Abstracts

Contributed Papers

Methodology (Ron Mittlehammer, Washington State University, Chairperson)

"The Food Stamp Program: Can We Talk About Its Efficiency?" Christine K. Ranney (University of California, Davis)
The structure of the Food Stamp Program, an in-kind transfer scheme, is discussed with particular attention to efficiency and Pareto optimality questions. It is asserted that the donor optimization/interdependent utility function approach to explaining the current structure of the Food Stamp Program is appropriate.

"A Methodology of Combining Annual Econometric Forecasts with Quarterly ARIMA Forecasts." Gordon L. Meyer and John F. Yanagida (University of Nevada, Reno)
Data limitations often limit the time framework in which agricultural commodities are modelled and prices forecast. This research provides a technique to alleviate this constraint. By combining an annual econometric model with a quarterly ARIMA model, quarterly forecasts can be made which utilize the theoretical and structural foundations in econometric modeling.

"Classification of Risk Preferences with Elicited Utility Data: Does Functional Form Matter?" Wesley N. Musser, Michael E. Wetzstein, Susan Y. Reece, Lynn M. Musser and Philip E. Varca (University of Georgia)
Recently, several problems have emerged with elicited utility functions. For the sample used in this research, different functional forms resulted in reversals in risk preference classifications. This paper suggests that risk preference classifications must be interpreted with caution.

"An Introduction to Durable Investment Analysis." Lindon J. Robison (Michigan State University)
The study of resource allocation problems has been narrowly focused on either nondurable assts divisible in use and acquisition or on durables lumpy in acquisition and use. A new theorem is presented to analyze a broader set of problems, including the analysis of durables lumpy in acquisition but divisible in use. It also allows analysts to examine changes in the value of durables resulting from changes in variable input prices.

"Optimization of Simulation Models Using the Box-Complex and the Modified Box-Complex Algorithms." Thomas R. Harris (University of Nevada, Reno) and Harry P. Mapp, Jr. (Oklahoma State University)
Optimizing simulation models may require the use of a nonlinear direct search method, such as the Box-Complex algorithm. The Box-Complex is inefficient in deriving optimal solutions for some simulation models. The potential efficiency of a Modified Box-Complex is illustrated by solving two problems on which the Box-Complex had been found inefficient. The Modified Box-Complex may offer considerable savings in computer time for some problems.

Marketing (Glen Pederson, North Dakota State University, Chairperson)

"The Effect of Cooking Methods and Degree of Doneness on Consumers Evaluation of Taste, Tenderness and Satisfaction of Beef." William D. Gorman, William N. Capener, Fondo Sikod, N. Scott Urquhart (New Mexico State University), John A. Marchello (University of Arizona) and James A. Bennett (Utah State University)
Consumers' evaluation of taste, tenderness and satisfaction of retail cuts of beef from cattle fed different levels of concentrate were significantly influenced by method of cooking and degree of doneness. Many consumers need to be taught how to cook different beef cuts to enhance rather than adversely affect their characteristics.

"Fourier Series Estimation of Spring Wheat Prices." Donald F. Scott and Donald W. Nelson (North Dakota State University)
Fourier analysis is used to forecast weekly hard red spring wheat prices 25 weeks into the future. This procedure applies sine and cosine functions fitted to historical price data. Projections are then made on the basis of continuing past price movements.

"The Effects of Industry Structure on Price: A Case in the Beef Industry." Dale J. Menkhaus and James S. St. Clair (University of Wyoming)
This study estimates the influence of concentration and other structural variables on the price of slaughter cattle. Results suggest that packer concentration has had a significant negative impact on fed cattle prices during the years of analysis, 1972 and 1977.

"A Method for Estimating the Value of Transport Service Attributes." P. V. Garrod and W. Miklius (University of Hawaii at Manoa)
This paper evaluates a conjoint measurement technique for estimating the value of transport

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service attributes. The technique uses ordinal rankings of shipper preferences to estimate each shipper's utility or preference function which, in turn, is used to estimate the change in consumer's surplus attributable to a change in service attribute. The method is applied to measure the value of increased sailing frequency in inter-island transportation.

"GNP Multipliers for U.S. Agricultural Exports." **Gerald Schluter (U.S. Department of Agriculture)**
Real and nominal GNP multiplirs for U.S. agricultural exports are estimated with a household endogenous I/O model. Assuming no capacity restraints, new U.S. agricultural exports generate from $1.74 to $2.31 of real GNP per dollar of real exports. Nominal multipliers are lower because of relative price changes.

