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Abstracts

Selected Papers

DEMAND AND PRICE ANALYSIS

(Abner Womack, University of Missouri-Columbia)

"Estimation of a Composite Food Demand System for the United States." Kuo S. Huang and Richard C. Haidacher, U.S. Department of Agriculture.

This study develops statistical procedures for computing the parameters of a complete demand system. A constrained maximum likelihood method has been applied, and parametric restrictions derived from classical demand theory are introduced by a substitution approach. The procedures are then applied to U.S. data for estimating a composite food demand system covering 12 food categories and one nonfood sector.

"Effect of Consigned Income on Income Elasticity of Food Expenditures." Chung L. Huang and Robert Raunikaar, University of Georgia.

The 1977-78 USDA NFCS data are utilized to show that household food expenditures are negatively affected by the relative importance of consigned income for committed expenditures. The statistical model is estimated for at-home and away-from-home food expenditures via OLS and Tobit regressions, respectively.

The decomposition of income elasticity into direct and indirect elasticities is demonstrated. The indirect elasticity accounts for the effect of change in the proportion of consigned income to income due to an income change on food expenditures. Results suggest that the significance of the indirect consigned income effect should not be overlooked.

"Some Observations on Price Elasticities in Systems of Simultaneous Equations." Jonq-Ying Lee and Mark G. Brown, University of Florida.

This paper has attempted to demonstrate that if price and quantity are specified in a simultaneous equations system as endogenous variables, price elasticities or flexibilities are not defined, since they are simultaneously determined within the system. Consequently, such elasticities and flexibilities do not provide policymakers with information necessary to evaluate the impact of policy changes on either price or quantity. This paper includes an example to show that policymakers should turn their attention from elasticities or flexibilities

computed directly from structural equation parameters to the responsiveness of price and quantity to policy changes derived from reduced form parameters.

"Input Substitution Elasticities for Selected Dairy Products with Implications for the Estimation of Derived Demand Elasticities." Henry Kinnucan, Auburn University.

Farm level demand elasticities are often computed as the product of the retail demand elasticity and the elasticity of price transmission. This procedure is consistent with the theory of derived demand only for products which have a zero substitution elasticity between the farm based input and marketing inputs. If the substitution elasticity is positive, and the empirical evidence presented in this paper suggest that for many food products it may be, then derived demand elasticities so computed will be too small in absolute value. Under these circumstances an alternative procedure, which retains the advantage of simplicity, is suggested for calculating derived demand elasticities.

"An Examination of the Farm Level Demand for Pecans." Gary J. Wells, C. Stassen Thompson, and Stephen E. Miller, Clemson University.

Previous studies have indicated an elastic demand for pecans at the farm level. But these studies did not have the opportunity to directly incorporate storage information because these data were not published until 1970. Incorporation of stock changes into a pecan demand model produced a price flexibility estimate using mean values which indicated an inelastic farm-level elasticity. An exact 95 percent confidence interval for this flexibility estimate did not include -1. Price predictions and an extension of an earlier optimal storage model were made using the price dependent equation estimated in this study.

PRODUCTION ECONOMICS (Donald Huffman, Louisiana State University)

"Agricultural Supply, Duality and Revisional Price Expectations." Timothy G. Taylor and J. Scott Shonkwiler, University of Florida.

The use of duality theory to obtain agricultural supply functions consistent with optimizing behavior is discussed with reference to the importance of incorporating unobserved price expectations. A flexible notion of price expectations, termed revisional expectations, is developed and incorporated into a system of supply equations consistent with revenue maximizing behavior.

"Demand for Farm Machinery in the United States -- Annual Time Series Study (1950-1980)." Ebenezer F. Kolajo and John L. Adrian, Jr., Auburn University.

A derived demand approach was used to estimate structural demand for farm machinery in the United States. The ordinary least squares method was employed in estimating single equation multiple regressions for both long-run and short-run stock and annual investment demands for farm machinery. Notwithstanding the dramatic economic changes that had evolved in the general economy in recent years, the results of this study, compared to past similar studies, show that very little change had occurred in the demand structure for farm machinery in the past half century.

"Improving Cost of Production Estimates Through Use of Census Data." Thomas C. Hatch, Kenneth H. Baum and David H. Harrington, Economic Research Service, USDA.

