AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Abstracts

# SELECTED PAPERS

## NATURAL RESOURCE AND ENVIRONMENTAL POLICY ISSUES (Nathaniel B. Brown, Jr., Fort Valley State College)

**"Policy Tradeoffs: Agricultural Production, Input Use, and Environmental Quality." Kenneth H. Baum, Edwin Young, and Steve Crutchfield, U.S.D.A.**

Environmental and resource policies need to be based on historical knowledge of our soil and water problems, commodity policy and programs, and the trade-offs among agricultural production, input use, and environmental quality. Current U.S. soil and water conservation programs and recent environmental legislation focus on maintaining our agricultural productive capacity and protecting the quality of our environment. The effectiveness, consistency, and rationale for our current resource conservation programs and those developed during the next decade will likely be in response to evolving or newly discovered environmental concerns, domestic commodity income and price support program needs, and international trade considerations.

**"Reducing Nitrogen Pollution from Crop Production Systems: A Virginia Case Study." Patricia E. Norris and Leonard A. Shabman, Virginia Tech.**

The mass balance principle illustrates a simple reality—residuals are an end product of all production systems. Agricultural residuals, such as nitrogen, cannot be treated before release to the environment. An input substitution strategy is the best way forward for reducing nitrogen loadings from agricultural land. This paper presents an analysis of alternative production systems which may reduce nitrogen pollution through substituting alternative inputs for commercial nitrogen fertilizer. The results suggest some changes will be required in pollution control programs.

**"Managing Agricultural Nitrate Contamination of Ground Water in Rockingham County, Virginia: A Policy Analysis." Penelope L. Diebel, John M. Halstead, Sandra S. Batie, Randall A. Kramer, and Daniel B. Taylor, Virginia Tech.**

Groundwater contamination from agricultural nitrates poses a potential health risk to rural communities in the United States. This study examined the potential effectiveness of policies for reducing nitrate contamination of groundwater from agriculture. The study used a physical-economic mathematical programming model of a representative dairy farm in Rockingham County, Virginia. A survey of dairy operations in the county was conducted to assist in the specification of the model and to identify farmer attitudes toward groundwater issues. Results indicate that a range of policies exist which can reduce nitrate loading to groundwater without severe farm income reductions.

**"Privatizing the Commons: Why and Why Not." George D. Santopietro, Radford University; and Leonard A. Shabman, Virginia Tech.**

The standard increasing costs model of a common property fishery is modified by incorporating the notion of worker satisfaction bonus as part of the returns accruing to those who exploit a public, but regulated, fishery. It can then be shown that privatization may not always be an efficient policy, using the Pareto criterion, because resource rents generated may not exceed the losses, financial and nonpecuniary, imposed on those with access under common property. In this case, we can expect public policy makers to reject economists' recommendation for privatization based on the standard model.

**"Marginal Social Benefit-Cost Analysis of Public Subsidy to Rural Water." Suki Kang and Dean F. Schreiner, Oklahoma State University.**

The Farmers Home Administration (FmHA) policy is to give priority of public subsidy to rural water systems serving low-income communities. The subsidies are provided to reduce (water) user costs. A marginal social benefit-cost analysis is used to evaluate the FmHA program. Weighting of welfare changes for households at different income levels is included in the analysis. Results of the analysis show that policy makers would not have to heavily weight welfare changes of low-income households to give marginal social benefit-cost ratios (MSBCRs) greater than one. However, high-income families receiving the subsidy benefits show very low MSBCRs.

## AGRIBUSINESS, RURAL CAPITAL, AND COMMUNITY SERVICES (Dewitt Jones, Southern University)

**"Employment Stability in Agribusiness Firms." Lewell Gunter, Kamil H. Shideed, and James O. Wise, University of Georgia.**

Changes in employment in response to output market fluctuations are important to the economic health of businesses and the communities in which they are located. This study is an empirical analysis of the responsiveness of payrolls to changes in sales for agribusiness firms in Georgia. The results indicate that agricultural processing and marketing firms, and diversified agribusiness firms are quite responsive in adjusting payroll levels to changes in sales. Agribusiness firms that deal in durable goods are less responsive, and those dealing with consumable goods are highly unresponsive in adjusting overall levels.

**"Do Cash Discounts Affect the Profitability of Farm Supply Firms?" Michael Bockhorn and Kim Harris, Southern Illinois University.**

The profitability of cash discounts offered by farm supply firms in southern Illinois is determined using a net present value model. Results suggest that cash discounts may reduce the profitability of farm supply firms. Among the 33 agribusinesses whose cash discounts were analyzed, more than one-half had unprofitable cash discounts. The average cost to the firms with unprofitable cash discounts was $38,800. Firms with profitable cash discount policies added, on average, about $67,600 to their firms' total profits. It was found that reducing cash discount rates is a major way to improve the profitability of cash discount policies.

**"The Financial Performance of Agricultural Cooperatives: Preliminary Findings on an Empirical Evaluation of Multidimensional Models." Alicia N. Rambaldi, Hector Zapata, and Ralph Christy, Louisiana State University.**

The adverse economic conditions in U.S. agriculture provide a unique opportunity to evaluate the performance of agricultural cooperatives. This paper attempts to: 1) derive from "cooperative as a firm theory" variables appropriate for financial performance, 2) introduce a procedure for grouping financial variables prior to statistical evaluation, and 3) evaluate the predictive accuracy of two statistical selection criteria using an "unrestricted" and a "traditional" model. Results of this paper indicate that, contrary to other studies, the two statistical selection criteria give different answers. Predictions stemming from restricted model in most cases out-performed those from the unrestricted model.

**"The S&L Crisis: Implications for Rural Capital Formation." Deano Hagerman and Clifford Rossi, U.S.D.A.**

The ongoing crisis in the S&L industry generates some concern as to what effects it may have on rural capital formation. The paper provides empirical evidence of the importance of the industry in providing capital in rural areas by classifying thrifts by geographic type and financial health using 1983–1986 data. An econometric model explaining loan/deposit ratios concludes that asset size, net worth, and S&L locational variables are significant positive determinants of that ratio. Financially distressed thrifts are likely to have rates of deposit greater than rates of loan growth.

**"Using Conditional Elasticities to Evaluate Law Enforcement Expenditures." Thomas G. Johnson and Ernest W. Wade, Virginia Tech.**

The central focus of this paper is to develop and test a model of the local government decision-making process and use conditional elasticities to evaluate the equilibrium interactions among the endogenous variables, whenever changes occur in the exogenous variables. Response measures obtained directly from the reduced forms are conditional upon the source of change in equilibrium. The model explicitly includes supply of and demand for law enforcement and derived demand for factors. The conclusions made from this study will help local government decision makers project future changes in demand, and fine tune their expenditure plans.

## U.S. FARM PROGRAM IMPACTS (Harry S. Baumes, Jr., U.S.D.A.)

**"Impacts of Farm Programs on West Virginia Agriculture." Abd. Malik bin**

**Ismail, Dale Colyer, and Virgil J. Norton, West Virginia University.**

This study evaluated the impacts of Federal farm programs on agricultural production in West Virginia. Farmers in the state receive relatively less from the government than is typical for the nation. The difference is due to the state's dependence on livestock enterprises that do not receive direct federal support. Although federal farm payments are relatively small, they are important income components for many farmers. Dynamic and static models were utilized with relevant price, technology, and government program variables specified. Federal payments have had statistically significant impacts on the production of corn and wool but not on wheat production.

**"Impacts of Alternative Flue-Cured Tobacco Production Levels on South Carolina Agriculture and the Economy." S. Sureshwaran, C. Stassen Thompson, and Mark Henry, Clemson University.**

A polystructural linear programming model is used to estimate changes in production of the study's endogenous commodities under alternative tobacco policy scenarios. Results from the linear programming model are used in an input-output model to estimate the direct, indirect, and induced impacts on the economy. For a 10 percent change in tobacco quota, the impacts on the economy varied from -$34 to $34 million. For a 25 percent change in tobacco quota, impacts on the economy varied from -$85.1 to $84.7 million.

**"Cotton Acreage Response and Fertilizer Demand in Tennessee." Roland K. Roberts and Burton C. English, University of Tennessee.**

A four-equation model of Tennessee cotton acreage response and plant nutrient use was specified. The model was estimated by autoregressive three-stage least squares. Results suggested that Tennessee cotton acreage was responsive to government price support and acreage diversion policies. Also, nitrogen, phosphate, and potash use were shown to be affected by government policies and plant nutrient prices. The model's usefulness was demonstrated by projecting Tennessee cotton acreage and fertilizer use for the 1988–89 crop year after accounting for the 1988 drought. Projections were for cotton acreage to decline, phosphate and potash use to increase, and nitrogen use to remain about the same.

**"Optimal Crop Mixes for Southern Peanut Farms." Stephen A. Ford and Tim Hewitt, University of Florida.**

A mixed-integer programming model is developed to investigate optimal crop mixes for a representative peanut farm in the Southeast. Special attention is given to the competitiveness of soybeans and additional peanuts (those peanuts grown outside of price support quotas). The model is designed to investigate a variety of government farm program participation and irrigation options. Results show that additional peanut acreage should not increase unless the market price for additionals rises above present levels.