Marketing (David Cobia, North Dakota State University, Chairperson)

"An Initial Estimation of the Import Demand for White Wheat in South Korea." **Michael V. Martin, Isang Gonarsyah, Ronald A. Oliveira (Oregon State University) and Glenn J. Knowles (Oklahoma State University)**
This paper addresses pecularities of demand on a class-specific, country-specific basis by estimating the excess demand for white wheat in the Republic of Korea. This analysis reflects a first step in a planned, more complete study of U.S.-Korean trade in wheat.

"Implications for U.S. Agriculture of Expanded Sunflower Production: A Simulation to the Year 2000." **David L. Watt (Michigan State University)**
The expansion of oil sunflowers by 5 million acres in low moisture areas of the Great Plains is modeled and an overview of the rapid growth of sunflowers and their role in the oilseed industry is given. Regional income distribution implications are found to be different if sunflower expansion results in displacement of grain sorghum versus wheat.

"Effects of Domestic Grain Grades on the Operational Efficiency of Alberta Primary Elevators." **W. J. Hoar, M. Hawkins, and M. Herohl (University of Alberta)**
The central focus of this research was to determine the impact of the present number of domestic grain grades, as defined under the Canada Grain Act, on the operational efficiency of primary elevators. In addition, economies of scale and regional effects present in the primary elevator system were also examined. The study found that the current elevator system is efficiently handling the

800 different grades of grain graded within Canada.

"The Demand and Allocation Structure for U.S. Apples." **Harry S. Baumes, Jr. (Virginia Polytechnic Institute and State University) and Kuldeep S. Turna (Longwood College)**
An econometric model of the demand and allocation structure of the U.S. apple sector is formulated and estimated. The apple sector is disaggregated into fresh and processing markets and grower and retail markets are specified. An impact multiplier analysis is also performed.

"Estimates of the Magnitude of Blending Efficiencies in the Pacific Northwest White Wheat Industry." **Terry P. Townsend and Michael V. Martin (Oregon State University)**
The unique nature of the white wheat grading specification and accompanying price discounting schedule creates the opportunity for large Pacific Northwest grain elevator firms to realize returns from white wheat blending. This paper estimates the potential size of these returns for the period 1969 to 1979, assuming optimal blending practices are employed.

Community and Human Resources (Lee -Gray, Colorado State University, Chairperson)

"Community Choice in Municipal Debt Financing: Some Factors Which Influence a Community's Decision to Undertake Debt." **Philip Wandschneider and Ralph Klien (Washington State University)**
A survey of local officials and analysis of election outcomes revealed that availability of grants and loans, cost, voter knowledge, voter turnout, and fiscal conservation are key factors influencing a community's approval or non-approval of bond issues in small Washington Communities.

"Earnings and Efforts of Families on Small Farms in Hawaii." **Robert N. Anderson (University of Hawaii, Honolulu)**
Analysis of a statewide random sample of small farm operators in Hawaii shows no statistical relation between net farm income and contacts with Cooperative Extension, nor with levels of education of the operators. Experience in farming and total sales were more powerful influences in this cross-sectonal analysis. Non-farm income for such families is also analyzed.

"Quality of Life in New Mexico: Implications for Public Policy." **Joel A. Diemer and Wilmer M. Harper (New Mexico State University)**
Preliminary results of a recently completed quality of life survey indicate that New Mexicans are

not uniformly satisfied with the quality of their lives. The differences in perceived quality of life by residents of the state's seven planning districts can be related to a variety of physical, social, economic and institutional factors. Welfare weighted quality of life measures which would be of value to decision makers and planners at both the state and regional levels are discussed.

"An Empirical Example of Nonparametric Analysis in Rural Development Research." Don Blayney and Gerald Marousek (University of Idaho)
The use of limited, diverse information to draw inferences for larger populations may pose problems in agricultural economics research. Nonparametric statistical procedures are useful when data cannot be analyzed by parametric means. A rural development problem illustrates nonparametric techniques for testing a distributional hypothesis and establishing service cost confidence bounds.

"Potential Impacts of MX Deployment on Ranch Management and Ranch Economics in Nevada and Utah." Lloyd Allen Torell and Mike L. Baughman (Resource Concepts, Inc.)
Deployment of the MX Missle System in Nevada and Utah will have significant impacts on the range livestock industries of those states. Direct changes in ranch management and economics will vary depending upon the type of operation impacted and the nature and duration of the impact.

Production (Bob Finley, University of Missouri, Columbia, Chairperson)

"Integrated Pest Management and the Demand for Pesticides." Thomas Burrows (University of California, Riverside)
This paper examines the impact of integrated pest management (IPM) on pesticide demand in California cotton and citrus crops. Single and simultaneous (probit) equation estimates indicated that IPM reduces pesticide use by approximately 40-50%. Therefore, IPM may provide a useful alternative to the "all-or-nothing" approach to pesticides inherent in the current regulatory philosophy.