Experimental multiple regression analyses of Census data were conducted to discover whether Census sources of survey information could be useful to directly estimate fertilizer costs, machinery investments per acre, and values of different land types. These estimates can be used to develop benchmark figures in cost of production (COP) studies and in disaggregated land market and farm budgeting studies. Results indicated that the allocation method for fertilizer costs presently used in COP studies in the Cornbelt may be inadvertently significantly biased and inaccurate. Furthermore, estimates of machinery investment per acre and land values proved to be statistically significant and accurate.

"An Analysis of Multiplier Effects in the Hog-Pork Sector." Mad Nasir Hj Shamsudin and Ying-Nan Lin, Mississippi State University.

An econometric analysis was conducted to estimate impact, interim, and total multiplier effects of changes in various key influencing factors, such as income, price of close substitutes, and cost variables on the supply and demand relationships in the feeder pig, slaughter, and retail markets of the hog-pork sector. These multipliers describe the effects in both the short and long run. Results suggested that the effects were quite large and varied in successive periods.

"Why the Partial Adjustment Model is Reasonable." Robert G. Chambers, University of Maryland.

This paper derives the partial adjustment model of Nerlove from a formal intertemporal maximization problem. The general model is

discussed and potential for empirical application is considered.

AGRICULTURAL POLICY AND REGULATORY ISSUES (John Adrian, Jr., Auburn University)

"An Econometric Analysis of Wheat Acreage Response in the U.S. and Canada: Effects of Government Programs." Won W. Koo, North Dakota State University and Ihn H. Uhm, Canadian Transport Commission.

A comparative examination of the two major exporters' dynamic wheat acreage response models reveals that U.S. farmers have responded more sensitively than their Canadian counterparts to government programs but less sensitively to price. This results from differences in the methods of government intervention and crop substitution possibilities. Direct control on acreage is characterized by the U.S. approach, while the Canadian approach is one of guaranteeing minimum returns and volumes marketed through the Canadian Wheat Board. In addition, more alternative crops are available for substitution in Canada than in the U.S.

"The Short- and Long-Run Milk Supply Response with Implications for U.S. Dairy Policy." Roger A. Dahlgran, Iowa State University.

This paper presents a system of supply relationships that model the short- and long-run price adjustments in the dairy industry. A trace of the milk supply response over the time of adjustment is presented for a price increase and a price decrease. Supply elasticities estimated by this model are compared with those estimated previously and are found to be larger, particularly for the long-run. Finally, the empirical results are used to show that the planned producer assessments will not be successful in bringing regulated equilibrium to dairy markets in either the short- or long-run.

"An Evaluation of Alternative Policies for Controlling Agricultural Nonpoint Source Pollution." Randall A. Kramer and William McSweeney, Virginia Polytechnic Institute and State University.

Using a combined economic and hydrologic model, an analysis was made of alternative public policies for reducing agricultural water pollution. The potential effects of the policies on farm income, land use, and water quality were investigated. Regulatory programs could have quite different impacts depending on which pollutant is targeted. Cost-share rates greater than 50 percent would have little effect on pollution from crop enterprises, but would reduce pollution from livestock.

"Economic Analysis of the Brucellosis Eradication Program in Alabama." Vernon Joseph and Gregory Sullivan, Auburn University.

The costs of public expenditures on animal health programs have steadily increased over the last several years. This has been particularly true in the State of Alabama concerning the eradication of bovine brucellosis. This research measures the benefits, costs, and consumer and producer surpluses of an accelerated brucellosis program. A computer simulation model was used to estimate physical losses from the spread of brucellosis, and a general equilibrium analysis was used to estimate consumer and producer surpluses. There was a significant difference in benefits between the two programs evaluated, with the accelerated program yielding a B/C ratio of approximately 4.1 for the period of 1983-2000.

"Government Regulatory Agencies Affecting the Turkey Industry: Description and Economic Impact." Harold B. Jones, Jr., University of Georgia.

The turkey industry is affected by a wide variety of governmental regulations. This article describes the major regulatory agencies affecting the industry and assesses their relative cost impacts on various industry sectors. Regulatory activity is classified into three types: economic; environmental, health, and safety; and social regulation. The combined effects of these regulatory laws and programs contributed an estimated 10.9 cents per pound to the cost of producing and marketing turkeys in 1982. Economic regulation accounted for 4.1 cents per pound; environmental, health, and safety regulation 2.6 cents per pound; and social regulation 4.1 cents per pound.