**"Farm Program Impacts on an Exhaustible Groundwater Supply: An Analysis of the Texas Southern High Plains." John G. Lee, Louisiana State University; and Ronald D. Lacewell and James W. Richardson, Texas A&M University.**

Stochastically simulated crop yields were combined with random correlated crop prices to provide input into a recursive QP model to evaluate optimal irrigated crop selection and associated rates of groundwater withdrawals. Three farm program scenarios were evaluated in two areas of the Southern High Plains. Participation in the current farm program increased net returns and groundwater extraction rates above nonparticipation. Discounted net returns were projected to decline across all farm program scenarios. Risk-averse preferences in crop mix decisions decreased cumulative groundwater extraction rates through reduced irrigated acres, but had higher per-acre application rates compared to the risk-neutral case.

## BEEF CATTLE PRODUCTION SYSTEMS (Lee A. Christensen, U.S.D.A.)

**"Choosing Production Strategies for Experimental Beef Pasture Systems in Georgia: A Legume System Versus a Nitrogen Grass System." James Duffield, U.S.D.A.; and Bill R. Miller, University of Georgia.**

A systems research approach was used to analyze the performance of beef pasture systems when they interact with various resource and management constraints. Two experimental pasture systems (a legume and a nitrogen

grass system) were designed to study the effects that a greater use of legumes in a system might have on calf growth and profitability. A Monte Carlo programming model showed that the nitrogen system dominated the legume system by second degree stochastic dominance. Results also indicated that over time, a cow-calf enterprise was less profitable than an enterprise that also included stocker and finishing phases.

**"Winter Wheat Grazing in West Central Oklahoma: Stocker Supplementation Costs as an Estimator of Forage Supply Volatility." Abelardo Rodriguez, James N. Trapp, Odell L. Walker, and Daniel J. Bernardo, Oklahoma State University.**

Management decisions in winter wheat stocker operations highly depend upon uncertain forage production. This study presents a simulation analysis of supplemental feeding decisions for stocker cattle on wheat pasture. Supplementation schedules to offset possible low wheat forage stocks throughout the grazing season were determined. Levels of stored hay required for different levels of coverage against possible outcomes were also determined. Expected supplementation costs, when used as estimators of forage supply volatility under different stocking densities, indicate that as stocking density is increased, volatility in forage supply increases geometrically.

**"Estimating the Demand for Poultry Litter for Feeding Cattle." Darrell J. Bosch, Virginia Tech.**

Poultry litter, which is abundant in the Southeast, has the potential to be used for feeding cattle. Due to high transportation costs, the cost of litter varies considerably among farmers depending on distance from the source. Farmers need to know what amount of litter is economical to use as its cost varies. In this study, a linear programming feed cost minimization model is developed to determine optimal litter use for beef feeding. Litter is found to be an economical feed; however, the amount used is highly responsive to changes in its own price and the prices of competing feeds.

**"Impact of Variability in Cattle Feed Efficiency on Risk-Income Choices of Farmer Feeders." John Morrill, Glenn A. Helmers, Terry J. Klopfenstein, and Larry V. Cundiff, University of Nebraska.**

The lack of data on feed conversion efficiency has limited most studies of cattle risk to variability in feed prices, feeder prices, and finished beef prices. In this study feed conversion efficiencies were available for the 1973–79 time period and included in the analysis of cattle feeding risk. Statistical analysis of return distributions for crops and cattle feeding, regression, and Target-MOTAD were used in this risk analysis. The results indicate a relatively minor impact of feed efficiency variability on total cattle feeding return variability, although its inclusion changed frequency distributions of returns. Target-MOTAD solutions demonstrated the importance of cattle feeding in association with crop activities in reducing risk.

**"Economic Implications of Selectively Retaining Beef-Feedlot Cattle." Alejandro Galetto, Glenn A. Helmers, Paul H. Gessman, and Rick A. Stock, University of Nebraska.**

This paper examined the economic impact of selectively retaining beef feedlot animals based on 60-day weight gain performance. Data on 60-day and total period rate of gain and feed efficiency were provided by 177 experimental animals. Early rate of gain was found to be positively related to feed efficiency for the remaining time in the feedlot. An overstock strategy as well as four retention strategies based on different early target weight gains were investigated and compared to a standard operation. The results demonstrated a strong potential for increased economic performance from selective retention based on early rate of gain.

## CONSUMER ATTITUDES AND DEMAND (Michael Walden, North Carolina State University)

**"The Effects of Advertising on Food Demand Elasticities." Hui-Shung Chang, Auburn University; and Richard Green, University of California-Davis**

This paper examines the impacts of advertising on own-price, expenditure, and advertising elasticities for five food groups: meats, dairy products, cereal and bakery products, fruits and vegetables, and all other foods consumed at home. The almost ideal demand system and the linear expenditure system were estimated. The results from the AIDS indicate that the effects of advertising on these

three elasticities are positive for dairy products and fruits and vegetables, but negative for cereal and bakery products; for meats, the effects are positive on own-price and advertising elasticities but negative on income elasticity. The results from the LES show that advertising has positive effects on own-price elasticities, but negative effects on expenditure and advertising elasticities for all the food groups considered.

**"The Consumer's Demand for Food Diversity." Jong-Ying Lee and Mark G. Brown, University of Florida.**

In this paper, consumer demand for food diversity is measured by the entropy and Simpson indices for budget shares. Results show that consumer demand for food diversity is related to total food expenditures and household size and composition.

**"The Demand for Fresh Fluid Milk Products in Texas: The Experience in the Eighties." Oral Capps, Jr., Daniel S. Moen, and Robert B. Schwart, Jr., Texas A&M University.**

Factors affecting whole milk and lowfat milk consumption within the Texas Market Order were identified using monthly time-series observations over the period January 1980 to January 1986. Own-price effects were neither negative nor statistically significant. Whole milk and lowfat milk were complements in lieu of substitutes. Cola and whole milk as well as yogurt and lowfat milk were substitutes. Income effects were negative for whole milk but positive for lowfat milk. Both generic radio and television advertising bolstered the consumption of the respective fluid milk products. A two-month lag for radio advertising and a four-month lag for television advertising were identified.

**"An Analysis of Regional Demand for Poultry Using Adult Equivalent Scales and Spline Functions." Hsiang-tai Cheng, University of Maine; and Robert Raunikar, University of Georgia.**

Changes in income distribution and the age-sex composition may contribute to the popularity of poultry in the United States. This paper analyzes regional demand for poultry. Adult equivalent scales are used to assess the contribution of various household members to poultry consumption. To capture structure differences in the income-consumption relationship across income groups, spline functions are used.

**"Socioeconomic Factors Associated with Catfish Consumption in the United States." Lynn E. Dellenbarger and Alvin Schupp, Louisiana State University; and James Dillard, Mississippi State University.**

Per capita seafood consumption, which has been increasing in recent years, was approximately 15.5 pounds in 1987 compared to 10.3 pounds in 1980. This increase in per capita seafood consumption has occurred during a period of increasing acreage devoted to aquaculture production, especially catfish. A nationwide household survey indicates that in the United States catfish is the second most popular seafood item following shrimp. A logit analysis was used to identify socioeconomic factors significantly influencing catfish consumption. Race, religious preference, and household size are significant factors influencing catfish consumption along with perceived regional availability.

## QUANTITATIVE METHODS IN FARM MANAGEMENT AND PRODUCTION (Jim Mjelde, Texas A&M University)

**"Consideration of Joint Price and Output Risk in Stochastic Dominance Analysis." Hector R. Malarin and Donald W. Reid, University of Georgia; and Bernard U. Tew, University of Kentucky.**

The assumption of price-yield independence and/or nonstochastic prices when generating gross revenue distributions for stochastic dominance analysis can yield incorrect results. The error is reflected by the over- or under-valuation of the moments compared to the situation of stochastic prices and nonindependence assumptions. Data presented in Klemme's study were used to demonstrate how results can change when fixed prices are assumed compared to when joint random price and yield are considered. In the case of corn, two pair-wise comparisons changed from a second-degree stochastic dominance solution to states of indeterminacy. In the case of soybeans, two alternatives changed to stronger dominance positions, while one passed from second-degree dominance to being indeterminate when random prices were used.

**"Economic Theory and Expert Systems." Michael Wetzstein, University of Georgia.**

Expert system methodology has shown considerable promise as an information technology. However, limited knowledge of how current information technologies relate to the decision process impedes the adoption of expert systems in agricultural decision making. Thus, a consistent theoretical development of how expert systems relate to the decision process is presented. The significance of developing an economic theory of expert systems is substantiated with an empirical application investigating a soybean pest management decision process. Results indicate the potential improvement in decision making processes with the adoption of expert systems.

**"Optimum Machinery Systems and Enterprise Organization Using Symmetric Quadratic Programming." Hisham El-Osta and Glenn A. Helmers, University of Nebraska.**

This paper employed Symmetric Quadratic Programming to evaluate machinery selection and crop organization plans under risk for a farm firm. The model simultaneously considered income variability and labor availability resulting from weather variability. Under risk aversion the results demonstrated changing enterprise mixes and machinery complements. The effect of risk aversion to the impact of weather was much less than that for risk aversion to income variability. In addition, for the farm size and resources examined, weather variability was not as important as would be for larger acreages.

**"Time-Varying Parameters in Supply Response Analysis for U.S. Corn Acreage." Kamil H. Shideed, Fred C. White, and James O. Wise, University of Georgia.**

In most previous work on supply response analyses, estimated parameters were assumed constant over time. This study estimates a time-varying parameter model for U.S. corn acreage. The results show that most of the structural shifts in corn acreage are due to permanent changes, and thus estimated parameters vary over time. Further, this study provides elasticity estimates that reflect structural changes over time.

