. This fact is exploited to recover the generating mechanisms of the parameters indexing the innovation distributions from time series yield processes. Gaussian mixtures are used to represent the innovation distributions and thus the conditional yield densities.

"Angler's Perception of Environmental Quality and Benefit Estimation in Multinomial Probit Models: A Simulation Approach." Heng Z. Chen, Michigan State University.

A varying parameter multinomial probit model is estimated using simulated MLE to accommodate perception variation of environmental quality across anglers. An unbiased simulator is proposed to estimate the benefit. The results indicate that the parameter estimates and benefit estimation are sensitive to the perception variation.

MONDAY, JULY 29, 1996
3:30 - 5:00 P.M.
SELECTED PAPERS

SP-4B MARKET VALUATION OF AGRICULTURAL PRODUCTS CHARACTERISTICS

Moderator: James L. Anderson, University of Rhode Island

"A Conjoint Analysis of Consumer Preferences for Vegetable Products." John E. A. MacKenzie and Hilary B. Spiller, University of Delaware.

We develop conjoint analysis of consumer preferences for vegetable mixes, focusing on lima beans. Survey respondents evaluated simulated products developed from a splitblock orthogonal main-effects conjoint design. Results indicate high

variability in consumer acceptance of lima beans and limited opportunities for market expansion beyond consumers already receptive to lima beans.

"Impact of Demographic Factors on Consumers' Willingness to Purchase Home-Grown Food Products." William Schiek, Mark Jekanowski and Daniel Williams, II, Purdue University.

A survey of 500 Indiana consumers was conducted and a ordinal probit model was used to determine the impact of demographic and attitudinal factors on consumers' likelihood to purchase food products produced within their state. Results indicate that consumers with higher incomes, less education, longer periods of state residency, and *

*Abstracts in excess of 50 words were truncated at 50 words.

"Protein Quantity and Quality: A Characteristic Demand Analysis of Japanese Wheat Imports." Kyle W. Stiegert and J. P. Blanc, Kansas State University.

The hedonic model is extended to consider the interactive effects of wheat protein quality measures in determining the value of contracted protein levels. Results show farinograph stability to be most important in shaping the protein market. Farinograph absorption is important for protein in lower protein wheats.

SP-4C MANAGING THE AGRICULTURAL SECTOR

Moderator: V. Premakumar, Iowa State University

"Aggregate Evidence of Boom/Bust Cycles in Domestic Agriculture." Andrew Schmitz and Charles B. Moss, University of Florida.

Schmitz's 1995 Waugh Lecture focused on the presence of boom/bust cycles for farm land values in Canadian data. This study finds evidence for the same phenomenon in aggregate U.S. data. Further, the boom/bust results cannot be explained by information on real interest rates or ex-post observations on inflation.

"Thinking Styles and Financial Characteristics of Canadian Farm Managers." Wayne H. Howard, George L. Brinkman, University of Guelph; Remy Lambert, University of Laval.

The thinking styles of Canadian farm managers were identified using the Life Styles Inventory and compared to a base sample of non-farm managers. Results indicate that farmers do think differently than non-farmers and that there are significant correlations between thinking styles and financial measures.

"Impact of Subsidy Programs on the Wealth of the Nova Scotia Agricultural Sector." Rita K. Athwal and J. Stephen Clark, Nova Scotia Agricultural College.

Estimates of the impact of changes in subsidy programs on land values in Nova Scotia are presented. Findings based on cointegration techniques include: subsidies are not capitalized into land values the same manner as income, inelastic responses of land values to subsidies and income and overshooting in the short-run.

SP-4D EROSION CONTROL: POLICY AND MANAGEMENT

Moderator: Jason Johnson, Texas Tech University

"Temporal and Spatial Evaluation of Soil Conservation Policies." P. G. Lakshminarayan and Bruce A. Babcock, Iowa State University.

The impacts of alternative production practices including CRP on potential soil erosion was evaluated. Erosion for 153,869 NRI-based cropland and CRP sites sampled from the

northcentral United States was estimated using metamodels. Using this framework the effectiveness of alternative soil conservation policies was evaluated in a spatially and temporally consistent manner.

"Timing of Erosion Control Investments." T. J. Wyatt, University of California-Davis.

This paper analyzes investment in terraces to control erosion as a timing decision. Timing is influenced by factors including initial soil depth, prices, planning horizon, and land market. The impact of changes depends on the magnitudes of both the immediate and future effects and the direct and indirect impacts of *

*Abstracts in excess of 50 words were truncated at 50 words.

"An Assessment of Soil Erosion Impacts on Lakeside Property Values in Ohio: A Hedonic Pricing Method (HPM) Application." Somskaow Bejranonda and Fred J. Hitzhusen, Ohio State University.

A hedonic pricing model is developed for estimating the effects of structural, community and environmental (sedimentation) factors on lakeside property values at 15 Ohio state park lakes. A demand system is developed and upstream soil conservation practices and dredging activity are simulated to measure the economic welfare changes.

SP-4E DEMAND, INCOME DISTRIBUTION AND DYNAMICS

Moderator: John Fox, Kansas State University

"Generalized Habit Formation in an Inverse Almost Ideal Demand System: An Application to Meat Expenditures in the U.S." Matthew T. Holt and Bary K. Goodwin, North Carolina State University.

In this paper we report on an attempt to incorporate nonlinear, nonadditive habit effects into a system of inverse meat demand equations. The results are promising, and support for the general specification relative to a static model and relative to one that includes linear, additive persistence terms is obtained.

"Utilizing Income Distribution Information in Demand Predictions: Implications for Applied Demand Studies." Thomas L. Wahl, Hongqi Shi and Ron C. Mittlehammer, Washington State University.

This paper proposes a new method of predicting consumer demand that utilizes information on distribution of consumer income. It is demonstrated that ignoring the effect of income distribution generally yields biased demand predictions compared to the proposed method. Monte Carlo simulation is used to indicate the severity of the problem.

"Dynamic Food Demand Behavior in Spain." Azucena Gracia and Jose Maria Gil, Servicio de Investigacion Agraria, DGA; Ana Maria Angulo, Departamento de Analisis Economico.

Other empirical works have demonstrated that Spanish food demand seems to have a dynamic structure. However, the commonly used dynamization processes are too restrictive to explain the dynamic food consumers' behavior. A more general model that is able to incorporate different dynamic structures (partial adjustment, first autoregressive, and static) and *

*Abstracts in excess of 50 words were truncated at 50 words.

"A Monthly Cycle in Food Use by Food Stamp Recipients: Implications for Empirical Research." Parke Wilde, Cornell University.

This paper investigates how the number of days since food stamp benefits were received affects food expenditure and food use. A systematic monthly pattern is identified for total food and for selected categories of food. If this monthly pattern is ignored, food demand parameter estimates can be inefficient or biased.

SP-4F DETECTING AND CONTROLLING POTENTIAL WATER POLLUTION FROM NITRATES

Moderator: Paul Jakus, University of Tennessee

"Evaluating Soil Nitrogen Testing Considering Carry-Over Effect." Wen-yuan Huang, Russ W. Keim, ERS/USDA; Yao-chi Lu, Agricultural Research Service; Terry Kelley, Massey University.

Soil nitrogen testing helps farmers improve net farm income. It also leads farmers currently underestimating the nitrogen carryover rate to reduce nitrogen loss, but it leads farmers currently over-estimating the carryover rate, using a replacement rule or using a static nitrogen application rule, to increase nitrogen loss.

"Value of Information for Targeting Performance Standards to Control Farm Nitrogen Runoff." C. Line Carpentier and Darrell J. Bosch, Virginia Polytechnic Institute and State University.

The value of perfect information for targeting a 40 percent performance standard in the Lower Susquehanna Watershed is estimated to exceed \$7000 per farm not counting increased transaction costs. Spatial variability is preserved by applying a farm programming model to multiple farms using survey reported practices and physical endowments.

"Optimal 'Green' Payments to Meet Chance Constraints on Nitrate Leaching Under Price and Yield Risk." Jeffrey M. Peterson and Richard N. Boisvert, Cornell University.

A program of "green" payments is designed for farmers to reduce nitrate leaching by restricting nitrogen application on corn. Price and weather risk are considered, information is asymmetric, and chance constraints regulate environmental quality. Empirically, risk and asymmetric information affect the value of information, program costs, and producer benefits.

"Policy Implications of Ranking Distributions of Nitrate Runoff and Leaching from Corn Production by Farm, Region, and Soil Productivity Group." Richard N. Boisvert, Cornell University; Anita Regmi, FAS/USDA; Todd M. Schmit, Cornell University.

Equations relating runoff and leaching to soils, weather, rotations, and fertilization are estimated econometrically and used to generate 30-year distributions of leachate and runoff for soils on 160 farms. Ranking the distributions by stochastic dominance has implications for designing representative soils for farm-level analyses and implementing policies to limit nitrate *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-4G POLITICAL ECONOMY AND ENVIRONMENTAL POLICY

Moderator: Bruce Gardner, University of Maryland

"The Politics of Underinvestment in Agricultural Research." Harry de Gorter, Cornell University; Jo Swinnen, K. U. Leuven, Belgium.

This paper develops a political economy framework that determines the factors causing underinvestment in public research expenditures. Governments are unable to fully compensate for unequal income distribution effects of research because of either their inability to make credible commitments or of deadweight costs associated with compensation.

"Analyzing Environmental Policy with Pollution Abatement versus Output Reduction: An Application to U.S. Agriculture." Gunter Schamel, Humboldt University at Berlin; Harry de Gorter, Cornell University.

A model is developed that derives optimal pollution levels and determines the welfare economics of pollution reduction, differentiating between abatement and output reduction. The model is applied to the U.S. corn sector and we simulate the effects of stylized environmental policies for pesticide use on social welfare and environmental quality.

"Effects of Uncertainty of Reform on Federal Grazing." Jill J. McCluskey and Gordon C. Rausser, University of California-Berkeley.

The expected value of Federal grazing rights is capitalized in the value of private property. The possibility that grazing rights will be expropriated by reform lower this expected value. This paper compares the policy implications of the differences between avoidable and unavoidable risk of rangeland reform.

"The Objectives of Environmental Groups: Are They Efficient Providers of Environmental Services?" Daniel K. Brown, University of Oregon; Julie A. Hewitt, Montana State University.

The purpose of this study was to determine the objective of environmental groups. Two objectives have received attention in the nonprofit literature: service maximization and budget maximization. Our results indicate that environmental groups tend to maximize their budget rather than services they provide, though the results are not entirely conclusive.

SP-4H TESTING FOR STRUCTURE CHANGE AND ADVERTISING EFFECTS IN DEMAND

Moderator: Wen S. Chem, Ohio State University

"Testing Structural Change and Estimation of U.S. Demand for Meat." Weining Mao and Won W. Koo, North Dakota State University.

Structural changes in U.S. meat demand are identified over three time periods using a PKK fluctuation test. A revised Singh-Ullah estimation procedure for the seemingly unrelated regressions with random coefficients (SURRC) is more efficient than the Zellner's SUR in estimating a Rotterdam model for U.S. meat demand.

"Replication and Misspecification Testing of Generic Advertising Econometric Studies." Nouhoun Coulibaly and B. Wade Brorsen, Oklahoma State University.

Five previously published generic advertising econometric models are replicated and subjected to misspecification testing. Only one study is found well specified. The advertising elasticities obtained here are smaller than those reported in previous studies. Although generic advertising stimulates sales, it may not be as effective as previously reported.

"The Power of the Non-Parametric Approach in Searching for Structural Changes in Commodity Demand: A Monte-Carlo Study." Zhikang You, Chung L. Huang and James E. Epperson, University of Georgia.

Monte-Carlo experiments are conducted to examine if the non-parametric approach can successfully identify constructed structural changes in commodity demand using actual U.S. meat and fresh fruit prices and generated quantity data from the LES, translog, and AIDS models. Experimental results indicate that its testing power is limited.

SP-4I OPTIMAL FOREST MANAGEMENT

Moderator: Diana Burton, Texas A&M University

"Divestment and Option Values: The Case of Timber Harvests." Andrew Plantinga, University of Maine.

Option values related to harvesting timber stands are shown to arise from forthcoming information on price trends, the possibility of avoiding unprofitable harvests, and the interaction between these effects. Simulations indicate that the price effect dominates and that option values have a large influence on the optimal timing of harvests.