MARINE ECONOMICS (James Easley, North Carolina State University)

"Impact of Tariffs and Quotas on the U.S. Shrimp Industry." Fred J. Prochaska and Walter R. Keithly, University of Florida.

Currently, over one-half of U.S. shrimp consumption consists of imported shrimp products. Consequently, one sector or another in the shrimp industry continuously presses for import restrictions. Models were developed to analyze U.S. shrimp import demand and foreign shrimp supply offered to U.S. buyers. Proposed tariffs and quotas were analyzed with respect to import prices, volume and value of imports, and the incidence of taxation. These impacts were extended to the dockside market level to estimate effects on exvessel prices and production. Finally, the question of further induced entry into

the fishery as a consequence of tariff and/or quota legislation was examined.

"Revenue Effects on Virginia's Soft Crab Fishery from Degradation in Chesapeake Bay Water Quality." Leonard A. Shabman and Oral Capps, Jr., Virginia Polytechnic Institute and State University.

The decline of submerged aquatic vegetation (SAV) in the Virginia portion of the Chesapeake Bay is attributable to increases in nutrient enrichment in the Bay. A commitment to increase state and federal spending for enhancing Chesapeake Bay water quality has been made. While general tax revenues will constitute a substantial share of the financial base of the programs, there are also proposals for alternative user fees, such as fishing licenses, real property tax surcharges, and taxes on commercial seafood harvest. In the case of a tax on commercial seafood harvest, one question of importance is the extent to which this sector would in fact benefit from expenditures to improve water quality. This paper focuses on that question for one particular dimension of the Bay improvement program—restoration of SAV. Based on econometric analyses, one of Virginia's smallest fisheries, the soft crab fishery, has been significantly affected by the decline in SAV. Restoration of SAV would have increased gross revenues in this fishery by \$361,000 or approximately 50 percent.

"The Economic and Biological Relationships Between the Industry and Firm in the Spiny Lobster Fishery." Walter R. Keithly and Fred J. Prochaska, University of Florida.

A "bioeconomic yield model" and an "individual firm production model" were estimated for the Florida spiny lobster fishery. Monthly pooled time-series and cross-sectional data, including harvestable population, were used to estimate the firm production model. Interaction of individual firm and industry production was analyzed while maximum economic yield and optimum level of inputs were determined. The simultaneous consideration of both the yield and production models provided more complete information for management of the lobster fishery and is applicable to other fisheries when economic goals are considered.

"Shellfish Bottoms Leasing Policy and Returns to Land in the South Carolina Oyster Industry." James C. Hite, Clemson University, and Raymond J. Rhodes, South Carolina Wildlife and Marine Resources Department.

Intertidal bottoms have traditionally been used for commercial oyster production in South Carolina. These bottoms belong to the State and are made available to private parties for use

under a leasing arrangement. Revenues from the leases are not sufficient to cover the State's cost in administering the program. In this paper, the returns to land in the oyster and associated clam industry are estimated and the implications are examined relative to changes in the leasing policy.

"The Effect of Alternative Harvesting Strategies on Firm Growth for a Representative Catfish Farm in West Alabama." David Hunt and Gregory Sullivan, Auburn University.

Profitability of a sample catfish farm in West Alabama was investigated using different harvest timing strategies. The Texas A & M University Aquaculture Budget Simulator was used to synthesize three harvest strategies: (1) 'Topping' by net 12 months a year, (2) harvesting only in September, October, and November, and (3) harvesting only in October. Using these alternative strategies, profitability was projected over a 10-year period.

Harvest strategy 1 yielded the highest growth of equity and the fewest negative net cash flow months. Harvest Strategy 3 yielded the lowest equity growth and the most negative cash flow months.

AGRICULTURAL CREDIT AND FINANCE (Wesley Musser, University of Georgia)

"A Linear Programming Approach to Credit Scoring." William E. Hardy, Jr., and John L. Adrian, Jr., Auburn University.

The typical approach for developing credit scoring models is to use the statistical procedure known as discriminant analysis. An illustrative example and empirical results are presented to demonstrate how linear programming can be used as an alternative procedure. Credit scoring results obtained with linear programming compare favorably with those generated by discriminant analysis. Several linear programming models gave total classification results which were better than with discriminant analysis.

"Current Financial Stress Among Farmers in South Georgia." G. Scott Smith, Wesley N. Musser, and Fred C. White, University of Georgia.