**"Estimating the Distribution of the Weather Factor in Crop Production." Qi Dai and Jerald J. Fletcher, Purdue University.**

One of the major difficulties in crop-weather analysis is how to appropriately measure the interacting effects of weather and soil on crop yield development. In this paper the soil moisture-stress index, an interaction between weather and soil conditions, is used to measure the random effects of weather and soil on crop yield variability. The beta density function is found to be a reasonable statistical model for the distribution of soil moisture-stress levels related to corn production based on the data from 17 counties in Indiana. Using the expected utility maximization framework, the estimated distributions of the soil moisture-stress index discussed in this paper provide a first step in identifying the impacts of weather and soil conditions on farmer's input use decisions.

## RECREATIONAL AND WILDLIFE RESOURCES: VALUATION AND USE (Buddy L. Dillman, Clemson University)

**"Ecological Value in the Total Valuation of Wildlife Species." Kurt Stephenson and Daniel B. Taylor, Virginia Tech.**

Previous work in the economic valuation of wildlife has identified various components of total value for individual wildlife species, including various use and existence values. This study identifies a new source of value, ecological value, which may present problems for researchers attempting to measure economic value of individual wildlife species.

**"A Qualitative Choice Analysis of Factors Affecting Deer Hunter Use of Public Sites in Louisiana." E. Jane Luzar, James E. Hotvedt, and Mark L. Messonnier, Louisiana State University.**

This paper presents an economic analysis of factors hypothesized to influence deer hunters who hunt on a Wildlife Management Area (WMA) in Louisiana to hunt exclusively on public hunting sites in the state. Another way of looking at the problem is to assess those factors associated with the likelihood of hunters availing themselves of both publicly available and private hunting sites. Using primary

data collected from a survey of 2,000 white-tailed deer (*Odocoileus virginianus*) hunters who used a Louisiana WMA during the 1987–1988 hunting season, a qualitative choice model was developed that identifies factors that influence the exclusive use of public sites by hunters. Included in the analysis are consideration of biological management practices, socioeconomic factors, costs of hunting, availability of substitutes, and frequency of hunting.

**"The Specification of Travel and Time Cost in Recreation Demand Models." Golam Mohammad, Leroy J. Hushak, and Alan Randall, Ohio State University.**

Appropriate specification of travel and time costs are persistent problems in recreation demand analysis. We propose and test, using a primary data set for Lake Erie charter fishing, alternative specifications of travel costs and time costs. Our model specifications performed better than the traditional specifications, and recent models of McConnell and Strand and Kealy and Bishop.

**"Estimation of Potential Reductions in Recreational Benefits Due to Sedimentation in Reelfoot Lake." Scott Ralston, Salisbury State University (MD): and William M. Park, University of Tennessee.**

A travel-cost recreational demand model is developed to estimate the potential reduction in benefits from sedimentation of Reelfoot Lake in northwest Tennessee. An attempt is made to isolate the influence of water quality perception on visitation rates, and an innovative approach to valuing the opportunity cost of time is employed. An illustration is presented of how the recreational benefit estimates could be used in the consideration of how much cost could be justified for soil erosion control.

**"Economic Impacts of Recreational Spending on Rural Areas in Georgia." John C. Bergstrom, University of Georgia.**

An analysis was conducted of the economic impacts of recreational spending on selected rural areas of Georgia. Recreational expenditures were collected as part of the Public Area Recreation Visitors Study (PARVS). Economic impacts of these expenditures were estimated using regional input-output models developed from the U.S.D.A. Forest Service input-output model and data-base system (IMPLAN). Results suggest that recreational spending contributes substantially to gross output, income, employment, and value added in rural areas. Thus, outdoor recreation may be a viable economic development strategy for some rural areas.

## LDC DEVELOPMENT, DEBT, AND TRADE ISSUES (Gene A. Mathia, U.S.D.A.)

**"Social Cost Analysis of Alcohol Production from Argentine Sugarcane." Carlos Gargiulo and Richard Perrin, North Carolina State University.**

Use of Argentine sugarcane for alcohol production and additional sugar exports is examined. Social costs are found to be about 22 percent less than market costs because of such distortions as taxes, minimum wages, and exchange rate controls. The full social cost of producing alcohol is about .48 Australes per liter, compared to social benefits of about .24 Australes per liter of gasoline saved. The full social cost of exporting sugar is about $.09 per pound, compared to world prices of $.06–.08 in recent years, and about $.10 in 1988.

**"LDC Debt and Wheat Imports: A Country Analysis." Kyle W. Stiegert and Azzeddine Azzam, University of Nebraska.**

The primary purpose of this paper is to explore to what extent external debt and/or exports determine LDC wheat imports. The hypothesis is that government will take a stronger role in deciding wheat import levels as debt repayment pressure exists or foreign exchange tightens. A model with the prescribed features was tested using time series data for six wheat importing nations. What we found is that debt accumulation has elicited little or no response in terms of restrictions on wheat imports and that changes in exports have had a relatively larger impact.

**"A Spatial Equilibrium Model of Inter-Provincial Rice Trade in China." Catherine Halbrendt, Conrado M. Gempesaw, II, and Cheau Shya Chen, University of Delaware.**

A spatial equilibrium model is developed to represent the current rice market in China. The model is used to examine the impact of a more efficient transportation system on

China's rice economy. The results illustrate the impact of an improved transport sector on overall economic welfare.

**"Trade Liberalization and Thai Rice." Douglas H. Brooks, U.S.D.A.**

The response of Thailand, the leading rice exporter, to agricultural trade liberalization depends on current policies and the required form of liberalization. Reducing the producer subsidy equivalent (PSE) does not necessarily involve a reduction in government intervention in Thai rice. Whether the recent shift in government influence from taxation to support is a response to market conditions or to economic development may determine the nature of liberalization. Reimposition of export taxes could lower the Thai rice PSE while increasing government intervention. Lowering irrigation subsidies could also reduce government support to Thai rice, with different effects on domestic consumption and exports.

**"Modeling Trade Flows and Market Share: A Modified Armington Procedure for Rice." Shoichi Ito, Dean T. Chen, and E. Wesley F. Peterson, Texas A&M University.**

The Armington procedure has become increasingly popular in agricultural trade analyses. However, some arguments have arisen concerning the relevance of using the procedure for agricultural trade analyses. This study examines the assumptions commonly made when using the procedure. The results of this research on rice trade suggest that the Armington procedure needs some modification and that the assumption of the single constant elasticity of substitution, in particular, may be inappropriate for analyzing agricultural trade. The results from the modified Armington procedure show that importers are highly responsive to variations of relative prices from different exporters.

## RISK ANALYSES IN FARM MANAGEMENT (Lucas D. Parsch, University of Arkansas)

**"Risk Management in Cotton Harvesting." Sukant Misra and Stan R. Spurlock, Mississippi State.**

Target MOTAD models were developed to incorporate the major risk factors (uncertainty in yield, price, and days suitable for harvest) involved in cotton harvest decisions. Early, standard, and late maturity management practices were considered for a representative farm in the Mississippi Delta. Using 10 years of data, the models showed that planting more acreage per 2-row picker tended to increase expected returns but also increased the level of risk. Even though earliness alone had significant benefits, a combination of maturity practices was shown to be risk-efficient. Cotton growers should attempt to incorporate at least two different maturity management practices.

**"An Evaluation of Alternative Measures of Risk in a Representative Farm Study." W. Robert Goodman and S. Darrell Mundy, University of Tennessee.**

Six alternative variance-covariance type measures of price and yield risk based on aggregate data were evaluated in representative farm applications of quadratic programming. Risk measures were evaluated on the basis of conformability to theoretically desirable characteristics of risk measures, as well as on the basis of comparability across risk measures of generated farm plans. Results supported the hypothesis that econometric procedures for the removal of non-random variation in an effort to provide conformability to implicit assumptions concerning the decision-making process were not necessary for generation of realistic farm plans.

**"A Risk Analysis of Rotations in Southeast Kansas Including Double Crop Alternatives." Jeffery R. Williams, Mario F. Crisostomo, Robert O. Burton, Jr., Kenneth W. Kelly, and Richard V. Llewelyn, Kansas State University.**

Six rotations, four which include a sequence of wheat followed immediately after harvest by double-cropped soybeans, are evaluated given the option of participating in the government commodity program. Stochastic dominance analysis which is used to evaluate these rotations for net return risk indicates that risk-averse managers would prefer an annual crop rotation of wheat and double-cropped soybeans. Risk-averse managers who determine that participation in the government commodity program is essential, would prefer a three-year rotation of grain sorghum, full-season soybeans, and wheat with double-cropped soybeans.

**"The Economics of Using Legume Cover Crops as Sources of Nitrogen**

**in Corn Grain Production." Robert L. Franklin, Stephen L. Ott, and William L. Hargrove, University of Georgia.**

Hairy vetch and crimson clover as winter legume cover crops are effective technical substitutes for nitrogen fertilizer. The returns to using these cover crops were simulated and their relative profitability and riskiness were analyzed using Gini's Mean Difference (GMD) criterion. Hairy vetch GMD dominates the other winter cover crops of crimson clover, stubble, and wheat. It can be winter killed up to 55 percent of the time before it would no longer dominate stubble, the most profitable non-legume cover crop. Given hairy vetch's winter hardiness, it should become the cover crop of choice for southeastern no-till corn farmers.

**"Estimating Diversification Benefits from Supplemental Irrigation in Humid Areas." Lonnie R. Vandeveer, Kenneth W. Paxton, and David R. Lavergne, Louisiana State University.**

Diversification represents a strategy that may be used to manage the risk position of a farm business. Supplemental irrigation is one alternative that a firm may use to diversify its operations. Application of a MOTAD analysis to a representative farm shows that diversification through supplemental irrigation substantially changes the risk-return relationship for the business. Results from a Target MOTAD analysis also suggest that diversification through irrigation improves the farm's financial position.