"Optimal Tree Planting and Harvesting Strategies on Marginal Agricultural Lands: A Guatemalan Case Study." Douglas S. White and Vilma G. Carande, Colorado State University.

Many rural farmers are reluctant to adopt tree crops due to their non-uniform cash flow. Presented is a theoretical and empirical analysis of the profit versus cash flow uniformity trade-off relationship with respect to optimal tree rotation intervals under various discount rates and levels of soil productivity loss.

"Optimal Rotation of Multiple Use Forests in the Presence of Fire Risk." Jeffrey Englin, University of Nevada; Peter Boxall, Canadian Forest Service.

Forest fires are an important and natural component of ecosystems. Forest fires affect the timber value of forests, but also affect the amenity values of the forest as well. This analysis examines the relationship between forest fire risk, timber values and a forest's amenity values.

SP-4J AGRICULTURAL COOPERATIVES

Moderator: Roger Ginder, Iowa State University

"Determinants of Cooperative Patronage in Alberta." K. K. Klein, University of Lethbridge; Timothy J. Richards, Arizona State University; Allan Walburger, University of Lethbridge.

Cooperatives in Canada are losing members to proprietary competition. Member commitment depends upon farmer attributes and their perceptions of cooperative performance. Poisson regression estimates using survey data show that older, less educated, and larger farmers use more cooperatives. Farmers who believe that cooperatives provide added value use more cooperatives, but *

*Abstracts in excess of 50 words were truncated at 50 words.

"Agency Theory and Effort Incentives in Agricultural Cooperatives." Rachael E. Goodhus, University of California-Berkeley.

Diversification and merit goods provision, two key institutional features of cooperatives, are analyzed using an agency theory approach. Both positively affect performance, suggesting that the conventional explanations for these features, risk aversion and shared ethics respectively, may ignore a more important role. The factors underlying cooperative sustainability are discussed.

"Strategic Alliance and Joint Venture Agreements in Grain Marketing Cooperatives." Joan R. Fulton, Colorado State University; Michael P. Popp, University of Arkansas; Carolyn Gray, Colorado State University.

Strategic alliances and joint ventures among local cooperatives in Colorado are analyzed using game theory. Our results suggest that these agreements allow cooperatives to capture size economies and maintain individual business identity. Successful agreements require attention to financial/operational detail and diligence in interpersonal dynamics of trust, commitment, and communication.

SP-4K ECONOMIC THRESHOLDS AND PESTICIDE USE

Moderator: Alfons Weersink, University of Guelph

"Socioeconomic Characteristics and Pesticide Misuses in Philippine Vegetable Production." Jessica D. Tjornhom, University of Minnesota; George W. Norton, Virginia Polytechnic Institute and State University; K. L. Heong, International Rice Research Institute.

Logit is used to assess socio-economic factors influencing pesticide misuse on vegetables in the Philippines. Reduced misuse is associated with age, education, pest management training, and credit from a cooperative. Increased misuse is associated with visits by chemical company representatives or by agricultural technicians and with membership in local organizations.

"Economic Thresholds for Postemergence Herbicides in Winter Wheat." Raziah Mat-Lin, Malaysian Agricultural Research & Development Institute; Douglas L. Young, Washington State University; Tae-Jin Kwon, Korea Rural Economic Research Institute; Kathleen M. Painter, Washington State University.

Logistic functional forms best described weed damage to winter wheat in southeastern Washington. With linear weed survival functions, the damage functions led to concave parabolic benefit functions from herbicide application. The resulting economic threshold interval for summer annual grass weeds in no-till winter wheat was 27 to 51 plants m⁻².

"Economic Thresholds: Why Fixed Costs Matter." Susan H. Hoffman and Richard K. Perrin, University of Nebraska.

Fixed costs are essential in the determination of an economic threshold. This paper develops a general model for thresholds and shows the necessity of fixed costs. A review of pest management literature reveals that no previous models have successfully identified thresholds in the presence of variable pest management levels.

"The Economic Threshold with a Stochastic Pest Population." Jean-Daniel Saphores and Jon M. Conrad, Cornell University.

Strategies to control pest populations might be viewed as options. When a pest population evolves stochastically, we show that the "economic threshold" is a stopping barrier. The optimal time to apply a pesticide occurs when option value first equals the discounted expected value of mortality less the cost of application.

TUESDAY, JULY 30, 1996

10:15 - 12:00 Noon

SELECTED PAPERS

SP-6A FARM PROGRAMS POLICY ISSUES AND MARKETING DECISIONS

Moderator: John Beghin, North Carolina State University

"U.S. Sugar and Corn Policies: A Sweet Deal for High Fructose Corn Syrup Processors?" Kevin McNew, University of Maryland.

Corn and sugar policies which support producer prices are shown to have more benefits to HFCS processors. Sugar quotas keep HFCS prices high, benefiting processors with minimal effect on corn producers. From a corn deficiency payment program, processor gain is nearly equal to corn producers (in percentage terms).

"The Impact of Lemon Prorate on Export Markets." Christopher Ferguson and Hoy Caman, University of California-Davis.

The California-Arizona lemon industry used their federal marketing order to practice price discrimination in domestic fresh, export, and processing markets. While most attention

has focused on the domestic fresh market, analysis reveals that the order had important quantity allocation and price impacts in export markets.

"The Impact of Tariffs on U.S. Exports of Value-Added Wheat Products." Joyce Hall Krause, William W. Wilson and Frank J. Dooley, North Dakota State University.

Tariffs that U.S. agricultural commodities and products face typically increase as a product is further processed, contributing to a bias towards exporting less processed products. This is the case with wheat, flour, and processed wheat products. Tobit models are used to quantify the impact of tariffs on the import demand *

*Abstracts in excess of 50 words were truncated at 50 words.

"Effects of Reduced Government Deficiency Payments on Post-Harvest Marketing Strategies." Steven Betts, Brian D. Adam and B. Wade Brorsen, Oklahoma State University.

Effects of reducing government deficiency payments on a wheat producer's post-harvest marketing strategies are evaluated. The deficiency payment is predicted using an average option pricing model to properly value both intrinsic value and time value of the deficiency payment. Results indicate that reducing target price leads to greater use of *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-6B PRICING ISSUES IN INTERNATIONAL MARKETS

Moderator: Paula Emerick, USDA/AMS-Dairy Division

"An Explanatory Model of Price Transmission: Price Pass-Through in Bolivian Agricultural Markets." James L. Garrett, International Food Policy Research Institute.

Political, economic, and market factors determine how price changes are transmitted from the international to the domestic market. Policymakers can improve programs of price liberalization by taking these factors into account in program design. A varying parameter model is proposed to capture the effects of these factors on price transmission.

"The Law of One Price and Mercosur Rice Markets." Eric J. Wailes, Ralph Bierlen and Gail L. Cramer, University of Arkansas.

The law of one price (LOP) is tested for rice markets in three Mercosur nations and between the Mercosur and two major external exporters. Mercosur markets are found to be weakly cointegrated at the mill level and Mercosur markets are cointegrated with the two external exporters at the mill and *

*Abstracts in excess of 50 words were truncated at 50 words.

"Price Relationships in International Wheat Markets: Cointegration and Correction Approach." William H. Meyers, Samarendu Mohanty, Patricia Cortez, Damell Smith and Steven L. Elmore, Iowa State University.

This paper examines price relationships in the international wheat market using a cointegration and error correction approach. Price series are found to be first difference stationary and cointegrated. ECM results suggest that there is no significant price leader in the international wheat market.

"Spatial Price Dynamics and Integration in Russian Food Markets." Barry K. Goodwin, Thomas J. Grennes and Christine McCurdy, North Carolina State University.

Dynamic elements of spatial market linkages for several important food commodities in the Russian Federation are evaluated. Conventional time-series tests of spatial integration are complemented with an analysis of dynamic responses to

price shocks. The results provide tempered support for integration in the long-run, especially in retail markets.

SP-6C TOPICS IN AGRICULTURAL FINANCE

Moderator: David Neff, University of Arkansas

"A New View of the Lender-Borrower Relationship." Bruce W. Roberts and Bruce J. Sherrick, University of Illinois.

Much recent literature discusses the lender-borrower relationship within a principal-agent context with the lender (principal) contracting inputs to the producer (agent). This paper characterizes the secured lender's position as a contingent equity holder through an option, and examines the implications for a better understanding of the economics of financial contracting.

"Optimal Capacity in the Anhydrous Ammonia Industry: An Application of Real Option Theory using a Mean Reverting Stochastic Process." Kyle W. Stiegert, Kansas State University; Thomas W. Hertel, Purdue University.

Pindyck's (1988) real option model is extended to account for mean-reverting tendencies in price spread data and parametric uncertainty in an analysis of the anhydrous ammonia industry (1971-1991). The model could not support the mid-1970's expansion phase that left the industry in a severe overcapacity state from 1976-1991.

"Analysis of Investments in Segregated Early Weaning in Hog Production: A Fuzzy Approach." L. H. Chien, M. A. Boland, P. V. Preckel and T. G. Baker, Purdue University.

The objective of this paper is to determine potential returns to management, operator labor, and facilities from adopting segregated early weaning (SEW). Fuzzy set theory is used to develop a tableau for a return from SEW adoption under alternative conditions.

"Capital Structure and Efficiency in Illinois Grain Farms, a Nonparametric Approach." Raoul E. Nasr and Peter J. Barry, University of Illinois.

In this paper, several radial-input measures of technical efficiency are computed using mathematical programming techniques. The results show that inputs on average could have been reduced by 18.4%. Both scale inefficiency and congestion are sources of inefficiency. Results also show that there is an effect of leverage on efficiency.

SP-6D RISK AND STOCHASTIC CONTROL IN PRODUCTION ECONOMICS

Moderator: David Lambert, University of Nevada

"The Incorporation of Risk Aversion, Output Price Uncertainty, and Input Price Uncertainty into a Duality Model of Production." Ernest S. Humphrey and Kenneth Foster, Purdue University.

The issue of input price uncertainty is ignored in models of agricultural production despite the fact that most production decisions in agriculture are made sequentially. Such models ignoring input price uncertainty may be misspecified. A duality model of production is developed which considers both output and input price uncertainty.

"Behavioral Risk: An Explanation of Contracts in the Broiler Industry." Sinaia Netanyahu, Siddhartha Mitra and Richard E. Just, University of Maryland.

While the traditional explanation for the evolution of contracts in the broiler industry focuses on access to capital and sharing of price risks, this paper explains evolution of contracts on the basis of behavioral risk and the two sided moral hazard

problem. Relative performance contracts solve the moral hazard problem.

"Discrete Events and Investment in Irrigation Technologies."
Gareth Green, Washington State University.

The option value theory is extended and applied to investment in irrigation technologies. The timing of investment is modeled as a function of continuous changes in water price and discrete changes in investment costs. It is found that large changes in the production environment may be required to induce investment.

SP-6E COMMODITY MARKET PRICING AND POLICY IMPACTS

Moderator: Lois Schertz Willett, Cornell University

"An Econometric Analysis of California Milk Quota Prices."
Javier Ekboir and Daniel Sumner, University of California-Davis.

The price of California's milk pool quota was found to depend on expected quota returns (milk price differential and allocations of new quota), the ratio of quota to base in any particular sale and regulatory changes. The latter are particularly influential because they affect the value of returns.

"The Market for High Fructose Corn Syrup: Estimation of Demand and Supply and Effects from Potential Changes to the U.S. Sugar Program." Lisa A. Offenbach, Mississippi State University.

This study estimated supply and demand curves for high fructose corn syrup (HFCS), using reduced-form, simultaneous equations. To estimate the effect of the U.S. Sugar program on HFCS, the demand curve for HFCS was used to predict welfare changes that occur as a result of changes in sugar prices.

"Using Markets to Induce Proper Diets." Michael Finke and Luther Tweeten, Ohio State University.

The positive welfare impact of changing diets through price policy is discussed. Magnitude of taxes and subsidies on aggregate food categories required, and the potential benefit to society of optimal food consumption are estimated.

"U.S. Cotton Quality Attributes Relative to Prices Paid by Textile Manufacturers: A Hedonic Analysis." Changping Chen, University of Georgia; Don E. Ethridge, Texas Tech University; Stanley M. Fletcher, University of Georgia.