A severe price-cost squeeze, high interest rates, and stagnation in land prices have created a financial crisis for many farmers in the United States. This paper considers the current ramifications of this crisis for Georgia farmers. Data from a survey of farmers in South Georgia reveal a wide array of current financial situations, ranging from normal levels of leverage to a large group of insolvent firms. A simulation analysis of a representative farm for the period of 1974-

81 is used to analyze the relationship of expansion strategies to this current situation. Different strategies analyzed resulted in all the levels of current financial situations.

"Principles for Building Present Value Models," Lindon J. Robison and William Burghardt, Michigan State University.

Present value models are designed to rationalize time differences between the receipt of cash income and the expenditure of cash expenses. Many other characteristics of present value models also need rationalizing. These include the treatment of taxes, capital gains, length of investment, and opportunity cost comparisons. In this paper, five principles are introduced which are designed to rationalize these influences to permit consistent construction and comparison of present value models. The principles are then employed to construct a maximum bid price for land.

"Capital Rationing Tax Incentives and the Internal Growth of an Alabama Aquacultural Firm." Neil R. Martin, Jr. and Gregory Hanson, Auburn University.

Capital rationing and tax incentive issues for an aquacultural firm are developed in the context of intensive firm growth with a channel catfish enterprise. Beginning firm debt levels and stringently imposed debt limits had prominent effects upon pond construction levels and growth profitability. Wide fluctuations in interest rate levels had little impact upon growth, although higher interest rates significantly reduced profitability. The tax incentive examined also had little effect upon firm growth. The methodology and the effect of the capital, debt, interest rate, and tax features analyzed provide insights that apply wherever capital and credit rationing impact upon aquacultural investment decisions.

"A Conceptual Framework for Examining the Farm Cash Flow Problem." Lonnie R. Vandever, Louisiana State University.

Farm financial problems have recently received much attention in many areas of the country. Increases in the number of farm foreclosures along with other factors suggest that many farmers are experiencing liquidity problems. Although farm financial management literature has demonstrated the importance of financial leverage and liquidity management, little research is available concerning procedures for estimating these relationships. This paper provides a discussion of a conceptual model that may be used to estimate these relationships. Empirical estimates from the cash requirement model reveal leverage levels that cause cash flow problems when yields for a representative cotton and soybean farm are below normal.

MARKET STRUCTURE AND EFFICIENCY (Leo Blakley, Oklahoma State University)

"Economics of Scale Versus Size." John W. McClelland and Michael E. Wetzstein, University of Georgia.

The aim of this paper is to correct some misconceptions in the agricultural economics literature and textbooks with respect to the concepts of economics of scale and economics of size. A mathematical example is presented as well as a geometric representation of scale and size. A major conclusion of the paper is that economics of size is a redundant and often misleading concept in agricultural economics.

"Structural Change in the Hog Subsector: A Regional Progress Report." Karen P. Mundy, University of Maryland; and David E. Kenyon, Virginia Polytechnic Institute and State University.

Contract hog feeding has grown substantially in the North Carolina, Virginia, Pennsylvania, and Maryland region during the seventies. This study used the Reimund, Martin, Moore model of structural change to analyze the factors that have led to increased hog contracting in the region. The analysis is based on mail survey data from hog producers and interviews with contractors and packers conducted in 1982 plus secondary data. The packing industry in the region imports up to 35 percent of their hogs and pays lower wages than Midwestern firms. These two factors provide a strong incentive for the packing industry to encourage additional production within the region.

"Performance of Hog/Pork Markets Under Different Market Structures." D. E. Farris, Texas A & M University; M. D. Rocha, Ministry of Agriculture, Philippines; and N. J. Beaton, University of Manitoba.

The U.S. hog/pork markets are characterized as large volume supply and surplus markets in the Midwest, and scattered and thin deficit markets in the rest of the country. Following from spatial equilibrium theory, if slaughter and assembly costs are the same, the price of slaughter hogs in deficit areas should be equal to the Western Corn Belt price plus freight and handling differentials.

Poor market performance was indicated in the Northwest, Southeast, and Southwest regions of the United States. Price differentials from the Western Corn Belt were generally \$1 to \$3 lower than the perfect competition model predicts. Part of the explanation was price discrimination by oligopsonistic packers.