## FACTORS INFLUENCING COMMODITY PRICES (Steve C. Turner, University of Georgia)

**"An Analysis of Oklahoma Alfalfa Prices from HAYMARKET and Satellite HAYMARKET." Clement E. Ward, Oklahoma State University.**

This paper reports on analyses of the alfalfa price-quality and price-quality-quantity relationships. An implicit prices model for alfalfa hay was re-estimated with data collected after the model was initially published. In addition, data from the first Satellite HAYMARKET auction were also studied, especially the price and quality relationship. Results indicate buyers pay premium prices for higher protein and higher TDN alfalfa. Likewise, price premiums are paid for weed-free alfalfa and for alfalfa baled in either large or small square bales. HAYMARKET and subsequent analyses indicate the importance of extension and research cooperation.

**"A Preliminary Analysis of the Effects of Quality Factors on the Price of Long and Medium Grain Rough Rice in Louisiana." John F. Denison, Louisiana State University.**

The effects of selected quality factors on Louisiana producer prices for long and medium grain rough rice are estimated for 1986 and 1987. Premiums and discounts associated with selected quality factors are estimated in a hedonic price framework. The data used to estimate the hedonic model were a pooled time-series cross-section of a bid/acceptance market. Quality factors found to significantly affect the price of rough rice included head rice, broken kernels, lot size, foreign seeds, heat damage, and red rice infestation. The estimated parameters of the hedonic model reflect time series properties of the errors.

**"The Role of Product and Other Characteristics in Determining the Retail Prices of Fresh Apples." Dhaneshwar Ghura and Ronald A. Schrimper, North Carolina State University.**

An hedonic price framework was used to analyze the effects of product and other characteristics in explaining the variation in retail prices of fresh apples. The data used for this study were obtained from food ads in North Carolina newspapers. It was found that the pricing scheme, variety, production location, month of sale, and retail store making the sale were important factors in explaining nearly 80 percent of the variation in retail prices of fresh apples in North Carolina.

**"Cattle Video Auction Performance During 1987." DeeVon Bailey and Monte C. Peterson, Utah State University.**

Satellite video auctions for cattle have gained rapidly in popularity during the past five years. Descriptive statistics are presented to describe the performance of a major cattle video auction company during 1987. Approximately 335,000 head of cattle were offered by the company in 1987 with more than 80 percent actually selling. Current cash and futures prices and lot characteristics largely explained video auction prices. The percentage of no-sales for the company was a negative

function of short-term price trends.

**"Analysis of Feeder Pig Auction Price Differentials." Ted Schroeder, John Jones, and David Nichols, Kansas State University.**

Several physical quality characteristics are important in pricing feeder pigs. This study identifies and estimates the discounts associated with various feeder pig physical characteristics. Weight, weight squared, lot size, lot size squared, weight-lot size interactions, health, and lot uniformity were the most important physical traits affecting feeder pig price differentials. In addition, time of sale and changes in expected finished hog prices and expected feed cost of finishing the feeder pigs also had significant impacts on feeder pig prices over the data collection period.

## QUANTITATIVE METHODS IN MARKETING AND AGRICULTURAL PRICE ANALYSIS (Thomas H. Spreen, University of Florida)

**"Forecasting Variables with Extreme Values: The Case of World Sugar Prices." Octavio A. Ramirez, J.S. Shonkwiler, and R.D. Emerson, University of Florida.**

A procedure which proves useful in forecasting variables having periods of high volatility mixed with periods of relative stability is illustrated in this paper. The procedure is based on applying an inverse hyperbolic sine transformation to the dependent variable, sugar world prices in this case. The transformed model is found to provide a statistically significant improvement in the predictability of sugar world price, relative to ordinary least squares. In addition, various prediction performance measures strongly favor the transformed model. The procedure indeed appears promising for predicting variables which have periodic one-sided spikes, and should be considered as a potential specification.

**"Testing Nonstationarity in Economic Time Series: An Empirical Evaluation with Estimation and Forecast Implications." Hector O. Zapata and Arthur M. Heagler, Louisiana State University.**

Alternative model specifications for testing one- and two-unit roots in nonstationary economic time series as developed in Fuller, Dickey and Fuller, and Hasza and Fuller, are summarized and evaluated in an empirical framework. Selected macroeconomic and agricultural price series are used to evaluate low and high order processes which may or may not contain a time trend. Graphical procedures are included to illustrate the consequences of inappropriate filtering. Implications for estimation, forecasting, and co-irrigation analysis are provided.

**"Modeling the Taste for Eggs." J.S. Shonkwiler, S.A. Ford, and R.D. Emerson, University of Florida.**

Whenever consumers' tastes are changing, proper specification of a time series market demand model is made difficult because aggregate preferences are not observed. Given a proxy for tastes, econometric issues concerning consistent estimation of the demand model are discussed and a methodology for estimating unobserved preferences is developed. Empirical results indicate that taste changes have been a major factor explaining declining per capita egg consumption.

**"Portfolio Optimal Hedging Levels." Thomas L. Sporleder and Elias T. Ayuk, Texas A&M University.**

The conventional optimal hedge ratio is examined in the context of a hedge portfolio. The advent of options has escalated hedge strategies to an n-dimensional problem. Optimal hedge ratio results for an n-dimensional hedge problem are presented here and represent an important extension of the conventional literature. Other refinements, such as asymmetry in expected returns from puts, also are addressed.

## AGRICULTURAL FINANCE TOPICS (Kevin C. Moore, University of Missouri)

**"Volatile Farm Income and Consumption Behavior." Michael R. Langemeier and George F. Patrick, Purdue University.**

Consumption expenditures of 18 Illinois farms were analyzed for 1979–1986. Average consumption exceeded disposable household income indicating other sources of funds were used for consumption. Four consumption models were estimated using disposable household income and disposable household income plus depreciation as alternative measures of

income. Estimated short-run MPCs range from 0.00 to 0.05, while long-run MPCs varied between 0.05 and 0.18. These results indicate the farm-family consumption responds little in response to changes in income. Increases in disposable family income, above levels of current family living, will largely be available for debt reduction or for investment.

**"A Discriminant Analysis of Farmers' Expectations as a Financial Stress Measure." C. M. Gempesaw, II, R. S. Gajulapalli, and B. S. Hunter, University of Delaware.**

Farmers' expectations of how long they can continue farming are used as an indicator of financial stress. Farmers' expectations are classified into five categories ranging from very pessimistic to very optimistic. Canonical discriminant analysis was used to determine if significant separation exists among the five levels of expectations. It was found that significant separation did not exist among the five categories indicating that farmers' expectations may be representing other factors and not just financial stress.

**"The Effects of Management Ability on the Effectiveness of Interest Rate Reductions." Laurence M. Crane and David J. Leatham, Texas A&M University.**

Effects of interest rate reductions on farmer's equity were evaluated using whole-farm simulations for a Texas grain farm from 1983 to 1986. Farms with low leverage positions were profitable without debt assistance. Management ability, as proxied by different tillage practices, affected the amount of assistance necessary to stabilize equity values. For leveraged farms, highly leveraged well-managed farms required 2 percentage point reductions in interest rates to maintain equity at 1983 levels.

**"The Economic Efficiency of Diversification: Certainty Equivalence and the Mean-Variance Model." Allen M. Featherstone, Kansas State University; and Charles B. Moss, University of Florida.**

The marginal benefit and cost of diversification for Florida orange producers is studied using certainty equivalents. The objective of the mean-variance model is shown to be equal to the certainty equivalent under assumptions of normality and negative exponential preferences. Results indicate that for moderate and high levels of risk aversion, diversification into strawberry, grapefruit, or additional orange production is not optimal. However, moderately risk-averse Florida orange producers would diversify into grapefruit production, if the annual amortized fixed costs were reduced by as little as 10 percent.

**"Change in Tax Distortions Between the 1982 and 1986 U.S. Tax Codes: A Case Study of Investment in Orange Groves." Charles B. Moss, Ronald P. Muraro, and William G. Boggess, University of Florida.**

The 1980s have been a period of dramatic change for the income tax code in the United States. Although numerous modifications were considered in policy deliberations, two key goals, tax simplification and elimination of tax distortion, emerged from the discussion and guided drafting of the latest round of tax legislation (i.e., 1986 Tax Reform Act). This study examines the degree of distortion of investment decision introduced by the provisions of the Tax Reform Act of 1986 and its predecessor the Tax Equity and Fiscal Responsibility Act of 1982. The study then compares the tax liability under these tax codes with a nondistortionary tax scheme. Results indicate that the Tax Reform Act of 1986 reduced tax distortion. However, a large portion of the reduction can be attributed to the change in the average tax rate.

## EXCHANGE RATES AND DEMAND FOR U.S. EXPORTS

**(Greg Pompelli, University of Tennessee)**

**"The Impact of Exchange Rates on U.S. Commercial Grain Export." Nathan W. Childs and Stephanie Mercier, U.S.D.A.**

Quarterly export demand models for corn, wheat, and rice (trimester for rice) are estimated for crop years 1975/76 through 1986/87. Each commodity model was estimated as a system of polynomial distributed lag models using Almon polynomial lags. Explanatory variables included: own farm price, a trade weighted per capita income, foreign stocks, and a competitor's price (domestic soybean prices in the corn model). Both one-period and cumulative (five quarters) elasticities are reported and compared with results of previ-

ous research. Foreign stock levels were the most consistently significant explanatory variable in each commodity model.