This paper presents an analysis of quality attributes determining the price of U.S. cotton in the textile mill market for the period 1992-1995 based on hedonic price theory. Results indicated that fiber length had the largest impact on cotton prices, followed by micronaire, color, and cleanness of fiber.

SP-6F AGRICULTURAL ASSET VALUATION

Moderator: Alan Barkema, Federal Reserve Bank of Kansas City

"A Historical Examination of Certainty Equivalence for Agricultural Assets: 1910-1992." Charles B. Moss, University of Florida; J. S. Shonkwiler, University of Nevada; Andrew Schmitz, University of Florida.

A perennial topic of concern in domestic agricultural policy is the valuation of agricultural assets. The effect of changes in interest rate, agricultural income, etc. on agricultural assets depends on the certainty equivalence. This study uses a latent variable approach to examine factors which effect the certainty equivalence over time.

"Information and Formation of Offer Price in Farmland Markets."
Edmund M. Tavernier, Tugrul T. Temel, Rutgers University; Farong Li, Johnson & Johnson.

This study develops a game-theoretic framework to examine the preservation and capitalization effects of government farmland preservation policies. The results suggest that the impact of such policies as agricultural zoning on the reservation price and mean-waiting period depends on the number and spread of the type of buyers.

"The Effect of Agricultural Policy on Farm Land Values." Calum Turvey, University of Guelph; Steve Clark, Nova Scotia Agricultural College; Alfons Weersink, University of Guelph.

The separate effects of market returns and government support programs on farm land values are investigated through a capitalization model with a time varying discount rate. The marginal response on Ontario land price is greater for a change in government subsidies than for production income.

"Differential Property Tax Assessment Programs, Land Allocation, and Land Values at the Urban Fringe." Sabrina J. Ise and David Sundung, University of California-Berkeley.

This paper presents a sample-selection model for land allocation and land values near Sacramento, California. Our empirical model explains patterns of enrollment in California's differential property tax assessment program. We find that the program is only marginally successful in achieving its goals of protecting prime farmland and reducing urban sprawl.

SP-6G DYNAMICS AND CONTROL IN PRODUCTION DECISIONS

Moderator: Catherine Morrison, University of California-Davis

"Dynamic Measures of Capacity Utilization and Scope Economics." A. Babacan, C. M. Gempeasaw II and J. Elterich, University of Delaware.

Dynamic measures of capacity utilization, scope, and scale economies are estimated empirically for German agriculture. Adjustment rates for quasi-fixed factors indicate that short-term agricultural policies may have a substantial effect on German production structure. Overall capacity utilization was close to unity, implying no significant unnecessary costs.

"Impact of Cattle Prices on Cow Herd Size and Heifer Replacement Levels." John D. Schmitz, University of Wyoming; Huiling Sun, Metro Bank, NA, Houston, TX.

A dynamic beef cow herd decision model is estimated and used to simulate a feeder cattle price shock. Cow herd and replacement inventory estimates are then compared to nonshock levels. Noticeable effects remain about ten years, while changes in cullings and replacements are erratic for the first five years.

"A Dynamic Economic Analysis of Nitrate Leaching in Corn Production Under Nonuniform Irrigation Conditions." Dana L. Hoag, Steven S. Vickner and W. Marshall Frasier, Colorado State University.

A dynamic model is used to develop profit maximizing nutrient management plans in the presence of irrigation system nonuniformity. A sensitivity analysis reveals how steady state profit and leaching levels are influenced by changes in relative prices and irrigation system performance.

SP-6H SUSTAINING OUR AGRICULTURAL RESOURCES

Moderator: Sudhir Chaudhary, Iowa State University

"Insuring Farm Revenue and Profit as an Incentive for Adoption of Best Management Practices." Eric A. DeVuyst, Viju Ipe and Robert H. Hombaker, University of Illinois.

Benefits from adoption of BMPs are not fully captured by farmers, so sub-optimal levels of adoption occur. Since BMPs may reduce profitability, it may be necessary to provide farmers additional economic incentives. This study suggests insuring farm revenue or profit against loss due to BMP adoption as an incentive.

"A Case Study of Federal Farm Commodity Programs and Sustainable Production Systems." Wesley N. Musser and James C. Hanson, University of Maryland; Tracy Irwin Hewitt and Katherine Reichelderfer Smith, Henry A. Wallace Institute for Alternative Agriculture; Steven C. Peters, Seeds of Change.

Federal farm commodity programs have been considered to be less beneficial for sustainable than conventional production systems. This research analyzed the impacts of changes in the 1990 Farm Bill on this issue. These changes increase the benefits of farm commodity program participation for sustainable farmers.

"Farmers' Perceptions of What is Sustainable." Lumane P. Claude, Jin-Jou Dau and Kate Smith, Pennsylvania State University.

A probit model investigates farmers' perception of what sustainable agriculture means in relation to their various farming practices given socio-economic and demographic characteristics. Farmers' self-classification as sustainable was directly connected to using organic or diversified farms and green or compost manure. However, adoption of chemical fertilizers negatively influenced farmers' choice.

SP-6I NUTRITION, HEALTH AND ADVERTISING EFFECTS ON DEMAND

Moderator: Vicki McCracken, Washington State University

"Diet-Health Knowledge and Nutrition: The Intake of Dietary Fats and Cholesterol." Jayachandran Variyam, University of Kentucky and ERS/USDA; James Blaylock and David Smallwood, ERS/USDA.

Simultaneous probit estimates confirm that human capital promotes healthier food choices through better acquisition and use of health information. Income, schooling, age, sex, race, ethnicity, vegetarianism, and dieting status significantly influence macronutrient intake. The informational role of exogenous variables is illustrated by computing their direct and indirect effects on intake.

"Sociodemographic Effects on the Importance of Nutrition in Food Shopping." Rodolfo M. Nayga, Jr., Rutgers University.

This study examines how the belief of a main meal planner of a household about the importance of nutrition in food shopping is influenced by the person's sociodemographic characteristics. The results have important implications for and may be crucial to the success of consumer information programs that promote health and *

*Abstracts in excess of 50 words were truncated at 50 words.

"Evaluating the U.S. Beef Check-Off: An Alternative Approach." Ronald Ward and Wanki Moon, University of Florida.

Using limited dependent variable models, models showing the impact of the U.S. beef check-off advertising efforts are estimated. Both the probability of becoming a beef consumer and the intensity of consumption are estimated. The models also show the effect from health concerns, consumer attitudes and demographics.

"Gaussian versus Count-Data Double-Hurdle Models: Cigarette Consumption by Women in the U.S." Steven T. Yen, University of Illinois; Helen H. Jensen, Iowa State University.

Cigarette consumption by U.S. women is investigated. The dependent variable is discrete and censored at zero. The Gaussian double-hurdle model and negative binomial double-hurdle model are used to accommodate zero observations in the sample. Elasticities derived from the two alternative models are extremely similar.

SP-6J REGIONAL INCOME INEQUALITY AND GROWTH

Moderator: Jill Findeis, Pennsylvania State University

"How Much Income Variation Really Exists Within A State?" Michael L. Walden, North Carolina State University.

A procedure for estimating the cost of living within one state, North Carolina, is developed. Hypotheses are tested concerning the relationships between local prices and national prices and several local factors. Intrastate income variation is reduced when the cost of living estimates are applied to nominal per capita incomes.

"Does Income Distribution Affect Regional Economic Growth?" David Tomberlin, Martin Shields and Steven C. Deller, University of Wisconsin.

A recent article suggests that the greater the income inequality in a country, the lower the equilibrium growth. The logic is straightforward: in an economy concerned with inequality, governments redistribute income. Redistribution, however, serves as a disincentive to accumulation, hence constricting growth. This result is supported by a multi-country regression.

"Income Growth vs. Inequality in the U.S.: A State-Level Analysis of Reverse Causality." Octavian Ngarambe and Stephan J. Goetz, University of Kentucky.

Trends of income distribution in the U.S. are examined at the national, state and regional level, using a rank-size distribution. State-level factors influencing both economic growth and inequality are identified. After controlling for reverse causality, we find a significant positive relationship between economic growth and inequality.

SP-6K FARM PRODUCTION SYSTEMS AND THE ENVIRONMENT

Moderator: Paul Wilson, The University of Arizona

"Increased Cropping Diversity to Reduce Leaching and Runoff: Economic and Environmental Analysis." Wayne S. Roberts and Scott M. Swinton, Michigan State University.

Analysis of variance on 34 Michigan fields and a whole-farm optimization analysis show nitrate leaching and phosphorus runoff can be reduced while maintaining profitability in combined crop systems. Gross margins are increased by crop rotation and manure use; cover crops reduce nonpoint source pollution without significantly reducing net returns.

"Crop Diversification - Multi-Cropping vs. Multi-Herbicide-Tillage Methods." Glenn A. Helmers, University of Nebraska; Joseph A. Atwood, Montana State University.

An Integer Programming model on a representative eastern Nebraska farm was used to analyze cropping system mixes, herbicide-tillage system mixes, and mixes of both. The results demonstrated that significant increases in revenues arise from each mixing method as well as the two together. The increased efficiency arises from reduced machinery *

*Abstracts in excess of 50 words were truncated at 50 words.

"Economics Of Animal Welfare And Environmental Measures In Pig Production Chains." M. den Ouden, A. A. Dijkhuizen and R. B. M. Huirne, Wageningen Agricultural University.

Using an economic pork chain simulation model it was calculated that animal welfare and environmental measures increased total farrow-to-finish production costs by 22% and 15% respectively. Improvement of the illumination standards and feed adaptations respectively, were found to be most efficient. However, the use of energy increased.

"Environmental Implications of Different Nutrient Management Strategies." David Shank and Wen-yuan Huang, ERS/USDA.

The dynamic and static rules for determining the optimal fertilizer application rates considering a fertilizer carryover based on the nutrient mass balance framework are compared to the widely used replacement rate strategy. The results suggest that a shift to a dynamic framework for nutrient management will precipitate an increase in *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-6L EMPIRICAL METHODS IN INTERNATIONAL TRADE
Moderator: Barry Krissoff, ERS/USDA

"A Geographic Allocation Model for Egyptian Import Demand for Wheat, Corn, and Flour." Regina Cryan-Pana and James L. Seale, Jr., University of Florida.

The continuing liberalization of its economy and Egypt's importance for the U.S. as an importer of cereals create a need for the present study, which shows that Egyptian cereals imports from different sources are uniform substitutes and that if total import expenditure for cereals increases, the U.S. share will increase.

"Estimating Equilibrium Real Exchange Rates: Differential Inflation and Domestic Relative Prices." William A. Masters and Elena Ianchovichina, Purdue University.

Differential-inflation proxies for real exchange rates (RER) systematically *understate* RER misalignment, and introduce a consistently *biased trend* in RER movements. Using 1967-87 data from Zimbabwe we test for these effects, concluding that RER studies should use domestic relative prices wherever possible; where proxies are used such errors should be acknowledged.

"The International Coffee Agreement: A Tax on Coffee Producers and Consumers?" Mary Bohman, University of British Columbia; Lovell Jarvis, University of California-Davis.

The International Coffee Agreement (ICA) used export quotas to increase the international price. The paper develops a model of domestic policy and shows that the producer price should fall in response to quotas. Econometric analysis supports the hypothesis that quotas caused producer prices to fall in most coffee producing countries.

"A Profit-Maximization Approach to Modeling Trade in the U.S. Farm Production Sector." Juan J. Porras, C. Richard Shumway and H. Alan Love, Texas A&M University.

We develop a profit maximization model of agricultural trade for the U.S. farm production sector. Short- and intermediate-run elasticities are computed. Hypothesis tests indicate that the underlying assumptions implicit in this approach cannot be rejected. Importantly, we discover that exports and nontraded production cannot be treated as an aggregate output.

SP-6M EDUCATIONAL METHODS IN ECONOMICS
Moderator: Ward Netstead, University of Minnesota

"Minority Student Performance in the Principles of Macroeconomics Course." Krishna Agnihotri, Donald R. Andrews and Ashagre Yigletu, Southern University.

The primary purpose of this analysis was to estimate the educational production function for minority students in principles of macroeconomics. Data were collected from students in this course in the Spring of 1995. The model that was developed and estimated is highly significant. The variables significant at the one percent *

*Abstracts in excess of 50 words were truncated at 50 words.