"An Evaluation of Price Effects of the Introduction on Market News on Mississippi Auctions: An Application of Efficient Market Theory." Kenneth E. Nelson, Economic Research Service, USDA.

The "efficient markets" concept is used to evaluate the price effects of the introduction of formal market news reports from livestock auctions in Mississippi. Regression techniques are used to assess efficiency before and after the introduction of market news. Significant shifts in regression parameters are observed which are consistent with an improvement in market efficiency by the measures used.

"An Efficiency Analysis of Daily Assembly and Supply Balancing Operations in a Fluid Milk Market." Peter Vitaliano, Virginia Polytechnic Institute and State University.

A method for determining least cost schedules for daily milk assembly and supply balancing operations in a fluid milk market is presented and applied to a case study market in Virginia under selected alternative delivery arrangements. Results indicate that organizations performing such operations could achieve modest, but significant cost savings through more systematic management of their operations and by shifting the burden of providing balancing functions to fluid milk processing plants. The method has potential application in the context of cooperative management, price negotiations, and cooperative joint ventures and mergers.

RISKS AND UNCERTAINTY (Stan Spurlock, Mississippi State University)

"Modeling the Impact of Financial Growth on Firm Risk Behavior." Joseph Atwood and Glenn A. Helmers, University of Nebraska; Neil A. Stanley, Iowa State University.

A polyperiod programming model with financial constraints and MOTAD-type deviations is developed for conditions of firm financial solvency risk. The model incorporates disaggregated production and output disposal activities. The net impact on the deviation matrix is shown to be identical to the disaggregated case. The model maximizes expected net worth subject to constraints placed upon the potential end-states as calculated with the MOTAD-type deviations. The model is shown to result in activity mixes which change in response to financial position and firm growth. Comparable MOTAD models are shown to result in greater occurrence of financial insolvency.

"Analysis of Crop Yield Distributions for Risk-Efficient Decision Criteria." Daniel F. Capstick and Mark Cochran, University of Arkansas.

Yield distributions from 30 cotton farms in Arkansas have been constructed and compared to one another and to county average distributions. There is little uniformity between the distributions. Problems for risk analysis using the "representative" farm approach are identified. In two of three counties, county average distributions were less risky than the majority of individual distributions for decision classes examined. Predictions based on county averages may be quite inaccurate.

"Risk Attitudes and Producer Attributes: A Case Study of Texas Coastal Bend Grain Sorghum Producers." S. Sri Ramaratnam, David A. Bessler, M. Edward Rister, and James Novak, Texas A & M University.

Risk attitudes of a sample of Texas Coastal Bend grain sorghum producers were measured using four different functional forms of Bernoullian utility. A Direct Elicitation of Utility approach was used to obtain the data in the utility-income space. Exponential functions best described most of the producers' utility with quadratic, logarithmic and semi-log functions appearing best in other cases. The exponential risk measures also related well with several producer and farm related socio-economic variables such as age, experience, dependency on farm income, tenure, farm size, and productivity. Non-linear relationships between risk attitudes and the socio-economic variables, including interaction between variables, were found to be significant.

"A Method for Computing Stochastically Efficient Mixtures of Risky Alternatives." Francis P. McCamley and James B. Kliebenstein, University of Missouri-Columbia.

This paper presents a method for computing stochastically efficient mixtures of risky alternatives. An exponential family of utility functions is assumed. A discrete distribution is used to approximate the joint distribution of the outcomes associated with the alternatives. The properties of the solutions are described. The method (CARA) is illustrated by applying it to data from an article by Hazell. The solutions are compared with those implied by E-V and E-A (MOTAD) criteria. Most of the CARA efficient mixtures are different from those associated with Target MOTAD. Advantages and limitations of the method are discussed.

"Management of Intensive Forage Beef Production Under Uncertainty." C. Arden Pope III and C. Richard Shumway, Texas A & M University.

Forage production variability as faced by beef producers in East Texas is incorporated into a simple decision theory framework. Conclusions suggest that the least risky, and possibly the

most profitable, approach to intensive forage beef production is to plan for relatively poor weather conditions and low forage production. This results in a more diverse forage system and a smaller herd size than would be found optimal under the assumption of constant average forage production. These results also demonstrate that the assumptions of constant average forage production may result in unreliable estimates of expected net returns.

TRANSPORTATION ISSUES (Marc Johnson, North Carolina State University)

"Shipping Urgency and Truck Rates in the Florida Produce Truck Market." Richard Beilock, University of Florida.