**"An Evaluation of the Export Enhancement Program for Wheat for the 1986/87 Crop Year." Stephen L. Haley, U.S.D.A.**

This report evaluates the effect of the export enhancement program for the 1986/87 crop year. Depending on one's interpretation of the European Community's motivation for its own targeted subsidy program, U.S. export enhancement bonuses have increased the U. S. price of wheat between 7 and 22 percent, U.S. wheat export volume between 10 and 31 percent, and U.S. wheat export revenue between 18 and 61 percent.

**"The European Community Dairy Quota: Impact on the U.S. Soybean Complex." Christian Mainguy and C. Parr Rosson, Clemson University.**

The linear-in-logs equilibrium displacement model was used to estimate the impact of the European Community (EC) dairy quota on U.S. soybean exports and prices. Results indicate that the quota will reduce EC soybean meal use by a maximum of 4.1 percent, leading to a 5.2 percent fall in price and a 3.1 percent drop in imports. The resultant impact of these changes on the U.S. soybean markets is to increase use by one percent, while price and exports fall by 3.3 and 2.4 percent, respectively. These figures represent a $15 million loss in export revenue annually.

**"The Elasticity of Export Demand for U.S. Peanuts: A Two Stage Price Transmission Approach." Tzongyun Kath Wu, Stanley M. Fletcher, and Dale H. Carley, University of Georgia.**

The price elasticity of export demand is critical in designing appropriate trade and agricultural policies. This paper incorporates a two-stage price transmission approach as well as the contribution of centrally planned economies into the calculation of the elasticities. The estimate for the U.S. peanut export elasticity was –1.109.

**"An Armington Model of the Export Demand for U.S. Rice." Kent Lanclos, Hector Zapata, and John Lee, Louisiana State University.**

The international rice market possesses several unique features which make modeling rice trade difficult. Armington theory was utilized to model U.S. rice exports to Saudi Arabia from 1966 to 1985 in an attempt to provide a more viable framework for researching this subject. The model was econometrically estimated with OLS. Parameter estimates and elasticities were indicated to generally be within ranges established by previous research. Characteristics of the data and the study made the results and implications most applicable to the southern rice industry.

## VALUE OF INFORMATION AND EXPERIENCE IN FARM MANAGEMENT (Charles L. Moore, North Carolina State University)

**"Factors Affecting Peanut Producer Adoption of Integrated Pest Management." Kevin T. McNamara, Michael E. Wetzstein, and G. Keith Douce, University of Georgia.**

Adoption of integrated pest management (IPM) practices is generally associated with enhanced producer net returns and reduced environmental degradation. Increasing producers' adoption of IPM can benefit both producers and society. Factors associated with peanut producers' decision to adopt IPM are analyzed in this paper. Results support IPM educational programs offered by the Cooperative Extension Service. Also, audiences to target these educational programs to are suggested.

**"Providing Farm Management Assistance to Operators of Small and Family-Size Farms." Joel C. Plath, Virginia State University.**

A special project to provide technical and farm management assistance to operators of small and family-sized farms in four counties in Virginia was initiated in 1986. The project is described, conclusions drawn, and implications discussed. A good partnership between Extension and the FmHA has been a key to the success of the project. It is argued that more farmers would get involved in farm record keeping, analysis, and planning if this partnership were broadened to include other agricultural lenders and other geographic areas. Implementation bottlenecks are discussed and solutions offered.

**"Probability of Success and the Value of Information: An Illustration with**

**Farm Planning." Kenneth Paxton and John Denison, Louisiana State University.**

This paper attempts to estimate the value of information on days suitable for field work used in farm planning. Two sets of days fit for field work parameters were estimated for three levels of probability of success. The value of information is compared for each level of probability of success. Results indicated an inverse relationship between the value of the information and the probability of success level.

**"Yield Forecasts Using Historical and Subjective Farm-Level Data." James Pease, Virginia Tech.**

Relatively little evaluation has been carried out to examine the characteristics of farm-level yield distributions, to compare subjective probabilities with forecasts developed from farm-level historical series, or to compare the relative performance of techniques for elicitation of subjective probabilities. Results from a recent research project indicate evidence of non-normality in historical and subjective yield distributions and little correspondence between historical and subjective distributions, and do not indicate superior performance for the elicitation techniques examined.

**"Experience Curve Experiences." Larry W. VanTassell and Morgan D. Gray, University of Tennessee.**

The existence of an experience curve effect for Tennessee dairy farmers was examined using cross-section and cross-section combined with time series data. The strongest experience effect was found in the deflated time series data. Using years of experience as a proxy for accumulated output may slightly overstate the experience effect in agriculture, but appears to be an adequate substitute when a measure of accumulated output cannot be obtained. There also appeared to be a strong relationship between the experience effect and the productivity of the farm when first purchased.

## MARKETING STRATEGIES AND ORDERS (Roger A. Hinson, Louisiana State University)

**"Determining Optimal Strategies for Marketing Calves and Yearlings on Rangeland." L. Garoian, J.W. Mjelde, and J.R. Conner, Texas A&M University.**

The decision to market calves as weaners, short yearlings, or long yearlings is considered in an environment of stochastic range conditions and cattle prices. Optimal decision rules are obtained from an application of dynamic programming. Optimal decisions indicate that the number of livestock retained increases as price decreases and range conditions improve. Expected present value of returns indicates that these marketing strategies are more profitable.

**"An Empirical Analysis of a Marketing Order Vote for a Specialty Crop: The Georgia Vidalia Onion Case." Bobby Mixon, Steven C. Turner, and Terence J. Centner, University of Georgia.**

Vidalia onion production is a major industry in a 20-county area of southeast Georgia. To increase cooperation among growers and handlers, a state marketing order was voted on in 1987. Probit analysis was used to investigate several hypotheses: first, the decision to vote was modeled as a function of type of grower, acres in production, number of growers in a county, and number of packers in a county; second, the decision to vote for or against the marketing order was modeled as a function of the same variables. Results indicate that number of growers and number of packers were the primary factors influencing voting behavior.

**"Marketing Orders and Market Segmentation: Matching Product Characteristics to Consumer Preferences." Gary F. Fairchild, University of Florida.**

A proposed amendment to the federal marketing order for Florida fresh citrus would eliminate Canada from the domestic market definition and include it in the export market category. Adoption of this amendment would permit smaller-sized grapefruit to enter the Canadian market while maintaining more rigid minimum size restrictions in the domestic United States. This variation in minimum size standards recognizes the perceived preference for smaller-sized grapefruit among Canadian consumers. Utilizing market order definitions to separate identifiable market segments facilitates the matching of product characteristics to consumer preferences. This paper evaluates the impacts of the proposed market-

ing order amendment.

**"Debt Choice and Marketing Instruments: The Case of Frozen Concentrated Orange Juice." Charles B. Moss and P.J. Van Blokland, University of Florida.**

Following the onset of financial stress in agriculture during the 1980s, agricultural economics literature has focused increasing attention on the firm's choice of debt. This study sharpens the focus by examining the interaction between this choice and the choice of marketing instruments for frozen concentrated orange juice. Specifically, the study examines the choice of optimal debt under cash, futures, and participation marketing strategies. The findings indicate that participation is the preferred strategy when debt choice is excluded, and that cash becomes the preferred strategy when debt choice is included. This change in preference results from the correlation between operating returns for each strategy and the cost of capital.

**"Cooperation Between Producers and Processors in Marketing Specialty Crops: The Case of Pecans." J. C. Purcell, E. E. Hubbard, and W. J. Florkowski, University of Georgia.**

Knowledge and perceived adequacy of pecan quality standards were analyzed using survey data. The desirability of establishing funds for promotion and advertisement of pecans was evaluated. Results from estimation of discrete dependent variable models allowed identification of growers' characteristics as they are related to knowledge of quality standards. Another model was used to identify factors significantly influencing the size of the checkoff fee contributed to the promotion and advertisement fund by growers and shellers.

## TEACHING PROGRAMS AND UNDERGRADUATE CAREERS

**(Dorothy A. Comer, University of Florida)**

**"Agriculture Graduates' Opinion of Their Careers and Career Potential." Kandace Brown, Mack Nelson, Vonda Humphrey, Mary Ray, and Nathaniel Brown, Jr., Fort Valley State College.**

The opinions of agriculture graduates concerning employment opportunities in agriculture and the future of agriculture are investigated. Graduates of a southern 1890 and an 1862 land grant institution were surveyed to determine their opinions of employment opportunities in agriculture and the future of agriculture. The relationships between the respondent's sex, college or university attended, major, career path choices, and opinions on whether good career opportunities exist in agriculture and whether agriculture is a declining industry are estimated. Logit analysis is used to estimate the odds of the respondent's opinions.

**"An Assessment of Skills and Characteristics Needed by Undergraduates Choosing a Career in Agricultural Sales." Kim Harris, Southern Illinois University.**

This paper presents survey information designed to identify those skills and characteristics needed by undergraduates entering and advancing in agricultural sales. The top five rated traits describe a student who has a positive work attitude and is self-motivated, has the ability to work with others and be a team player, and is self-confident and demonstrates loyalty to the company. Survey results indicate the educational and development needs of the agricultural sales undergraduate differ only slightly from any other student, regardless of his or her specialization.