"Testing Math Competency in Introductory Economics." Molly Espey, University of Nevada.

The results of this study indicate no significant difference in success between students who demonstrated math competency upon entering an introductory economics course and those who required remedial math assistance. However, students who did not eventually attain a basic level of math competency performed significantly worse in the course.

"Learning for Dollars: Student Motivation and Active Learning." Chris Bastian, Larry VanTassell, Dale Menkhous and Larry Held, University of Wyoming.

This study examines an active learning exercise incorporated into a commodities marketing course and evaluates the effect of dollar payoffs on students' involvement. Overall, the students reported a positive attitude toward the exercise, but the monetary rewards didn't seem to motivate students beyond what would normally be expected.

SP-6N INNOVATIONS IN FUTURES MARKETS RESEARCH
Moderator: Jeffrey Williams, Stanford University

"Efficiency Tests of July Kansas City Wheat Futures." Terry L. Kastens and Ted C. Schroeder, Kansas State University.

F-tests in forecast models, forecasting accuracy, and trading profits are used to test efficiency of Kansas City July futures from 1947 through 1995. Although generally concluding efficiency, the results show increasing efficiency over the years studied for the period five to six months prior to harvest, but decreasing efficiency since *

*Abstracts in excess of 50 words were truncated at 50 words.

"When Should Minimum-Variance Hedge Recommendations Be Followed." Sergio H. Lence, Iowa State University.

The most important minimum-variance-hedge-ratio assumptions are (a) deterministic production and (b) all wealth invested in the cash position. Relaxing either assumption renders costs associated with hedging relatively more important, yielding almost negligible net benefits of hedging. Hence, hedging costs typically dismissed in hedging models are relevant to explain hedging behavior.

"Cointegration and Settlement of Commodity Futures Contracts." Kenneth A. Foster, Purdue University; Art Havenner, University of California-Davis.

Intuitively, weekly live cattle prices in various markets would be expected to be cointegrated. A nonparametric test is used to evaluate the value of arbitrage forecasts implied by the structure of a linear state space model. The arbitrage relationship is employed to generate efficient discounts/premiums for either physical delivery or *

*Abstracts in excess of 50 words were truncated at 50 words.

TUESDAY, JULY 30, 1996
1:30 - 3:15 P.M.
SELECTED PAPERS

SP-7A MARKET IDENTIFICATION, ADVERTISING AND PROMOTION

Moderator: Julie Caswell, University of Massachusetts

"Measuring Exposure to Advertising: Gross Rating Points or Advertising Expenditures." Jonq-Ying Lee and Mark G. Brown, Florida Department of Citrus.

This study found that one should not expect a high correlation between gross rating points and advertising expenditures. In addition, depending on the availability of advertising data, either gross rating points or advertising expenditures can be expected to provide similar estimates for demand advertising parameter estimates.

"Using Price Discrimination Theory to Plan Promotions." Ronald B. Larson, North Carolina State University.

Serious mistakes can be made by marketers if they ignore the potential leakages between segments when they plan price promotions. The model illustrated in this paper considers leakages along with communication spending and non-participation by potential buyers to find the optimal list and discount prices for a promotion.

"Generic and Brand Advertising Effectiveness: An Analysis of Dairy Advertising." Cynda R. Clary, New Mexico State University; Michael K. Wohlgenant, North Carolina State University.

A model linking advertising and government purchases to farm price is used to examine the effects of generic and brand advertising in the dairy industry. Supply response to advertising is also included in the analysis. Results suggest that both generic and brand advertising have significantly affected farm-level milk prices.

"A Spatial Statistic for Identifying Market Areas." DeeVon Bailey, Utah State University; B. Wade Brorsen, Oklahoma State University; Michael R. Thomsen, University of Minnesota.

A new spatial statistic is proposed for identifying firms' principal market areas. This statistic is applied to agricultural data for feeder cattle sales at a video cattle auction. The market areas identified by the statistic conform to economic theory since transportation costs appear to be the principal determinant of where

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SP-7B U.S. AGRICULTURAL CREDIT ISSUES

Moderator: Allen Featherstone, Kansas State University

"Firm Dynamics and Credit Constraint: A U.S. Farmland Application." Francois Ortalo-Magne, London School of Economics.

A dynamic model of the agricultural sector consistent with microeconomic observations related to land transactions is calibrated to reproduce key features of the Minnesota farm sector. Numerical simulations show credit market imperfections to be key in explaining debt leverage changes, and farmer's entry and exit, but not land price fluctuations.

"Stabilizing and Extending Credit Worthiness Measures in Multiperiod Agricultural Credit Evaluation Models." Michael P. Novak and Eddy L. LaDue, Cornell University.

To overcome fluctuations in the annual creditworthiness measure, caused by annual changes within an economic environment, the creditworthiness measure is averaged and employed as the dependent variable in two corresponding average, multiperiod credit evaluation models. The results indicate the models are more stable and provide more accurate predictions of creditworthiness.

"Farm-Level Credit Rationing: Lender or Operator Imposed?" Ralph Bierlen, University of Arkansas and Allen M. Featherstone, Kansas State University.

Euler equations are estimated to determine if machinery investors suffer from lender and/or operator imposed credit rationing. A unique feature of the model is the use of a risk index to parameterize the debt constraint. The results support the notion that both types of credit rationing are imposed.

"A Multinomial Logit Analysis of Mortgage Borrowers By Lender Group." Charles B. Dodson, USDA.

A multinomial logit analysis of farms with mortgage loans indicated the wealthiest and most profitable operations were served by life insurance companies while FSA/individuals served specialized and low-equity farms. Banks served young farmers and operators demanding small loans while FCS was evident among older operators and in farming-dependent and metro-counties.

SP-7C THE ENVIRONMENTAL AND THE ECONOMICS OF DAMAGE CONTROL

Moderator: Paul Preckel, Purdue University

"Improved Climate Forecast Accuracy: Potential Implications for the Aggregate Texas Sorghum Supply Curve." Harvey S. J. Hill and James W. Mjelde, Texas A&M University; Wesley Rosenthal, Texas Agricultural Experiment Station.

Sorghum supply curve for Texas with and without knowledge of the Southern Oscillation (SO) are developed. The supply curves incorporating SO information shifted both left and right of the without knowledge curve depending on expected price. Further, overall SO based production practices used less nitrogen, which has sustainability and environmental consequences.

"Damage Control and the Concavity Assumption." David A. Hennessy, Washington State University.

Fox and Weersink recently showed that increasing returns on damage control inputs may occur. This paper describes a necessary and sufficient condition for increasing returns to occur, and applies it to single and multiple inputs models. Because analytic solutions may be impossible, an empirical test for concavity violations is provided.

SP-7D THE EFFECTS OF ENVIRONMENTAL QUALITY AND POLICY ON INDIVIDUAL AND AGGREGATE BEHAVIOR

Moderator: Dixie Reaves, Virginia Polytechnic Institute

"A Structural Equations Approach to Jointly Modeling Fish Catch and the Demand for Recreational Fishing." W. Douglass Shaw, Jeffrey E. Englin and David K. Lambert, University of Nevada.

A likelihood function is developed which combines two Poisson processes to jointly estimate the number of fish caught and recreational fishing trips taken. Welfare measures calculated for changes in dissolved oxygen and turbidity at the lakes in the analysis have significant effects on an individual's catch, and hence fishing demand.

"Incorporating Health and Environmental Costs into Apple Growers' Insecticide Selection Decisions." Bryan J. Hubbell, University of Georgia; Gerald A. Carlson, North Carolina State University.

Costs associated with health and environmental hazards are hypothesized to affect choices of apple insecticides. Insecticide selections are modeled using conditional logit choice probabilities. Results indicate that pest efficacy has the largest positive effect on selection probabilities. User and fish toxicity and exposure negatively affect probabilities of selecting insecticide products.

"The Economics Impact Analysis of Ozone Regulations in the San Joaquin Valley of California." Hongjin Kim, University of Alaska; Gloria Helland and Richard Howitt, University of California-Davis.

This study analyzed the benefits and costs of regional ozone regulations in the San Joaquin Valley with the objective of providing a quantitative analysis of regional air quality standards based on those regional benefits and costs.

"Impact of Trade and Environmental Policies in the Pork Sector on Water Quality: The Case of Raleigh, North Carolina." Marielle Savard and Mary Bohman, University of British Columbia; Pierre-Philippe Claude, Independent Consultant.

This paper analyzes the effect of trade and environmental policies in the hogpork industry on the levels of phosphates and nitrates in surface water in North Carolina with a mathematical programming model and with the Erosion Productivity Impact Calculator (EPIC) simulation model.

SP-7E SUPPLY RESPONSE, SUPPLY CONTROL AND RESPONSE SURFACE

Moderator: Greg Perry, Oregon State University

"Cropland Retirement and Supply Control in the Great Plains." Mary Riddel and Melvin D. Skold, Colorado State University.

Fixed effects models for wheat data from the Great Plains suggest that increasing trends in production and yield far outweigh the reductions in wheat production derived from short and long-term set-aside programs. Long-term programs such as CRP are slightly more effective than short-term programs in controlling wheat supply.

"Producer Response to Milk Price Reform." Steven Buccola and Yoko Iizuka, Oregon State University.

Hedonic cost analysis shows that dairy farms operate in stage I of their feed production functions. Substitution elasticity of concentrates for forages is only 0.25, and conditional feed demand elasticities are near -0.12. Price reform will bring little improvement in protein/butterfat ratios unless breeding programs are altered.

"Response Surface Methodology for Modeling Complex Systems." F. Roka, University of Florida; Dana Hoag and S. Vickner, Colorado State University.

Simulation models are powerful tools for researchers. However, they can be difficult to work with due to the massive amounts of data that can be generated. Research, response surface methodology (RSM) is proposed to reduce complex, lumpy systems into tractable equations useful to production economists. RSM expresses the relationships in *

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SP-7F REGIONAL FACTOR MOBILITY AND DEMAND FOR SERVICES

Moderator: Notie Lansford, Oklahoma State University

"The Role of Defense Cuts in the California Recession: Computable General Equilibrium Models and Interstate Factor Mobility." Sandra Hoffmann, University of California; Sherman Robinson, International Food Policy Research Institute; Shankar Subramanian, Cornell University.

This paper examines the impact of recent defense cuts on California using a state computable general equilibrium (CGE) model. It also explores the sensitivity of regional impact analysis to assumptions about factor migration by comparing the results from a flex-price CGE model with those from a fixed-price, input-output, multiplier model.

"Commuting, Migration and Labor Market Adjustment in North Carolina: Does Suburbanization Explain the Trends?" Mitch Renkow, Dale Hoover and Jon Yoder, North Carolina State University.

We find that suburbanization was a significant determinant of rural-metro commuting only during the 1980-1990 period, and that even then its impact on observed commuting flows was quite limited. Rather, rural-metro commuting appears to have been much more highly influenced by the pull of more remunerative urban employment opportunities.

"Discrete Choice Model of the Demand for Rural Hospital Services in the United States." Paul E. McNamara, University of Minnesota.

This paper presents a conditional logit model of the rural resident's choice between use of no hospital services, the nearest rural hospital, the next nearest hospital, and some other hospital. Using a unique random sample covering over 5,000 U.S. rural residents, the model shows that income, shopping habits, ethnicity, *

*Abstracts in excess of 50 words were truncated at 50 words.

"Supporting Local Economic Development Efforts: A Microeconomic Analysis." Steven C. Deller, University of Wisconsin; Norman Walzer, Western Illinois University; Martin Shields, University of Wisconsin.

Using data from a sample of rural Illinois residents, a model predicting individual willingness to support local economic development and growth efforts is reported. Data on revealed preference for twelve specific development strategies is used to construct an index of overall support. The results suggest that younger residents with lower *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-7G ECONOMICS OF RISK AND UNCERTAINTY

Moderator: Paul Fackler, North Carolina State University

"How to Decide if Experts Disagree: Uncertainty Based Choice Rules and the Safe Minimum." Richard T. Woodward and Richard C. Bishop, University of Wisconsin.

Decision makers facing a panel of experts may have no way to state the probability that any one expert is correct. This can be interpreted as a condition of ignorance. We discuss choice criteria appropriate for this condition, and demonstrate the similarities between these criteria and the Safe Minimum Standard.