In their 1980 article, "Competition and Value of Service Pricing in the Trucking Industry," DeVany and Saving hypothesized that in competitive trucking markets apparent price discrimination may be found. The price differentials, however, would be associated with differences in costs from providing expedited and nonexpedited services, rather than on differences in demand elasticities. In this paper, their hypothesis is tested by the use of data from the highly competitive Florida produce truck market. The findings strongly support DeVany and Saving's hypothesis.

"Forecasting Rail Freight Traffic in Georgia." Jeffrey L. Jordan, Georgia Experiment Station, Experiment, Georgia.

The purpose of this study was to develop a procedure for estimating future rail traffic that explicitly considers the relationship between the structure of a state's economy and rail freight traffic. The expanded use of input-output models to include the forecasting of transportation demand was considered. A Georgia case study was used to test the forecasting capability of the input-output procedure for the years 1978-1981. For the year 1979, the model predicted rail traffic to within 0.20 percent of actual traffic. Various statistical tests indicate that the procedure was effective in forecasting rail freight traffic.

"Waterway User Charges and Interregional Competition in Grain Marketing." Mack N. Leath, Economic Research Service, USDA.

Recent legislation imposed user charges on commercial waterway users. These fees will increase the cost of marketing grain which will eventually be reflected in lower prices to producers or higher prices to users. The impacts of user fees on the relative value of corn and soybeans in various states were determined using an interregional trade model of the marketing system for corn and soybeans. Results indicate that the relative competitive position

of soybean producers in Southern States will be enhanced. The analysis also revealed that the comparative advantage of Gulf ports in handling export grain would be weakened.

"Short Term Truck Rate Variations for California and Florida Produce Shipped to the Northeast." Richard Beilock, John H. Koberger, and Jeffrey P. Morgan, University of Florida.

In this paper a model is developed to explain weekly variations in truck rates for produce. The model is employed to estimate rates to New York for the October 1979 to June 1983 period for Florida tomatoes and grapefruit and California lettuce and citrus. Overall, results were encouraging, with a large proportion of the variation explained in each equation and with the majority of the estimated parameters being consistent with expectations. However, given the lack of previous work in the area, this work should be viewed as being exploratory in nature.

"Effects of Increased Transportation Costs on Spatial Price Differences and Optimum Locations of Cattle Feeding and Slaughter." Gregory M. Clary, Clemson University, Raymond Dietrich and Donald Farris, Texas A & M University.

A least-cost multiproduct transshipment model is developed to evaluate the impact of changes in interregional relationships in the cattle feeding/fed-beef economy as a result of increased transportation costs. Results indicate that Southern and Central Plains and Corn Belt cattle feeders would continue to account for nearly 85 percent of all cattle fed in the United States in the short run. Slaughter generally was shown to remain production oriented as slaughter firms locate near concentrated sources of fed slaughter cattle.

Results suggest that cattle feeders in the Southern and Central Plains may be faced with less favorable competitive positions when competing with western Corn Belt feedlots if transportation costs increase more than 50 percent relative to other input costs. Future increases in placements of feeder cattle would likely occur to a greater degree in the Corn Belt and to a lesser extent in the South.

PROFESSIONAL ISSUES IN AGRICULTURAL ECONOMICS (Leo Polopolus, University of Florida)

"A Survey of Journals Used by Agricultural Economists." Josef M. Broder, University of Georgia and Rod F. Ziemer, Texas A & M University.

Agricultural economics faculty were surveyed to learn more about their use and assessment

of professional journals. Faculty rankings of journals are reported along with faculty assessments of changes in journal quality. Of 25 journals used by agricultural economics faculty, the *Southern Journal of Agricultural Economics* ranked first among regional agricultural economics journals in personal usefulness, subscriptions, papers submitted, papers published, and participation in the editorial and review processes. This journal was also ranked as the second most improved journal among all journals surveyed.

"An Analysis of Factors Related to College of Agriculture Students Choosing Farming as a Career." James O. Wise, University of Georgia.

Discriminant analysis showed that some major factors related to students choosing farming as a career were the number of years lived on a farm, majoring in a farm related option, the enjoyment received from farming, the potential of profitable crop and livestock enterprises, and the size of the home farm. Major factors related to choosing a non-farm career were majoring in Agricultural Economics and the fact that major crop and livestock enterprises on the home farm did not provide adequate income or were sources of dissatisfaction. Other factors were the renting of land for the home farm, concentrating in the resource economics option, and being married and older.