**"An Examination of Factors Important in the Selection and Performance Appraisal of Agricultural Loan Officers." William E. Hardy, Auburn University; and Kenneth H. Foshee, Mississippi State University.**

The Delphi Process was used to survey Production Credit Association Loan Officers in Alabama, Louisiana, and Mississippi to determine factors that they felt were most important in the selection and appraisal of loan officers. Results of the analysis showed that trustworthiness and dependability were the most important characteristics. The ability to make decisions and use good judgment and the ability to communicate, both verbally and in writing, were also deemed to be very important. Knowledge of agriculture, while important, ranked about one third of the way down in the list of 30 characteristics.

**"Determinants of Earned Income: A Case Study of Former Virginia Tech Agriculture Students." Warren P.**

**Preston, Maria Christina P. Almero, and Josef M. Broder, Virginia Tech.**

This study described individual and occupational characteristics of a sample of former agricultural students. Analysis of covariance was used to estimate models of annual earnings both immediately after college and some years later. Gender, education, year of job market entry, profit sharing, and personal emphasis placed on pay were found to be significant determinants of starting incomes. Significant income determinants for a later year included number of jobs held, profit sharing, personal assessment of the importance of oral and technical skills to the career, marital status, and place of residence. Implications for recruitment, curricula, and students were discussed.

**"Teaching Evaluation in Agricultural Economics and Related Departments in the Southern Region." Josef M. Broder and William J. Taylor, Virginia Tech.**

This paper summarizes the findings of a survey of teaching evaluation in agricultural economics and related departments in the southern region. Student evaluations of teaching (SET's) were found to be the most common method of teaching evaluation. The survey found that 90 percent of faculty in the southern region used SET's; that faculty in the southern region were generally dissatisfied with their SET forms which they supplemented with their own questions; and that the influence of SET's diminishes as faculty dossiers move through the promotion and tenure process. Implications for teaching quality, student enrollments, and future research were discussed.

## FOOD SAFETY AND NUTRITION ISSUES (Gerald A. Carlson, North Carolina State University)

**"Analysis of Consumer Attitudes Toward Commercial Pre-Cooked Ready-to-Eat Beef." Stanley M. Fletcher, Tsu-Tan Fu, and Anna Resurreccion, University of Georgia.**

Consumer preferences and buying intentions are crucial information for marketing commercial pre-cooked ready-to-eat beef. The analysis utilized factor analysis and regression. Segmenting the market based on sociodemographic and common attitudinal factors for promotional programs is possible. However, detailed information on product attributes is required for an effective program.

**"Welfare Implications of the Delaney Clause Illustrated Using Electronic Spreadsheet Analysis: The Case for Tomatoes." Walter L. Ferguson, U.S.D.A.**

Use of electronic spreadsheets allows the considerable flexibility needed for timely and comprehensive analysis of pesticide-suspension assessments. The case is illustrated using scenario analysis to assess the economic implications, on producers and consumers, of alternative interpretations of the Delaney Clause on fungicides used in tomato production. A less strict interpretation of the Delaney Clause, from a zero tolerance to a near-zero tolerance, would result in considerably less redistribution of welfare between producers and consumers while allowing negligible increases in risk to human health and the environment.

**"An Analysis of Consumer Attitudes Toward Pesticide Use and the Potential Market for Pesticide Residue-Free Fresh Produce." Stephen L. Ott and Arlyn Maligaya, University of Georgia.**

More than 300 supermarket shoppers were surveyed to assess their concern about pesticides being used on fresh produce. One-half were concerned and would like to see greater restrictions placed on pesticides. Two-thirds would be willing to pay higher prices to have pesticide residue-free fresh produce, with white or college-educated shoppers being the most willing to pay more. However, shoppers were unwilling to accept lower quality. The shoppers were less willing to purchase pesticide residue-free fresh produce if it meant buying it from a farmers' market.

**"Marketing Food Safety: Toward the Development of Product Differentiation Strategies." Amy McCormick, College of William & Mary; and Anya McGuirk and Warren Preston, Virginia Tech.**

Shoppers are characterized according to attitudes and behavior regarding food safety and health issues using cluster analysis. Potential consumer receptiveness to marketing strategies emphasizing food safety attributes is discussed. Results are used to draw implica-

tions for the marketing of food attributes related to food safety.

**"Consumer Willingness to Pay for Food Safety." James A. Zellner and Robert L. Degner, University of Florida.**

When asked to name foods they no longer consumed or consumed less frequently due to concern over the food's safety, eight percent of respondents surveyed identified chicken. Four percent believed they had suffered foodpoisoning from chicken. Consumers were willing to pay 12 cents per pound more for chicken which had almost no chance of making them ill, but if the bacteria were destroyed with chemicals or irradiation they were willing to buy the safer product only if the price were reduced. Respondents would change food preparation techniques and spend 10 more minutes preparation time to avoid cross contamination of other foods.

## INTERNATIONAL POLICY POTPOURRI (David M. Henneberry, Oklahoma State University)

**"Significance of the GATT Negotiations for States: An Institutional Perspective." Fred O. Boadu and Amy Angel, Texas A&M University.**

An important issue affecting the Uruguay round of multilateral trade negotiations is federalism, the distribution of power between the federal government and the states. This issue is especially relevant for the United States, where the dividing line between the powers of the various levels of government is unclear and always shifting. This paper examines first the sources of authority of both the federal and state governments in foreign commerce and then the way in which the GATT has dealt with the federalism issue. Finally, it discusses areas where state action may circumvent the reductions in trade barriers made at the GATT meetings.

**"Competitive Position of United States Soybeans in a Changing World Economy." Gregory W. Arburn and C. Parr Rosson, Clemson University.**

Recently the U.S. soybean industry has become concerned over declining shares of foreign markets. Argentina and Brazil have significantly expanded their soybean and product production capabilities over the last decade. Domestic and trade policies of these South American countries profoundly impact the competitive position of U.S. soybeans. To investigate the changes in U.S. competitive position in the soybean market, a spatial equilibrium model is employed to model expected policy changes in Brazil and Argentina. Alternative scenarios are generated via expected policy changes and are compared to a Base Scenario representing actual current market conditions to reveal changes in competitive position.

**"Government Intervention in the U.S. Cotton Market." Nancy H. Cottrell, North Carolina State University.**

The producer subsidy equivalent (PSE) approach is used to provide estimates of support to U.S. cotton producers for the years 1982–86. This method incorporates all government policies that directly and indirectly assist agricultural producers. The estimates for the United States are compared with cotton PSEs for other countries previously calculated by the U.S.D.A.

**"Domestic Effects of Terminating the Food Aid Program: An Evaluation of Options." Gene A. Mathia, Michael Price, and Mark Smith, U.S.D.A.**

This paper summarizes the results of an analysis of alternative options to offset the effects of eliminating U.S. food aid programs and managing surplus stocks of U.S. wheat. Under certain assumptions, paying farmers to idle land to offset food aid exports was the relatively least expensive option, followed by allowing the market to adjust to greater supplies given existing farm programs. Provision of food aid was found to be the more expensive option, but the differences in costs were relatively small between the options. This analysis does not consider certain non-economic and long-term economic factors.

**"A Comparison of Economic and Statistical Criteria in Evaluating Exchange Rate Forecasting Models." Mary E. Gerlow and Scott H. Irwin, Ohio State University.**

Although statistical criteria are often the basis for evaluating price forecasting models, they do not account for the crucial element of market timing. A recent theoretical model is presented which determines the equilibrium value of price forecasts based on economic cri-

teria. The general regression test is applied to four exchange rate forecasting models of both the Canadian dollar and the German mark over 1976:11–1984:8. Of these models, only the unconstrained static and dynamic forecasting models exhibited significant market timing value with respect to the Canadian dollar. The constrained dynamic model had market timing value in forecasting the German mark.

## PRODUCTION AND SUPPLY ANALYSIS POTPOURRI

**(Roland K. Roberts, University of Tennessee)**

**"Dynamic Supply Elasticities for Corn and Soybeans." Stephanie Mercier and Bengt Hyberg, U.S.D.A.**

The work of Tegene, Huffman, and Miranowksi is expanded to a national model and explicitly includes two crops (corn and soybeans), program variables, and production costs. A six-equation dynamic model was estimated. All variables entered significantly with the expected positive own price and negative cross-price elasticities. The elasticities generated from the estimated model fall into the range of previous estimations, while the simulation model predicts actual production admirably. These results strongly suggest the Tegene framework provides a useful extension to previous work in crop supply modeling.

**"A Regional Soybean Supply Analysis Using Expected Returns." Brad Crowder, U.S.D.A.**

Soybean acreage response in major U.S. soybean production regions is estimated for 1960–1987 using ordinary least squares. Expected net returns for soybeans and competing crops are used to explain fluctuations in plantings. Expected net returns are constructed using futures prices and a combination of lagged market prices, support prices, and government program variables. Elasticities of soybean acreage vary considerably among regions with respect to lagged acreage and, particularly, expected returns to soybeans and competing crops. Elasticities also differ according to which model is specified. Both futures price and lagged market-price models perform well for calculating expected returns.

**"An Econometric Model of the U.S. Model for Southern Softwood Lumber: Including the Roles of Price Expectations and Finished Product Inventories." Jan K. Lewandrowski, North Carolina State University.**

This paper presents a conceptual model of softwood lumber markets in which: (1) the production, inventory, and sales decisions of producers are interdependent and result from a single optimization problem; (2) producer behavior in any period t is based on existing inventory levels and expectations regarding future price (sales) levels; (3) expectations are formed rationally; and (4) the demand for lumber is derived from the demand for new and remodeled homes. The model is applied empirically to the U.S. market for southern softwood lumber.