"Risk Sharing and Off-Farm Labor Decisions." Kevin Chen, University of Alberta; Alfons Weersink, University of Guelph.

A dynamic off-farm labor decision model of a prudent farm household facing stochastic farming income is developed to show that an increase in income uncertainty generally

increases off-farm employment hours and precautionary savings. This may explain low participation rates for public programs to reduce farm income variation.

"Optimal Markup Rules Under Demand Uncertainty." Timothy Park and Luanne Lohr, University of Georgia.

We test the theoretical optimality of a rule of thumb for wholesaler markup pricing under demand uncertainty. We derive testable comparative-static results that describe the influence of shifts in key parameters. An application to organic lettuce wholesalers shows that a markup rule that simplifies the pricing decision can be *

*Abstracts in excess of 50 words were truncated at 50 words.

"Yield-Price Correlations at the Farm Level: Estimation Methods, Findings, and Implications for Risk Management." Richard Heifner and Keith H. Coble, ERS/USDA.

Estimates of farm-level yield-price correlations are crucial for quantifying the effects of pricing and government programs on farm revenues. This paper reports a methodology designed to mitigate the paucity of farm-level price and yield data. Results are reported for 746 corn-growing counties and 515 soybean-growing counties in the United States.

SP-7H INPUT CHOICE, RURAL CREDIT AND ECONOMIC REFORM IN AFRICA

Moderator: Ulpal Vasavada, USDA

"Gender and Variety Selection: Farmers' Assessment of Local Corn Varieties in Southern Mali." Toon Defoer, Abdoulaye Kamara and Hugo De Groote, Institut d'Economie Rurale, Mali.

In order to respond to the variability of local conditions, farmers in southern Mali grow several varieties of corn. Their selection criteria are quite different from breeders' and women's criteria for transformation and consumption have thereby often been neglected. A methodology to find these criteria is hereby presented with applications.

"Nonprice Determinants of Input Acquisition Behavior in Senegal." Valerie Kelly, Michigan State University; Bocar Diagona, Institut Senegalais de Recherches Agricoles; Thomas Reardon, Michigan State University.

The quantity and quality of peanut seed used in Senegal are below levels required to meet national objectives. A model of seed acquisition behavior shows that both can be improved by increasing livestock income, education and extension; but policies to increase cereal sufficiency will impact negatively on the peanut sector *

*Abstracts in excess of 50 words were truncated at 50 words.

"Credit Unions in Niger: The WOCCU Experience." Korotoumou Ouattara and Mayada M. Baydas, Ohio State University.

Credit union strategy in developing countries focuses primarily on the savings mobilization first approach. By generating local resources, CUs like the ones in Niger have the ability to become one of the most important source of financial resource for farm household as well as micro and small scale entrepreneurs.

"The Unfavorable External Economic Environment and Economic Reforms in Sub-Saharan Africa." Kofi Adu-Nyako, North Carolina A&T State University.

Economic restructuring in Africa was undertaken in the environment of negative shocks in the international price regime. The relative importance of domestic policy versus exogenous factors in influencing producer incentives to export

agriculture is analyzed. The case of reforms in Ghana illustrates the impact of the unfavorable external price regime.

SP-7I META ANALYSIS OF RESOURCE ISSUES

Moderator: Kevin Boyle, University of Maine

"An Alternative Approach to Morbidity Valuation: A Meta Analysis." F. Reed Johnson and Erin E. Fries, Triangle Economic Research; H. Spencer Banzhaf, Duke University.

Placing dollar values on human health has long been a controversial aspect of policy analysis and remains difficult given the relatively small number of morbidity valuation studies available. By combining both the economic and health literature, this paper offers an alternative approach to morbidity valuation.

"Economic Benefits of Rare and Endangered Species: Summary and Meta Analysis." John B. Loomis and Douglas S. White, Colorado State University.

Using CVM, the annual WTP of 18 species ranges from a low of \$6 per household for the striped shiner to a high of \$95 for the spotted owl. A regression analysis shows that 68% of the variation in WTP is explained by the change in population size, species type, *

*Abstracts in excess of 50 words were truncated at 50 words.

"Meta-Analysis of Gasoline Demand Elasticities in the United States." Hilary Kaufman and Molly Espey, University of Nevada.

Meta-analysis is used to determine if there are factors that systematically affect price and income elasticity estimates in studies of gasoline demand in the United States. Among the factors analyzed are functional form, lag structure, time span, national setting (U.S. versus the U.S. pooled with other countries), and estimation technique.

SP-7J EVALUATION OF ECONOMETRIC METHODS: TO BE OR NOT TO BE?

Moderator: Jay Coggins, University of Minnesota

"Autocorrelated Errors, Trended Data, and Regression Inference: How Thick is This Ice, Anyway?" Mark Jekanowski and James K. Binkley, Purdue University.

With trended data and autocorrelated errors, OLS and even consistent estimators yield unreliable inferences in univariate regressions. Using analytics and Monte-Carlo, we show that problems are reduced by additional trended regressors and that inferences for untrended regressors are always reliable. A diagnostic to detect inference problems is proposed.

"The Many Faces of Collinearity." Anya McGuirk and Paul Driscoll, Virginia Polytechnic Institute and State University.

The consequences of collinearity on regression results are examined. We demonstrate that one cannot examine this issue holding all aspects of a regression model constant. We examine four collinearity scenarios which differ by what parameters are allowed to change. The consequences of collinearity vary substantially depending on the scenario analyzed.

"Treating Binding Non-Negativity Constraints - Does the Approach Really Matter? An Application to Herbicide Demand in Corn." Channing Arndt and Songquan Liu, Purdue University.

We show that choice of approach in treating binding non-negativity constraints significantly impacts estimates. We also argue that the Lee and Pitt estimator has superior properties compared its primary alternative - the modified Heckman's two step.

"Storage and Policy: A Critique of Current Econometric Practice." Darren L. Frechette, North Carolina State University.

This paper examines bias from ignoring storage non-negativity when markets are fully rational. Fully rational data are simulated using numerical methods to generate conditional price distributions. Least squares and GMM estimators are biased when stock-outs are frequent. However, GMM is nearly unbiased when stock-outs are infrequent. Bias sources are explored.

SP-7K IMPACT OF COMMODITY PROGRAMS I

Moderator: Klaus Salhofer, University of Resource Sciences Vienna (Austria)

"The Impact of Commodity Programs on Agricultural Productivity." Shiva S. Makki and Luther G. Tweeten, Ohio State University.

The long-term impact of various government support programs on U.S. agricultural productivity was analyzed using an error correction model. Results indicate that commodity programs have little or no impact on farm productivity, while investments in research, extension, and education contribute significantly to enhance U.S. farm productivity.

"The Influence of Commodity Programs on Supply Response to Market Price." Daniel A. Sumner and Jeffrey D. McDonald, University of California-Davis.

Under complex commodity programs growers receive revenue from several sources so that market price is not the relevant supply price. The program payment structure filters prices from market to producer which effectively dampens supply response. We derive explicit conditions for marginal acreage and participation decisions under which this filtering process *

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"Evaluating Wheat Acreage Response by Class: Implications for U.S. Wheat Policy." Deborah E. Bridges, Hongqi Shi and Thomas L. Wahl, Washington State University.

This paper investigates the heterogeneity of wheat and how wheat classes respond differently to commodity programs and market conditions. An econometric model is developed for each wheat class, including the acreage response, participation response, and yield response decisions. The results indicate that the responses to program provisions differ across the *

**Abstracts in excess of 50 words were truncated at 50 words.*

TUESDAY, JULY 30, 1996
3:30 - 5:00 P.M.
SELECTED PAPERS

SP-8C INTERNATIONAL AGRICULTURAL CREDIT ISSUES
Moderator: Mark Krause, North Dakota State University

"Evaluating Credit Guarantee Programs in Developing Countries." Richard L. Meyer and Geetha Nagarajan, Ohio State University.

The paper discusses the key issues involved in evaluating credit guarantee programs for agricultural and small enterprise lending in developing countries. A review of results of evaluations shows that there is little quantitative information to clearly support the use of guarantee programs to stimulate lending in developing countries.

"Collateral Substitutes: Effect on Loan Access and Size in the Philippine Informal Credit Markets." Geetha Nagarajan and Richard L. Meyer, Ohio State University.

Collateral substitutes such as interlinked contracts and reputation are econometrically shown to affect loan access and loan size from informal lenders in the Philippines. Greater access and larger sized loans from farmer were influenced by borrower reputation and land links, while from trader lenders by business relations and product links.

"The Effects On Peasant Households Access To Formal Deposits and Loans." Douglas H. Graham, Mark Schreiner and Mario Miranda, Ohio State University.

A dynamic, stochastic, rational expectations model of a peasant household with access to deposits and loans (up to a credit limit) is solved and simulated. If formal contracts offer more favorable rates than informal contracts, then access to formal contracts increases average consumption and decreases its standard deviation.

SP-8D PRODUCTION ISSUES: AN INTERNATIONAL PERSPECTIVE

Moderator: Steven Buccola, Oregon State University

"Production Efficiency in Ukrainian Agriculture and the Process of Reform." Lyubov Kurkalova and Helen H. Jensen, Iowa State University.

A representative sample of 49 state and collective farms in Ukraine provides data in physical units on livestock production and input use for 1989-92. The changes in production efficiency for beef, pork and dairy production are investigated using stochastic frontier methods and show declining technical efficiency and especially low marginal *

**Abstracts in excess of 50 words were truncated at 50 words.*

"Intercountry Agricultural Production Functions Revisited." Michael A. Trueblood, University of Minnesota.

This paper re-estimates intercountry agricultural production functions. The results indicate that there are substantial differences in the production coefficients between the developed countries, less developed countries, and the former centrally planned economies. These stronger findings are partly attributable to a much larger sample size (143 countries) and partly from improved *

**Abstracts in excess of 50 words were truncated at 50 words.*

"Technical and Productive Response to Agricultural Policy Change: An EC Farm Simulation Study." Giovanni Giardini, University of Bologna, Italy.

A mathematical simulation is used to investigate the effects of EC farm policy changes on production decisions and economic results of a representative Italian farm. Significant impacts on farm income and land values are shown. Reduced tillage is stimulated by lower returns, with due effects on crop yields.

"Diversity of Farming Systems and the Regional Spillover of New Technology: Evidence from the Sudano-Guinean Zone of Mali." Lisa D. Poley and William A. Masters, Purdue University.

Using an ex-ante farm programming approach, we show that recently developed farming techniques are likely to be highly profitable across a range of farming systems in the Sudano Guinean rainfall zone of Mali. Key innovations include new varieties, increased fertilization, and more intensive management of manure and crop residues.

SP-8E FARM-LEVEL EFFICIENCY AND PERFORMANCE
Moderator: Alan Ker, The University of Arizona

"Non-Financial Factors and Farm Performance." Kent Olson and John Westra, University of Minnesota.

A logit model is used to explain farm success on the basis of non-financial variables. Formal education beyond high school, soil quality, diversification, management time, new machinery, and letting neighbors try new technology first were found to be significant and positive in explaining positive financial performance.

"Factors Affecting the Efficiency of Ohio Farms." E. Neal Blue, D. Lynn Forster, Marvin T. Batte and Carl R. Zulauf, Ohio State University.

Data envelopment analysis (DEA) is used to analyze the efficiency of a representative sample of Ohio farms. Efficiency measures are derived for each firm. Then, post-DEA regression analysis is performed to estimate the relationship between efficiency and farming practices, capital structure, location of the farm operator characteristics.

"An Empirical Analysis of the Factors Affecting Average Farm Acreages." Ashok K. Mishra and Mehboob U. Ahmed, North Carolina State University.

The present paper reports on an empirical assessment of the factors affecting average farm acreages in Kansas. Particular attention is given to the role of government payments and off-farm work by farm operators. Fixed and Random effects model are used to evaluate the model. Results show that both factors are *

*Abstracts in excess of 50 words were truncated at 50 words.

"A Primal Approach to the Measurement of Expansion Adjustment Costs for Pennsylvania Dairies." Beth Pride Ford, Pennsylvania State University; Wesley N. Musser, University of Maryland.