"Alternative Risk Supply Response Models for Corn and Soybeans." Richard M. Adams and Dale J. Menkhaus (University of Wyoming)
This paper reports on an analysis of the effects of including specified risk variables into alternative supply models. Two supply models, the Nerlovian and Ryan-Goodwin, are used to test the efficiency of the risk variables. Statistical properties and elasticities elicited from each model formulation are examined. Statistical results are mixed for the

risk variables, with supply elasticities displaying high levels of sensitivity to the model formulation used.

"The Effects of Feed Prices, Interest Rates and Fed Cattle Prices on Breakeven Feeder Cattle Prices: A Simulation Approach." Dale J. Menkhaus and Richard M. Adams (University of Wyoming)
This paper reviews an approach useful in analyzing the effects of rapidly changing production costs for fed cattle on feeder cattle prices. Using simulation, a performance function is estimated. Related to feeder prices, calculated response coefficients are elastic for fed cattle prices and inelastic for the production costs considered.

"Risk Efficient Farm Plans vs. Actual Producer Patterns: Cash — Crop and Crop — Livestock Systems." Larry J. Held and Richard A. Zink (University of Wyoming)
MOTAD is used to develop risk efficient farm plans for an irrigated farm in eastern Wyoming. Compared to a cash-crop system, a crop-livestock system yields higher income and less income variability. Area producers specify a representative farm plan which assumes an intermediate risk-income position, reflecting risk aversion.

"A Dynamic Programming Analysis of Irrigation System Investments." A. L. Stoecker and Gregg L. Lloyd (Texas Tech University) and A. Seidmann (Tel Aviv University)
Linear and discrete dynamic programming methods are used to maximize the net present value of investments in alternative irrigation systems. The amount and time of discrete changes in well capacity and area developed for irrigation are considered. The profitability of furrow and pivot irrigation systems are compared.

"The Potential for Microcomputer Use in Agriculture." Verlyn Enger (Texas Instruments, Inc.) and E. A. Unger and Bryan Schurle (Kansas State University)
A survey of farmers shows substantial interest in microcomputers. Many want microcomputers to store and analyze their financial, production, and marketing data. These applications will require enormous software development efforts. An educational effort is needed to promote understanding of computers so that farmers can make good decisions concerning computer use.

"A Willingness to Play: Analysis of Water Resource Development." William E. Martin, Helen Ingram and Nancy Laney (University of Arizona)
Economic analysis shows that the Central Arizona Project will be a poor investment from the point of

view of individual farmers. Yet farmers support the Project. In this study of the economics and politics of the CAP, farmers are questioned as to their information and motivations. Farmers are willing to play — not necessarily to pay.

Resources (Harry Mapp, Oklahoma State University, Chairperson)

"Laser Leveling: A Private Investment Analysis." John Daubert (University of Arizona) and Harry Ayer (U.S. Department of Agriculture)
Estimates show laser leveling is a profitable water conservation technology in many areas of Arizona. The profitability and rate of adoption are strongly affected by federal cost-sharing programs, investment credit policies, irrigation field efficiencies, capital costs, yield increases, changes in the price of pumping fuel, and the planning horizon.

"The Derived Demand for Irrigation Water: A Methodological Note." Roger A. Selley and Dennis C. Cory (University of Arizona)
Determining an estimate of the elasticity of derived demand for irrigation water is a crucial step in analyzing water policy alternatives for most regions in the West. Previous research indicates that water usage in western agricultural regions is relatively insensitive to changes in water prices. More recently these findings have been challenged on the basis that the modeling approaches that have been employed provide results that are biased toward inelasticity. This paper analyzes the implications of assumptions commonly used in regional models and identifies sources of potential bias. The significance for empirical research is discussed.

"Estimating Congestion Costs and Optimal Admission Fees: An Indexation Approach." Dennis C. Cory, Eric Lundgaard and David L. Barkley (University of Arizona)
Rationing the use of fixed capacity facilities subject to congestion costs by user fees is complicated in practice by the difficulty of estimating quality-adjusted demand schedules for the facility. Previous approaches to measuring congestion costs have met with limited success. An alternative methodology based on indexation techniques is presented and applied to a popular urban lake in Arizona. Estimating quality-adjusted user fees through indexation techniques has advantages over earlier approaches.

"Estimation of Wilderness Use Functions for California: An Analysis of Covariance Approach." Michael E. Wetzstein (University of Georgia), Richard D. Green (University of California,
Davis) and Gary H. Elsner (Resource Perspectives, Inc.)
The Hotelling-Clawson procedure for estimating the demand for recreation resources assumes only one destination with no close substitutes. In estimating the demand for wilderness use in California, the availability of close substitutes influences both the estimation technique and the determinants accounting for wilderness use. Alternative estimation techniques are presented and tested to account for differences among destinations.