**"Examining the Economic Feasibility of Market Gardening." Kevin C. Moore and Charles D. DeCourley, University of Missouri.**

A linear programming model was used to examine the economic feasibility of a market garden. A long-run model examined the economic profitability of an established operation while short-run models analyzed the start-up of a new operation. Special consideration was given to labor, cash flow, demand, and land constraints. Economic profit was possible in the long run; however, this was not achieved until the fourth year. Labor requirements fluctuated greatly from week to week. Obtaining variable amounts of hired labor and overall management of the operation are critical factors for success.

**"Dynamic Nutrient Response Functions: Implications for Selecting Optimal Laying Hen Rations." Nona R. French and Bill R. Miller, University of Georgia.**

Selecting optimal rations for laying hens requires knowledge of production response to protein and energy intake over time. Current industry practice in Georgia relies on linear programming to determine least cost per unit of feed to satisfy nutrient requirements for maximum production. In this paper, a dynamic specification of hen response to protein and energy intake is estimated. The use of this response surface in two strategies to maximize net returns above feed costs is contrasted with current industry linear programming rations.

## MARKET, INDUSTRY, AND RETIREMENT STUDIES (Joe T. Davis, University of Kentucky)

**"Competition in the Meat Packing Industry." Azzeddine Azzam, University of Nebraska.**

Recent increases in industry concentration have raised concern about the potential exercises of oligopsony and oligopoly power by meat packers. This paper develops a model of meat-packing industry oligopoly/oligopsony behavior and tests for market power over the 1959–1982 period. The empirical results fail to reject price-taking behavior for packers in both their livestock procurement and wholesale meat markets.

**"A Quantification of the Economic Impacts of PST on the U.S. Hog-Pork Industry." C. K. Halbrendt, W. B. Stoughton, L. G. Sterling, and C. M. Gempesaw, II, University of Delaware.**

A multi-sector model was formulated to simulate the U.S. hog-pork industry for the 1973–1985 period. A farm sector model was specified for the nine largest hog-producing states, while the retail sector was specified on a national level. The multi-sector model was used to simulate the effects of the introduction of porcine somatotropin (PST) into the growing cycle of domestic hogs.

**"Demand and Supply Dynamics of the U.S. Catfish Industry." Daniel S. Tilley and Yoke Thong Lo, Oklahoma State University.**

An econometric model of the U.S. farm-raised catfish industry is developed and empirically estimated using monthly data from January 1981 through December 1986. Wholesale demand for catfish is found to be elastic. Wholesale prices are related to past wholesale prices and are negatively related to changes in inventory. Farm production is positively related to output prices and negatively related to the cost of feed. Farm prices are closely related to the price processors receive. Catfish imports are positively related to U.S. wholesale prices and negatively related to the cost of imports.

**"Substitution of High-Fructose Corn Syrup for Sugar: What Lies Ahead?" William Lin, U.S.D.A; and Andrew Novick, Lafayette College (PA).**

An econometric analysis shows demand for caloric sweeteners is significantly related to real wholesale price of caloric sweeteners, per capita real disposable income, and lagged caloric sweetener consumption. The HFCS share of sweetener demand is projected by a logistic growth curve to reach 40 percent by 1995, up from 36 percent in 1987. Per capita consumption of HFCS is projected to rise at a much slower rate than earlier years, reaching 57.4 pounds by 1995. After a long period of decline, per capita consumption of refined sugar is projected by the model to rise gradually in the 1990s reaching 62.7 pounds by 1995.

**"A Profile of Retired Agricultural Economics Faculty in the Southern Region." Teresa D. Taylor and Fred C. White, University of Georgia; and Josef M. Broder, Virginia Tech.**

This paper summarizes major findings of a survey of agricultural economics faculty who retired from the southern region. Biographical, financial, and health profiles of retired faculty were developed. The survey found that 83 percent of retirees were living with their spouse, health was the major reason for retiring, retirees and their spouses tended to retire at the same time, retirement incomes from all sources were comparable to that received during last year of employment, and growths in retirement incomes had out-paced increases in cost-of-living. The average respondent retired at age 62, was 70 years old in 1988 with net worth of $368,000.

## THE CONSERVATION RESERVE PROGRAM: PARTICIPATION AND BENEFITS (Gary D. Lynne, University of Florida)

**"Participation of Eligible Landowners in the Conservation Reserve Program: A Logistic Analysis." Steven E. Kraft, Hassan Aly, and J. D. Esseks, Southern Illinois University.**

Data from 508 landowners with land eligible for the Conservation Reserve Program are analyzed using the logistic form of the discrete-choice model. Nine variables are hypothesized to influence the decision of landowners to offer land for inclusion in the Reserve. Across four study sites, all the variables were significant with the expected signs.

Cragg-Uhler R-squares ranged from 0.21 to 0.46. Three program variables controllable by agency personnel were found either alone or in combination to increase the likelihood of land owners offering land from 5.4 percent to 55.8 percent. Implications for implementing the Reserve are discussed.

**"Pine and CRP as Alternative Cropland Uses: An Application of the Southeast Land Allocation Model." Jay Dee Atwood, CARD/SCS; Burton C. English, University of Tennessee; and Thyrele Robertson, U.S.D.A.**

A land use competition model is constructed and applied to evaluate the competition between pine and crops for cropland in the southeastern United States. The model has several methodological and empirical improvements over other pine versus crop studies: a more detailed land base; more competing land uses; more factors of net returns explicitly accounted for; and a modeling framework which includes institutional constraints resulting in endogenously determined land rents which may differ from the single static or dynamic enterprise budget results. It is found that quantifiable profit factors alone are enough to explain much of the low rate of farmer investment in pine trees.

**"Offsite Sediment Damage Benefits of the Conservation Reserve Program in the Southern United States." Robert R. Alexander and Burton C. English, University of Tennessee; and Thyrele Robertson and David Post, U.S.D.A.**

A major goal of agricultural resource policy since the mid 1970s has been the reduction of nonpoint pollution. One of the purposes of the Conservation Reserve Program is to reduce sediment and improve water quality. An interregional sedimentation model, the Micro-Oriented Sediment Simulator, is used to evaluate the impact of the Conservation Reserve Program on sedimentation and on the offsite costs of sediment damage. The 25-million-acre Conservation Reserve Program has reduced annual sedimentation in the southern United States by 467 million tons and reduced annual offsite sediment damage costs by $595 million. Annual Conservation Reserve Program payments in the southern states are just over $311 million.

**"Using the Conservation Reserve Program to Protect Groundwater Quality." Wen-Yuan Huang, Kenneth Algozin and David Ervin, U.S.D.A.**

About 9 million acres of the CRP-eligible cropland vulnerable to groundwater contamination currently are not enrolled. Soil texture or groundwater table can be used to target these acres for early enrollment. To add 10 million acres of highly vulnerable cropland to the current pool of the CRP-eligible cropland, four policy strategies—minimization of rental payment, maximization of DRASTIC reduction, minimization of population exposure, and minimization of pesticide use—are investigated. The minimization of population exposure strategy, which resembles EPA's wellhead protection strategy, appears to be a good policy option.

**"Derivation of the Welfare Implications of the Conservation Reserve Program and the Conservation Compliance Provisions of the 1985 Food Security Act." Eduardo Segarra, Texas Tech University; and Michael R. Dicks, U.S.D.A.**

A model of optimal input and land use in agriculture is developed in this paper. This model provides insights about the welfare implications and underlying trade-offs associated with the implementation of the Conservation Reserve Program and the Conservation Compliance provisions of the 1985 Food Security Act.

## ADOPTION OF TECHNOLOGY AND THE DAIRY INDUSTRY

**(Darrell Bosch, Virginia Tech)**

**"The Structure of Agriculture Technology in Five Southern States." Rudolph A. Polson and C. Richard Shumway, Texas A&M University.**

Using a dual economic specification of a multiproduct technology, the structure of agriculture technology is tested for five southern states (Texas, Oklahoma, Mississippi, Arkansas, and Louisiana). A comprehensive set of output supplies and input demands comprised the system of estimation equations. Evidence of non-joint production was detected in all five states. Several commodities and variable inputs satisfied the conditions for consistent aggregation in each state. While the specific outputs and inputs satisfying these properties varied by state, some common

features were evident in all states. These empirical results are useful for legitimately justifying simplified model specifications of southern agricultural production.

**"On Predicting Supply Shifts from New Technology: Diethylstilbestrol." Kevin Bernhart and Richard Perrin, North Carolina State University.**

This paper examines the problem of predicting industry supply curve shifts given data from experiments with new technology. Simple models utilized by Griliches and Peterson are compared to a more elaborate model by Muth. The case study is diethylstilbestrol, a synthetic hormone introduced for beef production in the 1950s. Based on experimental data then available, the Muth model predicts a production increase of 5 percent and a price decrease of 7 percent, while the simpler models predict changes 2 to 2-1/2 times this size. Comparison of these predictions with later industry performance is the next phase of the research.

**"Factors Which Contribute to the Financial Performance of Selected Tennessee Dairies." Kimberly L. Haden and Larry A. Johnson, University of Tennessee.**

The objective of this study was to identify factors which contributed to the financial performance of 81 selected dairy farms in Tennessee. Several measures of financial performance were analyzed including cash farm income, net farm income, and returns to operator labor and management. Regressions with 10 explanatory variables were used to determine factors that explained the variation in the measures of financial performance. Production per cow, number of cows, price received for milk, forage costs, and level of debt use appeared to influence financial performance.