Adjustment costs of farm expansion have received little attention in farm growth research. This paper uses a primal production approach to estimate milk production per cow adjustments associated with herd size changes. Results indicate significant adjustment costs in the form of lost milk production are associated with dairy herd expansion.

SP-8F OPTIMAL FARM DECISIONS AND EFFICIENCY
Moderator: Ken Foster, Purdue University

"Joint Dynamic Optimization of Ration and Marketing Time: An Application to Pork Production." M. A. Boland, P. V. Preckel and K. A. Foster, Purdue University.

The objective was to jointly optimize the ration/marketing time and determine a pork producer's return to management/operator labor. One to five feeding periods with potentially different rations were considered. Optimal levels of seven nutrients (protein, amino acids) were determined from eight ingredients (corn, soybean meal, synthetic amino acids).

"An Economic Evaluation of Precision Fertilizer Applications on Corn-Soybean Fields." Gary Schnitkey, Jeffrey Hopkins and Luther Tweeten, Ohio State University.

We divide returns from adopting precision fertilization technologies into two parts: information gathering and precision applications. These returns are estimated for 18 fields located in Northwest Ohio. We find higher returns for information gathering than for precision applications. Soil nutrient levels likely will decline under precision applications.

"Site-Specific Analysis: An Economic and Empirical Analysis." Timothy E. Fiez and David A. Hennessy, Washington State University; Bruce A. Babcock, Iowa State University.

New technologies make site-specific management in agriculture possible. We show that profit decreases with increased variability of input requirements. Production effects are complicated. Moving from uncertain to variable input requirements is considered. Empirical analysis suggests that site-specific management reduces nitrogen use substantially. Production and profitability impacts are small.

"A Nonparametric Efficiency Analysis in a Multiple-Output Production Case." Muhammad Zulficar Ahmed and Glenn A. Helmers, University of Nebraska.

A nonparametric, subvector, output technical efficiency analysis was used to measure the relative efficiency of producing crop and livestock outputs for a set of 59 Nebraska farms. On average, crop production was 94% technically efficient, and 96% scale efficient. Livestock production was less scale and technically efficient regardless of the *

*Abstracts in excess of 50 words were truncated at 50 words.

SP-8G FOOD MARKETS: EMPIRICAL STUDIES AND NEW DATA

Moderator: James Binkley, Purdue University

"Demand for Frozen Vegetables in Grocery Stores: Taking Advantage of the Unique Structure of Scanner Data." Steven S. Vickner and Joan R. Fulton, Colorado State University.

Store-level scanner data is used to estimate the retail demand for frozen vegetables in a single market. Traditional empirical demand analysis is enhanced with several new explanatory variables constructed from the disaggregate data. Empirical results have strategic implications for agribusinesses, especially food processors and food retailers.

"Fruit and Vegetable Prices in a Wholesale Farmers Market." John K. Horowitz, Marc Nerlove, James C. Hanson and Kevin McNew, University of Maryland.

This paper examines fruit and vegetable demands in a wholesale farmers' market in which price and quantity are recorded for every transaction. The farmers market allows sellers to develop reputations for high quality produce and it attracts buyers who are likely to be particularly sensitive to quality differences. Produce quality, *

*Abstracts in excess of 50 words were truncated at 50 words.

"Intercommodity Price and Advertising Effects for Spaghetti Sauces." Oral Capps, Jr. and Seong-Cheon Seo, Texas A&M University.

Using IRI Infoscan data pertaining to six types of spaghetti sauces and employing a demand systems framework developed by Duffy, estimates are obtained of own-price, cross-price, and total expenditure elasticities as well as own- and cross-product advertising elasticities. Own-price elasticities are in the elastic range, and all compensated cross-price effects.

"An Analysis of Household Demand for Fresh Beef Products." Jane L. Hsu and Gary W. Brester, Kansas State University.

This paper examines the demand structure of seventeen beef products using an Almost Ideal Demand System and cross-section data from the 1987-88 Nationwide Food Consumption Survey. Price and income elasticities are presented and the effects of demographic factors are considered.

SP-8H DYNAMIC MODELING FOR POLICY ANALYSIS

Moderator: Matt Holt, North Carolina State University

"Modeling Income Stabilization Programs for Agriculture." Keith H. Coble, ERS/USDA; Jeffrey R. Stokes, University of Tennessee.

Agricultural policy in many countries has trended toward less costly and more efficient farm programs. One approach is income stabilization which subsidizes intertemporal savings to mitigate risk. Because of the inherent dynamics of such a risk protection design, it poses unique modeling challenges. This paper provides a methodological approach to *

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"Assessing Multiyear Risk-Management Strategies in the Context of Government Farm Programs." James D. Monke, University of Wyoming.

An approach is developed to address a decision maker's global risk aversion using multiple risk aversion coefficients. The model uses intra- and interyear risk management techniques to analyze farmer behavior under commodity programs. Variability aversion may explain why farmers do not build base even when intrayear risk aversion suggests base *

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"Intertemporal Risk Pooling and the Financial Soundness of the Crop Insurance Program." Haiping Luo, ERS/USDA.

Intertemporal risk pooling is fundamental for crop insurance to cumulate financial reserves. Current program design provides no mechanism to realize such pooling. This study proposes encouraging continuous participation to increase pooling size and investigates feasible incentives. The results suggest 5-year participants deserve 38% premium rate reduction compared to 1-year participants.

"Stability and Cycles in Cattle Inventories." Brian Roe, University of Maryland.

Under certain combinations of economic and biological parameters, optimizing behavior in a dual-purpose cattle model leads to local instability and oscillatory behavior of cattle inventories. Situations featuring high interest rates, low birth rates, inelastic milk preferences and carrying costs, and elastic meat preferences are more likely to induce oscillatory dynamics.

SP-8I RURAL HOUSEHOLD EMPLOYMENT AND THE LOCATION OF PRODUCTION

Moderator: Judith Stallman, Texas A&M University

"Off-Farm Employment and Earnings: Effects of Local Labor Market Structure and Conditions." Jill L. Findeis and Grace Matiru, Pennsylvania State University.

This research examines the influence of local economic conditions and labor market structure on off-farm work participation and earnings in Pennsylvania. Results indicate that unemployment rates, and differences in concentrations of employment in manufacturing, low-wage services, high-wage services, and the resource industries affect participation and especially earnings.

"Estimating Agricultural Trade-Related Rural Employment in the '90s." William Edmondson, Chinkook Lee, Gerald Schluter and Lowell Dyson, ERS/USDA-Rural Industry Division.

Using an Input-Output (I/O) model, agricultural trade impacts on rural employment are examined. An important lesson to emerge

from this analysis is that rural areas have a major stake in the agricultural exports which generate employment in nonmetro regions. And, a trade liberalization through GATT agreements and WTO would result *

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"Determinants of Fam Household Participation in Rwanda's Banana Wine Subsector." Pamela Riley Miklavcic and Thomas Reardon, Michigan State University.

Two-stage Heckman analysis identifies landholdings, income, and agroclimate as influential determinants of household-level participation in Rwanda's banana wine subsector (BWS). Poor households sell more bananas; rich households, more wine. Since BWS-strengthening policies would favor more food-secure Rwandans, research is needed to find new micro-enterprise-enhancing uses for this erosion-controlling crop.

"Economics of On-Farm Processing in the Food Marketing Chain: An Empirical Example." Hans Andersson, Swedish University of Agricultural Sciences; Sone Ekman, Swedish Institute of Agricultural Engineering.

Developments of agricultural policies indicate a transition towards rural development policies. The methodology for including on-farm processing in a sector model is discussed. The case of the Swedish potato industry is analyzed. On-farm processing activities are shown to offer income support to primary producers given increasing international competition.

SP-8J TESTING UNIT ROOT AND COINTEGRATION ANALYSIS USING AGRICULTURAL MARKET DATA

Moderator: Donald Liu, University of Minnesota

"Law of One Price in the International Commodity Markets: A Fractional Cointegration Analysis." Samarendu Mohanty and Darnell Smith, Iowa State University; E. Wesley F. Peterson, University of Nebraska.

This paper examines the Law of One Price (LOP) in the International Commodity markets using a fractional cointegration analysis. Out of nine pairs of price series examined, fractional cointegration supports the existence of the LOP in eight cases as compared to three cases as in standard cointegration process.

"Testing for Seasonal Unit Roots in U.S. Agricultural Data." Harry Vroomen, The Fertilizer Institute; Frederick L. Joutz, George Washington University.

Seasonality is quantitatively important in many U.S. agricultural data series. Determining whether a series follows a constant (deterministic) seasonal pattern or a varying (stochastic) seasonal pattern has important implications for modeling seasonality, testing economic theories, and forecasting. This paper applies seasonal unit root tests to determine the nature of seasonality *

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"Recent Developments on Cointegration and Causation." Hector O. Zapata, Louisiana State University; Alicia N. Rambaldi, University of New England.

A Monte Carlo experiment is used to evaluate the performance of "causality" tests in multivariate cointegrated systems. For samples of size 50 or less, the LR test outperforms the classical Wald and a new Wald tests. All tests perform relatively well for moderate-large samples. Testing mechanics are provided.

"Japanese Beef Supply Response to Prices: A Time Series Assessment." Robert D. Weaver and Atsushi Chitose, Pennsylvania State University.

Using Japanese monthly data, results indicate output levels are trend stationary and prices are nonstationary. No Wagyu beef response to price was found over short- or long-runs. Weak evidence of price responsiveness was found for dairy beef. Results highlight need for modeling conditioned on underlying time series properties.

SP-8K ESTIMATING DEGREES OF MARKET POWER

Moderator: Garth Holloway, University of California-Davis

"Identifying the Degree of Oligopoly Power in the Beef Packing Industry Using Interaction Variables." Mary K. Muth, North Carolina State University.

A method of testing for oligopoly power in beef packing was employed using pork and poultry prices as interaction variables in the beef demand equation. Results indicate beef packers did not exercise oligopoly power from 1967 to 1993 and instead suggest scale economies as consolidation has occurred in the industry.

"A Statistical Test for Market Power Exertion using Nonparametric Techniques." Kellie Curry Raper, University of Massachusetts; Alan H. Love and C. Richard Shumway, Texas A&M University.

Price-taking behavior may be rejected in nonparametric market power tests because of one violations. Violations occur due to noisy perceptions of supply and demand curves and rivals' behavior. We construct a nonparametric test which incorporates a market power index and a stochastic test. Its usefulness is demonstrated using Monte Carlo *

*Abstracts in excess of 50 words were truncated at 50 words.

"Econometric Estimation of the Magnitude of Market Power in the Soybean Export Market." Satish Y. Deodhar, University of Georgia; Ian M. Sheldon, Ohio State University.

In this paper, an estimate of the degree of imperfect competition in the market for soybean exports is derived using a structural econometric model. Derived from a nonlinear three-stage least squares procedure, the estimate of market power shows that the world market for soybean exports is perfectly competitive.

"The Effects of Seasonality on Apple Markets." Daniel Pick and Carlos Amade, ERS/USDA.

This paper estimates monthly oligopoly power coefficients in the U.S. apple market. We account for seasonality in our modeling approach and show that seasonal variation in market conduct exists. We jointly estimate conjectural variation and markup equations and demonstrate that marginal costs can be specified as a weighted average of *

*Abstracts in excess of 50 words were truncated at 50 words.

WEDNESDAY, JULY 31, 1996
10:15 - 12:00 Noon
SELECTED PAPERS

SP-10A TRANSACTION COSTS AND THE VALUE OF INFORMATION IN MARKETING SECTOR

Moderator: Keven McNew, University of Maryland

"Direct Foreign Investment in Processed Foods by Food and Beverage Firms." Peter Goldsmith, McGill University; Thomas Sportleder, Ohio State University.

Global trends in agricultural marketing portend a greater emphasis on trade and direct foreign investment. This paper examines the decision process of a firm's boundary decision as it determines whether to participate in international trade. Hypotheses are tested as to the determinants of strategy using a dichotomous choice nested logit *

*Abstracts in excess of 50 words were truncated at 50 words.

"Public Situation and Outlook Programs: To Be or Not to Be?" Scott Irwin, Ohio State University.

Theoretical arguments regarding the social value of situation and outlook programs are considered. Incorporating learning behavior and costly information into a rational expectation model indicates public situation and outlook information may improve social welfare. The improvement is the result of increasing the speed of convergence towards a rational expectations equilibrium.