"The Growing Conflict Between Establishment of Instream Flows and Other Water Uses on Western Streams." Raymond L. Anderson (U.S. Department of Agriculture)
Instream flow demands on the scarce water supply of most streams will create serious water conflicts in arid areas of the West. Much economic activity is dependent upon certainty of water supply. To attempt to reallocate water will cause severe disruption to planned uses of water and to weak segments of the economy such as irrigated agriculture.

"The Hydropower Cost of Irrigation Development of Fisheries Enhancement in the Columbia River Basin." Robert B. Wharton, Norman K. Whittlesey and Ronald C. Faas (Washington State University)
The opportunity cost of allocating water among competing uses in the Columbia River Basin can be quite substantial, particularly since the resource has multiple uses. This paper presents an analysis of the trade-offs, measured in megawatts, between agriculture, fisheries and hydropower generation for future irrigation levels and minimum instream flows.

Production (Doug Young, Washington State University, Chairperson)

"Entry and Growth in New Mexico Agriculture." William N. Capener and Dale C. Nelson (New Mexico State University)
Twenty-two young New Mexico farmers and ranchers were interviewed to determine how they entered agriculture and their rates of growth. Eighteen producers received substantial assistance when entering agriculture. The average annual growth rate for the group was over 25 percent and the average real growth rate was nearly 18 percent.

"Response of Traditional Farmers to an Abrupt Change in Off-Farm Wage Opportunities." Jerry Eckert and Ron Wykstra (Colorado State University)
Lesotho depends heavily on migratory employ-

ment in South African mines. In the mid-Seventies a rapid increase in mine wages sharply altered opportunity costs to Lesotho's farm households. Significant adjustments followed in cropping, livestock management and labor resource allocation, each of which affects long-term development potential.

"Federal All-Risk Crop Insurance and Disaster Assistance As Risk Management Tools for Colorado Dryland Wheat Farmers." Robert King and George Oamek (Colorado State University)
A stochastic simulation model is used to evaluate a range of risk management strategies for dryland wheat producers in Colorado. The analysis focuses on the ASCS Disaster Assistance Program and federal All-Risk Crop Insurance Programs, with special attention given to the proposed elimination of the Disaster Assistance Program.

"An Assessment of Cropland Requirements and Land Availability." Carlos A.M. Santana and Richard M. Adams (University of Wyoming)
This paper reports the results of an assessment of 1985 land requirements and availability under alternative demand and yield assumptions. Specifically, alternative levels of foreign and domestic demand are projected, and interfaced with yield projections to arrive at 1985 land requirements. These requirements, when compared with land availability, suggest an adequate cropland base at the national level but some adjustment when extended to a regional level.

"Redefining the Economic Threshold." Mark Cochran and Lindon J. Robison (Michigan State University)
This paper develops the argument that the determination of the economic threshold and the underlying procedure defining optimal pesticide use is in reality a durable investment problem. It provides a conceptualization of the economic threshold that can guide research in the area to more accurately define the problem of optimal chemical usage.

"The Effect of Energy and Crop Price Changes on Output Response of Risk Averse Farmers — A Quadratic Programming Approach." Francis P. McCamley and James B. Kliebenstein (University of Missouri, Columbia)
A quadratic programming model is used to explore producers' output response to changes in energy and crop prices. Risk considerations are also incorporated. Solutions are obtained for several price and risk aversion levels and approximate crop response functions are estimated. For small changes from current prices, the elasticities were small.

"The Effect of Proposed Income Tax Cuts on Farm Operator Growth Potentials: An Application of Firm Level Simulation," Clair J. Nixon and James W. Richardson (Texas A&M University)
The Reagan Administration's proposed tax cut for 1981-1984 is analyzed using the Farm Level Income and Policy Simulation Model to quantify the likely impact on farm growth. Results indicate that a typical cotton farm on the High Plains would save about $66,000 in income taxes between 1981 and 1990 and grow only sightly more than under the current tax program.

"The Development and Analyses of a Model to Assess the Long-Run Impact of Technical Progress and Topsoil Erosion on Future Crop Yields." Daniel Taylor and Douglas Young (Washington State University)
Theoretical and mathematical properties of a yield projection model employing a non-linear yield-topsoil depth function and multiplicative exponential technical progress are developed. Empirical estimates of the model suggest Palouse farmers are reaching critical topsoil depths. Researchers are urged to employ similar models to facilitate realistic soil conservation policy evaluations.