**"Factors Affecting and Projected Impact of Adoption of Developing Technologies by Dairy Farmers." Dale H. Carley and Stanley M. Fletcher, University of Georgia.**

New technologies such as bovine somatotropin (BST), isoacid feed additives (ISOA), and embryo transfers (ET), if adopted by dairy farmers, will result in increased milk production per cow. However, the effects of new technology adoption on the dairy industry may be less than expected. Even though a majority of Georgia dairy farmers were aware of the technologies, there was a wide range of opinions on adoption timing. A multi-ordered response model was used to determine factors affecting adoption timing. Adoption timing by dairy farmers was affected by education level, herd size, dairy farm specialization and the current use of recommended management practices.

**"Some Simple Analytics of Technology Adoption: Bovine Growth Hormone and the Dairy Industry." Bruce Larson and Fred Kuchler, U.S.D.A.**

This paper develops a simple analytical framework to investigate the incentives for the adoption of bGH and the resultant level of milk production. Based on the biological literature that describes the per-cow yield response to bGH, the conclusion of the "technology treadmill" are questioned. The possibilities are raised that: (1) farmers may not have the incentive to adopt; (2) if farmers adopt, they may not produce at the biological maximum; and (3) if prices are allowed to fall as aggregate milk production increases, there may be a milk price at which farmers have the incentive to switch out of using bGH.

## FUTURES MARKET STRATEGIES (Kandice H. Kahl, Clemson University)

**"Dynamic Stochastic Simulation of Corn Cash and Futures Prices in the Eastern Shores Region." R.M. Nayga, Texas A&M University; and C. M. Gempesaw, II, and U. C. Toensmeyer, University of Delaware.**

Time series procedures are used to develop a dynamic model for corn cash and futures prices. The estimated time series models are then incorporated into a stochastic simulation process to forecast basis behavior for eastern shore corn producers. The model is validated using ex-post and out-of-sample forecast and found to reasonably approximate the behavior of corn basis in the region. The out-of-sample forecasts were then used to incorporate several hedging strategies into a grain futures and options hedging evaluator computer program.

**"Minimum Variance Cross Hedging with Multiple Futures Contracts." John D. Lawrence and Ann A. Wilkinson, University of Missouri.**

This paper describes a method of cross hedging a cash commodity using multiple fu-

tures contracts to minimize variance of total returns. The multiple contract portfolio hedge, when compared to the conventional single contract cross hedge for grain sorghum, provided lower variance and higher total returns in three weeks out of a 10-week post-harvest marketing period. This result is preferred by all risk-averse individuals. The portfolio hedge is also used to define the efficient frontier for the constrained minimum variance problem.

**"An Analysis of the Efficiency of Rough Rice Futures Contracts." Harlon T. Traylor, Louisiana State University.**

The Chicago Cotton and Rice Exchange began trading rough rice futures in August of 1986. The efficiency of a new market is of concern to market participants. This paper analyzes certain aspects of the rice futures market efficiency during the first two years of operation and compares its performance to soybeans and corn. The efficiency of the markets is analyzed by comparing the price relationships between futures and cash markets. Both Louisiana and Chicago, Illinois, cash markets are used for the analysis. Results indicate improvement in the rice futures market performance.

**"Further Evidence of Risk Premiums in the FCOJ Future Markets." Ronald W. Ward, Maryellen Tuttell, and Gary Fairchild, University of Florida.**

Realized returns from trading frozen concentrated futures contracts are calculated and evaluated relative to spot market sales. Average spot prices are shown to often be at a premium to the realized price. This premium is reflective of part of the risk shifting cost of using the futures market. A risk premium model is estimated where the premium is directly related to the level of cash price risk. Both the risk premium and the absolute levels of futures trading risk are then compared.

**"A Clarification of Forward Pricing with Yield Risk." Larry A. Johnson, University of Tennessee.**

The paper is an expansion of Grant's theoretical model of optimal hedging. The purpose is to expand upon the relationship of farm level yield and price and draw implications as to preferred levels of forward pricing. The theoretical conclusions imply that optimal forward positions vary by farm and/or region and, in some cases, recommend no hedging at all.

## MARKETING RESEARCH AND PRODUCE MARKETS (C. W. [Bill] Herndon, Mississippi State University)

**"Overview of Marketing Research Funding at State Agricultural Experiment Stations, United States and Southern Farm Production Regions, 1970–85." Paul L. Farris and Roland Robinson, Purdue University.**

Federal funding of economics and marketing economics at state agricultural experiment stations declined substantially between 1970 and 1985. Associated with the decline was removal in 1977 of the requirement that 20 percent of added Hatch funds be on marketing. Relative increases in nonfederal support, particularly state appropriations, were important in sustaining research in economics and marketing economics. Similar patterns prevailed in the South as in the United States.

**"A Regional Analysis of Vegetable Production with Changing Demand for Row Crops Using Quadratic Programming." J. E. Epperson and L. F. Lei, University of Georgia.**

Based on the analysis it seems clear that vegetable crops are not destined in the near future to replace row crops in terms of land utilization. Nevertheless, vegetable crops appear to compete with and complement row crops well as evidenced by substantial increases in production as market share was assumed to increase. However, fresh vegetables cannot be considered as residual enterprises to which producers move when the levels of demand for row crops decline. Even with a simulated 20 percent decrease in the levels of demand for row crops, the acreage of fresh vegetables did not increase.

**"Interregional Analysis of Dry Onion Production: A Focus on Texas in the Spring and Summer Seasons." Stephen Fuller, H. L. Goodwin, Carl Shafer, and John Schmitz, Texas A&M.**

A national interregional trade model of the fresh onion sector is developed to evaluate the cost competitiveness of Texas production. The analysis shows proximity of Texas to major eastern U.S. markets places it at a cost advantage relative to the principal onion producers in the western United States. And, if high-quality onions can be produced at costs which

are comparable to those of competing regions, then there is some opportunity to expand shipments, particularly in the August-September window.

**"The Importance of Produce Terminal Markets: The Case of Florida." Richard Beilock, University of Florida; James Patterson, U.S.D.A.; and Ronald Mahan and George Fletcher, University of Florida.**

It is commonly assumed that produce markets have declined to a point of negligible importance. In this report the functions of these markets and their importance for Florida-origin produce are examined. The findings indicate that 21 percent of trucks exiting the state have a pickup at an origin market and 29 percent have a drop at a destination market. Loads routed through origin and destination markets differ in several regards from those bypassing the markets. Finally, the importance of destination markets differs across regions in the United States and Canada.

**"The Effects of Merchandising on Supermarket Produce Demand." John J. VanSickle and German Molina, University of Florida.**

Produce demand equations were postulated for determining the effects of shelf space and other merchandising factors on the sales of four produce categories in the supermarket: salad vegetables, cooking vegetables, hard fruit and soft fruit. Ordinary least squares regression analysis was used to estimate a base demand model and then test the effects of additional variables on the sales of each category. The results suggested that produce managers could best influence sales of produce by reviewing their overall pricing policies. Shelf space allocations were also significant in determining demand as were advertising and display format.

## DOMESTIC POLICY POTPOURRI (Patricia Duffy, Auburn University)

**"Sustainable Agriculture in the Institutional Setting: Is it Reasonable to Expect Change?" Philip Szmedra, U.S.D.A.**

The institutional structure that supports energy-intensive agriculture practices is rigid and will not be changed in the short term. Technological advances in the chemical industry, federal farm programs, and the farmer's perception of low-input, alternative production systems as a step backwards reinforce the barriers to adoption of sustainable practices. This paper provides an overview of the situation and points to the necessary sources of change.

**"Goals and Methods of Low-Input Sustainable Agriculture and the Role of Economic Research." Herb A. Holloway and Dana L. Hoag, North Carolina State University.**

Much controversy has surrounded the field of low-input sustainable agriculture (LISA). A review of LISA literature was conducted to ascertain the goals, motivations, and methods of LISA advocated. Three schools of thought were discovered, each with differing objectives. This lack of concise goals was determined to be a primary cause of debate and the shortage of economic research into LISA. Economic rationale and feasibility of LISA are discussed, as well as the role of economics in future research and adoption.

**"Preferences of Citizens for Government Policies to Protect Family Farms." Jayachandran N. Variyam, Jeffrey L. Jordan, and James E. Epperson, University of Georgia.**

A multiple-indicator latent variable formulation is used to examine the structure of citizens' preferences for policies to protect family farms. Data are from a nationwide survey on public attitudes toward agriculture. Standardized estimates of the influence of economic and socio-demographic variables on the intensity of preferences are computed using maximum likelihood procedure. Signs and magnitudes of estimated coefficients of economic variables lend support to the self-interest theory of voter behavior.

**"Tax Progressivity for Farmers after Tax Reform." Clifford Rossi and Ron Durst, U.S.D.A.**

The progressivity of the personal federal income tax structure before and after tax reform is examined. The effect on progressivity from restoring the capital gains exclusion is also evaluated. Results suggest that despite sharp reductions in marginal tax rates, the effective progressivity of the federal income tax increased as a result of the base-broadening provisions of tax reform. Restoring the capital

gains exclusion under the current tax rate structure would reduce progressivity and negate any improvements in fairness achieved under the Tax Reform Act of 1986.

**"A Game Theoretic Framework for Predicting Endogenous Policy Changes." John C. Beghin, North Carolina State University.**

A game-theoretic framework unifies the revealed preference approach to government objectives and the policy behavioral equation methodology. Public policies are the equilibrium outcome of a bargaining process among interest groups and the policy maker. This study stresses the interdependence between policies and bargaining power of the players and derives the comparative statics of equilibrium policies and bargaining strength of the players with respect to a changing economic environment. Also it provides a specification of behavioral equations consistent with the underlying bargaining game. The model is illustrated using the political economy of food and agricultural price policies in Senegal.