"Asymmetry in Wholesale-Retail Food Price Transmission in an African Metropolitan Area: The Case of Kinshasa (Zaire)." Bart J. Minten and Steven C. Kyle, Cornell University.

Price liberalization can be insufficient for efficient operation of African food markets due to the existence of significant transactions costs, caused by deficient infrastructure and information systems. A model based on search costs and kinked demand curves is used to explain asymmetric price behavior in retail markets in Kinshasa (Zaire).

"Evaluating the Effectiveness of Courts in Recovering Road Damage from Overloaded Trucks." Eric L. Jessup and Kenneth L. Casavant, Washington State University.

Highways serve a critical purpose in transporting agricultural products from farm to market. The fee and fine system is designed to maintain this valuable resource by controlling overloading. This paper investigates the courts' role and effectiveness in achieving that goal. The court system is found to be lacking.

SP-10B ECONOMIC POLICIES RELATED TO PUBLIC FINANCE

Moderator: Loren Tauer, Cornell University

"Economic Development Policy in a Regional Economy with Public Goods." David S. Kraybill and Chang Seung, Ohio State University.

This paper describes a dynamic computable general equilibrium (CGE) model for analysis of state tax incentives for economic development. Our analysis suggests that the stimulatory effects of tax reductions are muted when effects of public expenditures on productivity of private capital and utility of households are taken into account.

"Impacts of Alternatives to the Property Tax for School Financing in West Virginia." Qingshui Zhou and Dale Colyer, West Virginia University.

This study analyzed the impacts in West Virginia of replacing the property tax for school finance with increases in general sales or income taxes. Use of a sales tax increase would make the system more regressive while the income tax increase would tend to make it neutral and less regressive.

SP-10C RESOURCE USE ON THE FARM

Moderator: Tim Richards, Arizona State University

"An Economic Analysis of a Corn Soybean Crop Rotation Under Various Fertilizer, Insecticide, and Herbicide Input Combinations." Robert D. Funk, James W. Mjelde, Frank M. Hons and Vince A. Saladino, Texas A&M University.

This study examines the relative economic desirability of eight different input combinations of fertilizer, insecticide, and herbicide on a corn-soybean crop rotation. Results indicate that input combinations which omit some of these inputs can be more profitable and less risky than input combinations which use all three inputs.

"Producers' Attitudes Toward Pesticide Application." Bozheng Yang, Larry VanTassel, Mark Ferrell and David Legg, University of Wyoming.

This study examines producers' attitudes towards pesticide usage issues such as environment, health, educational and economic effects. The more educated the respondent the less they perceived problems to exist with pesticide usage and the more they felt profit maximization should be used as the objective in determining pesticide application.

"Economic Evaluation of Cropping Patterns Based on Policy and Environmental Factors." Krishna P. Paudel, Neil R. Martin, Jr. and Nancy Kokalis-Burelle, Auburn University.

Decision models were used to evaluate switchgrass in peanut rotation systems. Peanut-switchgrass rotation has some benefit based on environmental and financial sustainability factors, but not on profit alone. The model and approach appear useful in evaluating farmer response to changing agricultural policy and environmental regulation.

"Substituting Herbicide for Labor: What is Economical for Sugarbeets?" Larry J. Held, K. James Fomstrom and Stephen D. Miller, University of Wyoming.

Because of decreasing marginal rates of substitution of herbicide for labor, applying more herbicide for growing sugarbeets is not always economical. Initially, labor costs drop sharply from one to two applications. However, labor savings become quite modest with additional applications, and are eventually offset by added herbicide costs.

SP-10D MANAGING WATER RESOURCES

Moderator: Rangesan Narayanan, University of Nevada

"Managing for Spatial Heterogeneity of Sea Water Intrusion into a Coastal Aquifer." Douglas D. Parker and Tracy Hart, University of California-Berkeley.

In coastal regions, over-extraction of the aquifer often results in sea water intrusion, thus affecting water quality. Although overall decreased extraction of the groundwater supplies will slow intrusion, more efficient results can be obtained by spatially heterogeneous management of the aquifer.

"Spatial Allocation of Irrigation Water Under Conjunctive Use." Chieko Umetsu, East-West Center; Ujjayant Chakravorty, University of Hawaii.

This paper presents a spatial allocation model for conjunctive use of surface and groundwater when traditional and modern irrigation technologies are used. The model is found to generate significantly higher benefits compared to the case where only surface water is allocated.

"Modeling Optimal Water Policies in Basins Dominated by Nonconsumptive Uses." Frank A. Ward and Thomas P. Lynch, New Mexico State University.

This paper presents a discrete optimal control model that optimizes economic performance of water policies in watersheds dominated by nonconsumptive values. Results show that application of this model to New Mexico's Rio Chama basin could increase total system benefits over

historical benefits by exploiting complementarities between power production, instream recreation, *

*Abstracts in excess of 50 words were truncated at 50 words.

"Evaluation of Instruments to Control Multi-Contaminants in an Agricultural Watershed." Anastasia Lintner, Wilfred Laurier University; Alfons Weersink, University of Guelph.

A multi-contaminant model that combines hydrological simulations with an economic optimization model is developed to examine the efficiency of nine instruments in achieving three environmental objectives. Firm-specific emission standards and an ambient tax/subsidy scheme are efficient but the latter is likely preferred by regulators and farmers.

SP-10E TOPICS IN FOOD DEMAND ANALYSIS

Moderator: Laura Blanciforti, University of West Virginia

"On The Choice Of Functional Forms In Demand Analysis: An Application To Beverage Consumption In Italy 1960-1990." Raffaella Castagnini and Federico Perali, Università degli Studi di Verona; Thomas L. Cox, University of Wisconsin.

This study analyses how the choices over the class of preferences, the degree of concavity of the price kernel, the rank of the demand system and the choice over the demographic transformations affect the statistical and economic performances of the demand for Italian beverages. We deem that this approach gives *

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"The Effects of Advertising in an Inverse Demand System." Kyrre Rickertsen, Agricultural University of Norway.

An inverse almost ideal demand system is used to investigate the effects of quantities and advertising on the prices of vegetables. The price flexibilities show that the vegetables are q-substitutes. No positive significant effects of advertising are found supporting previous findings estimated by a quantity-dependent almost ideal model.

"An Econometric Study of Fats and Oils Commodities: A Choice of Functional Form." Jayantha R. Perera, Joe L. Outlaw and Ronald D. Knutson, Texas A&M University.

Non-nested scalar combinations of demand systems is used to evaluate the Rotterdam, Central Bureau of Statistics (CBS), Almost Ideal Demand (AID), and the Neves demand (NBR) systems using U.S. fats and oils demand data. CBS fits the data better than any other model or combination of models.

SP-10F PROTECTING OPEN SPACE AND ENVIRONMENTAL QUALITY

Moderator: Linda Lee, University of Connecticut

"Conjoint Analysis of Public Preferences for Farmland Protection." Maria C. Centenera, Elizabeth O. Mackenzie, Dean C. Naim and John Mackenzie, University of Delaware.

We analyze public preferences for alternative farms as candidates for a farmland protection program. Survey respondents evaluated hypothetical farms portrayed graphically and verbally. The survey is implemented via personal interviews and, experimentally, via the Internet. Analysis of preliminary data indicates as strong public demand for open space as for working *

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"Population Growth and Environmental Quality: The Asian Experience." Viju Ipe, University of Illinois.

Interactions between population growth, per capita income, and environmental quality are analyzed using data from representative countries in Asia. Due to data limitations, stock of forest was used as a proxy for environmental quality. Results showed that while population growth leads to deterioration in environmental quality, improvement in income may *

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"Sustaining Open Space Benefits in the Northeast: An Evaluation of the Conservation Reserve Program." Peter J. Parks, Rutgers University; James P. Schorr, Harvard University.

Participation in the Conservation Reserve Program by Northeastern land owners shows significant differences between metropolitan and nonmetropolitan counties in the region. Results confirm that if benefits such as open space are desired in metropolitan counties, alternative policies (e.g., purchase of development rights, zoning legislation) may be required.

SP-10G POTENTIAL FOR INCOME AND FOOD SECURITY: NEW APPROACHES

Moderator: James L. Garrett, IFPRI

"The Potential for Small Holder Fruit and Vegetable Production in Mexico: Barriers and Opportunities." Robin R. Marsh, Asian Vegetable Research and Development Center; David L. Runsten, North American Integration and Development Center.

This paper addresses the social or *ejidal* sector in Mexico, and its potential for diversification into higher value crops, particularly fruits and vegetables. Ten case studies were carried out in nine Mexican states. Principal barriers include uninformed marketing, undercapitalization, poor technical assistance, high transaction costs, labor migration and cultural factors.

"Labor Market Outcomes in a Natural Resource Boom: The Case of Mariculture Exports in Honduras." Denise L. Stanley, University of Wisconsin.

This study of shrimp seed gatherers illuminates export zone labor market outcomes. The incentive compatible contracts used and associated earnings functions are described. The results suggest nonrandom selection into labor market tiers, with upper-tier advantages more attributable to job rationing rather than human capital differences or omitted variables.

"Heteroskedastic Price Forecasting for Food Security Management in Developing Countries." Christopher B. Barrett, Utah State University.

Relatively recent innovations in heteroskedasticity-consistent time series techniques offer reasonably accurate price forecasting tools feasible for government and NGO food security managers in low-income economies. In particular, extended GARCH models exhibit superior out-of-sample forecast accuracy using monthly food price data from Madagascar.

"Loan Subsidy Equivalents: A Novel Approach for General Equilibrium Investigation of Farm Program Expenditures in the U.S." Serdar Sayan, Bilkent University; Luther G. Tweeten and Leroy J. Hushak, Ohio State University.

An elimination of subsidies to U.S. agriculture is expected to generate (i) direct relative price effects, and (ii) an indirect effect on the real interest rate resulting from the fall in budget

deficit. This paper proposes a novel CGE approach to capture both effects following a counterfactual elimination of subsidies.

SP-10H ESTIMATING RECREATION DEMAND

Moderator: Richard Dunford, Triangle Economic Research

"The Demand for Recreational Fishing in Tampa Bay, Florida: A Random Utility Approach." Gretchen Greene, Charles B. Moss and Thomas H. Spreen, University of Florida.

Estimation of demand for recreational fishing in Tampa Bay, Florida can aid in the environmental management of the Bay. A nested random utility travel cost model is used to estimate access values. Results suggest average annual values for the bay alone are \$15.67, and \$0.048 for participants and nonparticipants, respectively.

"The Role of Time in Recreational Demand for Wilderness." Ram N. Acharya, Howard A. Clonts and L. Upton Hatch, Auburn University.

This study examines the role of on-site time in wilderness recreation using data from Cheaha and Sipsey wildernesses. Count data models were used to estimate recreation demands. Results indicated that these two wildernesses were substitutes and on-site time is both a source of utility and an opportunity cost.

"Time Values in Recreational Demand: The Empirical Relevance of Labor Supply Constraints." Frank Lupi, Tiffany D. Phagan and John P. Hoehn, Michigan State University; Theodore Tomasi, Environmental Economics Research Group.

We estimate the value of time under institutional constraints on labor supply. We compare the model to a wage regression that ignores the constraints. Predicted time values are not significantly different from predicted wages, which is consistent with Larson's theory and supports using wages to value time in recreational demand *

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"Measuring the Stability of Choice Set Randomization in Discrete Choice Models." Steven M. Waters and Kevin J. Dietz, Triangle Economic Research.

Sensitivity of the parameter and welfare estimates in a random utility model are investigated when a random draw of the choice set is used. One hundred repetitions of 6, 12, and 24 random draws are examined and the confidence interval formula is used to identify the point of stability.

SP-10I ADVERTISING, COINTEGRATION, AND BASELINE FORECASTS

Moderator: Won W. Koo, North Dakota State University

"Wheat Prices and Money: An Application of Time-Varying Cointegration to Agricultural Policy." David Deamont and David Bessler, Texas A&M University.

This paper applies time-varying cointegration to wheat prices and money supply from 1871 to 1991, and shows that cointegration is broken after the farm programs entered into the analysis. We argue cointegration is broken by farm programs. We discuss the implications of cointegration for agricultural policy and price analysis.

"Evaluating USDA Long-Term Baseline Forecasts." David A. Stallings, USDA.

USDA prepares forecasts of commodity supply and use each January. Errors are largest for exports and stocks. Their's U2

indicates nearer-term forecasts are superior to random walks. Poor efficiency, especially with exports and stocks, indicates that crucial information is excluded. There is, nonetheless, statistically insignificant bias in the forecasts.

"Research and Advertising Decisions in an Open Economy: The Case of Colombian Milds Coffee." Daniel Sellen and Ellen Goddard, University of Guelph.

Research and advertising investment both offer the potential to increase producer surplus. A model is developed that includes applied research and generic advertising with the aim of measuring marginal and optimal returns from each. The model is applied to data from the world coffee market, with particular focus on Kenya *

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SP-10J ECONOMICS OF WATER USE AND QUALITY

Moderator: Leon Danielson, North Carolina State University

"Water Use in the Canadian Food and Beverage Processing Industry." Diane P. Dupont, AAEA; Steven Renzetti, AERE.

Four aspects of water use (intake, treatment, recirculation and discharge) are examined for Canadian Food and Beverage processing. Price and output elasticities are estimated using 1991 plant-level data. All aspects of water use are sensitive to economic factors. Policies such as sewer surcharges will reduce water use and pollution.

"Asymmetric Information and the Pricing of Natural Resources: Understanding the Case of Unmetered Water." Rodney B. W. Smith, University of Minnesota; Yacov Tsur, Hebrew University of Jerusalem.

This paper uses mechanism design theory to (i) propose a mechanism to price irrigation water when farmers are heterogeneous in their production technologies (adverse selection) and their individual water uses are unobserved (moral hazard) and (ii) discusses briefly when such a mechanism might be economically unreasonable. Unmetered irrigation water is *

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"A Benefits Transfer Test of the Benefits of Reducing Nitrate Contamination of Drinking Water." Joseph Cooper and Stephen Cautchfield, ERS/USDA.

The accuracy of benefits transfer is evaluated. Single bound, double bound, and bivariate probit CVM models are used to predict willingness to pay for nitrate-free drinking water, and the estimated equations used to transfer benefits estimates across regions. Comparisons are made between benefits transfer estimates and site-specific benefits estimates.

"Misspecification Bias in Dynamic Optimization Models for Managing Groundwater Quality and Use." C. S. Kim and C. L. Sandretto, ERS/USDA; R. A. Fleming, Oregon State University.

This research extends previous work in dynamic models to manage groundwater quality by using the consumptive nitrate use rate instead of the nitrate application rate. The analysis indicates that misspecification results in overestimation of economic benefits, and supra-optimum nitrogen fertilizer application rates and groundwater nitrate stocks at a steady state.

SP-10K IMPACT OF COMMODITY PROGRAMS II

Moderator: Daniel Sumner, University of California-Davis

"Farm Programs, Off-Farm Income, and Labor Migration out of U.S. Agriculture." Evert Van der Sluis, University of Nebraska.

Results of this study suggest that cropland diversion programs increased total and self-employed agricultural labor outmigration, but that federal farm payments counteracted this outmigration, based on national U.S. data of 1940-93. Also, the results indicate that agricultural labor migration increased as income from nonfarm sources by farm residents increased.

"The Role of Farm Tenure in Off-Farm Work Participation." Edmund M. Tavernier and Tugrul T. Temel, Rutgers University; Farong Li, Johnson & Johnson.

A labor supply model is used to examine the relationship between farm ownership and operators' participation in the of farm labor market for the northeast region. Results indicate that (i) part owners significantly allocate labor to off-farm activities, and (ii) government policies influence part-owners' tendency to participate in these activities.

"Economic Implications of Alternative Crop Insurance Designs." Hong Wang, Steven D. Hanson, Robert J. Myers and Roy J. Black, Michigan State University.

Participation and welfare implications of alternative crop insurance designs are examined. Results show that relaxing trigger yield restrictions can significantly improve risk management performance, particularly in an area-yield insurance program. The optimal design is found to be especially sensitive to premium rates and correlation between individual and area yield.

"The Peanut Program and Pass-Through of Prices, Conjectural Variations and Consumers' Welfare Gain." Stanley M. Fletcher and Satish Y. Deodhar, University of Georgia.

Using a version of the model developed by McCorrison and Sheldon, change in consumers' welfare is estimated for the U.S. peanut industry. Results indicate that with various levels of price pass-through and degree of market imperfection, consumers' welfare gain was in the range of \$9 to \$130 million.

SP-10L INTERNATIONAL GRAINS MARKETS POLICIES

Moderator: Linda Young, Montana State University

"Price and Price Risk Dynamics in U.S. and Canadian Wheat Markets." Vincent H. Smith, Montana State University; Matthew T. Holt, North Carolina State University.

This study explores price leadership and volatility spillover issues in international wheat market by using a bivariate GARCH-M approach. Among other things, the results show that autonomous increases in Canadian price volatility have a much larger effect on U.S. price volatility than the other way around.

"Impacts of Policy Changes in Canada and the European Union on World Wheat Trade." Cris deBrey, ERS/USDA; Parr Rosson and Alan Love, Texas A&M University.

This study simulated the impacts of anticipated policy changes in Canada and the EU on exportable surplus of wheat. The declining trend in levels of protection cause EU exports and production to decline. Canada's presence in world wheat markets also declines with the elimination of the Canadian grain transportation subsidy.

"Impacts of Trade and Agricultural Policies on the World Malt and Malting Barley Market." Satyanarayana Vidyashankara, William W. Wilson, D. Demcey Johnson and Frank J. Dooley, North Dakota State University.

Major changes are occurring in agricultural and trade policies that affect trade and competition in malt and malting barley. A math programming model was used to simulate changes in EU supplies and restitutions, the U.S. EEP, and import tariffs. Results indicate that these pressures will alter trade flows and competitiveness among supplying regions.

"The Conservation Reserve Program: Implications of a Reduced Program on U.S. Grain Trade." Susan E. Leetmaa and Mark E. Smith, ERS/USDA.

Were the Conservation Reserve Program reduced from 36.4 million acres to 15 million, U.S. export revenue from barley, corn, sorghum, and wheat would rise \$444 million (about 4 percent). The U.S. share of the world wheat market would rise 2 percentage points, chiefly at the expense of Canadian exporters.

SP-10M SPECIFICATION ISSUES AND SELF-SELECTIVITY CORRECTION IN ECONOMIC MODELS

Moderator: Peter Basiotis, USDA

"Correcting Self-Selection Bias in a Tobit Demand Model with the Supplement from Census Data." Lih-Chyun Sun, National Taiwan University; Ching-Fan Chung and Eilleen van Ravenswaay, Michigan State University.

A truncated survey sample is transferred into a censored sample with the supplement of census data. Based on a Tobit demand equation, parametric analyses to detect and correct the possible self-selection bias are then developed and some very encouraging results are supported by Monte Carlo experiments.

"Count Models with Self-Selectivity Corrections: An Application to Recreational Demand Modeling." J. S. Shonkwiler, Jeffrey Englin and W. Douglas Shaw, University of Nevada.

In this paper we develop an econometric approach that allows us to accommodate self-selection in count data models. The technique is applied to recreational survey data that suffers from a substantial self-selection problem. We find that the self-selection correction is important to the welfare estimates.

"Testing Among Functional Forms: An Extension of the Generalized Box-Cox Formulation." Alfons Oude Lansink and Geert Thijssen, Wageningen Agricultural University.

This study uses the Generalized Box-Cox framework and Double Length Artificial Regression to test whether different specifications of the profit function are able to mimic the technology underlying panel Dutch arable farms for the period of 1970-1988. To this end, an extended Generalized Box-Cox is developed that includes the Translog.*

*Abstracts in excess of 50 words were truncated at 50 words.

SP-10N EVALUATING EXTENSION AND RESEARCH PROGRAMS

Moderator: Daniel O'Brien, Kansas State University

"Using Citations to Evaluate the Quality of Agricultural Economics Journals." Gregory M. Perry, Oregon State University.

Researchers are often confronted with a decision as to where they should send a manuscript for publication. In this paper, we use citation counts from 19 major agricultural economics journals to rank these journals.

"Producer Acceptance of Alternative Extension Services." J. R. Bacon and C. M. Gempesaw II, University of Delaware; M. R. Jenkins and J. A. Hankins, Freshwater Institute.

Aquaculture producers were surveyed to examine extension support and determine how alternative programs attributes would be accepted by producers. A conjoint design was used and analyzed using logistic regression. The results quantify the desire by farmers to maintain the status quo. Eliminating farm visits significantly reduced a program's approval rating.

"Multi-Criteria Analytic Hierarchical Analysis of Research and Extension Funding Allocation Decisions." Xiaoting Wang and Daniel S. Tilley, Oklahoma State University.

The method of the analytic hierarchy process is introduced. The analytic hierarchy process is applied to solve the problem of research and extension funding allocation in alternative small fruit crops. Recommendations for use and refinement of the method are then presented.

"Oregon Invests! Describing Potential Economics, Environmental, and Social Effects of Oregon Agricultural Experiment Station Research Projects." Carole Frank Nuckton, Oregon State University.

This paper reports on the Oregon Agricultural Experiment Station's accountability project that uses a large computer database to describe potential environmental, economic, and social benefits of the station's research projects. A video will demonstrate how this tool presents information to decision makers, other researchers, and the interested public.

SP-100 THEORETICAL APPROACHES TO MEASURING THE IMPACTS OF MARKET POWER

Moderator: Richard Rogers, University of Massachusetts

"Efficiency of Countervailing Framework and its Implications to Agricultural Policy Reform." Meng Zhou and Andrew M. Novakovic, Cornell University.

Countervailing framework (bilateral oligopoly) as a special market structure has been chosen as the study focus. Establishment of two countervailing theorems by using a conjecture variation approach shows that price distortion under a countervailing framework is less severe than the situations under oligopoly or oligopsony, indicating relative economic efficiency of*.

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"Vertical Restraints and Competition Policy in the U.S. and UK Food Marketing Systems." Steve McCorriston, University of Exeter; Ian M. Sheldon, Ohio State University.

The theory of vertical restraints is ambiguous about their private and social effects. Analysis presented in this paper suggests that this ambiguity in the literature is mirrored in decisions on vertical restraints of the U.S. courts and the UK competition authorities with regard to their respective food systems.

"The Effect of Farm Supply Shifts on Concentration and Market Power in the Food Processing Sector." Stephen F. Hamilton and David Sunding, University of California-Berkeley.

A theoretical model is presented to explain the empirical regularity of increasing concentration and decreasing market power in food processing industries. The model is developed with asymmetric-cost firms and considers entry. The effect of a farm supply shift is analyzed and cases are identified that are consistent with observed trends*.

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SP-10P FOREST POLICY AND PROGRAMS

Moderator: Randy Rucker, Montana State University

"A Time Series Analysis of Poverty in California's Forest Counties." Peter Berck, Sandra Hoffmann and Louise Fortmann, University of California-Berkeley.

This paper uses Granger causality tests to examine the relationship between lumber and wood products employment and poverty in California's forested counties. It finds little support for popular perceptions that increased timber harvest, and by implication increased timber-related employment, will relieve poverty in these counties.

"Private Forest Landowners' Participation in Forestry Programs." Venkatarao Nagubadi and Kevin T. McNamara, Purdue University.

This paper reports on private forest landowners' participation in classified and cost-share programs. The analysis estimated probability of participation based on various owner attributes. The probit results suggest that acres owned, information sources, forestry organization participation, and commercial ownership interests influence program participation. Owner characteristics were not independently associated with *

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"Linkages Between National Forest Policy and Employment." Diana M. Burton, Texas A&M University.

Sector specific policy and sector employment linkages are explored using a nonstationary Markov analysis. When transition probability parameterization includes the policy variables, formal hypothesis tests determine policy impact relative to other variables. Application to the forestry sector in Oregon demonstrates that national forest policy does not have statistically significant effects.

"Timber Harvest Probability and Urbanization in Mississippi." Stephen A. Barlow and Ian A. Munn, Mississippi State University.

The effects of urbanization on timber harvesting are explored by combining U.S. Census Bureau and U.S. Forest Service data using Geographic Information Systems. Preliminary results indicate significant relationships between probability of harvest and distance to urban areas as well as other site attributes.