"Education as an Investment in Human Capital and Manufacturing Employment Growth." Kevin T. McNamara, Virginia Polytechnic Institute and State University; Warren P. Kriesel, University of Kentucky, and Brady J. Deaton, Virginia Polytechnic Institute and State University.

The relationship between investments in public education and local economic growth is an important consideration in developing community investment strategies. In spite of this, it has received little attention in rural development research. This paper reviews literature on economic growth that has included some human capital measure in model estimation, develops the theoretical link between local investment in education and local economic growth using both a flow and a stock concept of local human capital, and develops an empirical model to test these concepts. The paper also discusses measures for the stock and flow of human capital and presents evidence that expenditure measures do not necessarily provide a good measure of the stock of educational output, or for the flow of human capital.

"Decomposing Technical Change in U.S. Agriculture." Utpal Vasavada, University of Maryland.

A distinction between autonomous technical change (ATC) and induced technical change

(ITC) is made. A methodology is developed to assess the relative contributions of both types of technical change to U.S. agriculture. ITC is explicitly linked to relative scarcities, as measured by relative factor prices.

Test results indicate that ATC exercised a greater influence on input-output ratios than ITC or factor prices. ATC is labor and land saving, and capital and materials using. Input usages are biased in the opposite direction by ITC. Also, ITC reduces the degree of substitutability between inputs over time.

"Food and Fiber Sector Employment in the South." William Edmondson and Gerald Schluter, Economic Research Service, USDA.

Employment in the Food and Fiber system (workers needed to produce, process, and distribute for domestic consumption, food and natural fiber clothing, and for agricultural exports) was estimated to be 22.7 million nationally and 7.6 million in the South. Food and Fiber employment accounts for a larger proportion of jobs in the South, 23.8 percent, compared with 22.1 percent nationally.

PEST MANAGEMENT ISSUES

(Michael Wetzstein, University of Georgia)

"Economic Implications of a Regional Integrated Pest Management Cotton Production System: Texas Rolling Plains." Sharif M. Masud and Ronald D. Lacewell, Texas A & M University; Emory P. Boring, Texas Agricultural Extension Service, Vernon, Texas; and Thomas W. Fuchs, Texas Agricultural Extension Service, San Angelo, Texas.

Economic analysis of cotton production under the delayed Uniform Planting Date (UPD) production system in a 27 county area of the Texas Rolling Plains consisted of regression and budgeting analysis using data for 1970-1981. The estimated cotton yield equation emphasized the importance of the UPD for cotton production—lint yield increased about 25 pounds per-acre for counties practicing this production system. Yields increased in the face of dramatically greater cotton acreages. The estimated costs of insecticide, seed cotton, and labor per-acre were lower with the UPD compared to the conventional production system. The resulting increase in net returns for the UPD was an estimated \$21.36 per acre.

"Integrated Pest Management Characteristics Associated with Cotton, Soybeans and Peanuts." Tsu-Tan Fu, Michael E. Wetzstein, and Philip Szmedra, University of Georgia.

A Lancaster characteristics approach to IPM suggests that producers tend to derive benefits

not from IPM as a whole, but from the individual IPM characteristics associated with a given IPM practice. Results based on this methodology suggest that soybean producers tend to utilize IPM techniques to a greater extent than cotton and peanut producers.

"Producer's Beliefs and Adoption of Integrated Pest Management." Susan Y. Reece, David M. Edwards, and Philip E. Varca, University of Georgia.

Adoption of integrated pest management has been limited in Georgia although objective data indicate that an IPM technology may be more efficient than conventional pest control strategies. This paper analyzes data pertaining to IPM among 192 Georgia peanut producers. The relationship between beliefs about IPM and adoption of the IPM is explored. Results generally support earlier research indicating that users and nonusers of IPM hold different views pertaining to the consequences of employing IPM. A policy implication of these findings is that certain positive beliefs about IPM must be reinforced among nonusers of IPM.

"Yield Maximization Versus Profit Maximization: The Case of Alfalfa Management." David L. Debertin and Angelos Pagoulatos, University of Kentucky.

Agricultural economists have sometimes been critical of biological scientists for emphasizing production practices that result in maximum yield, rather than production practices that result in the greatest net returns to the farmer. This study was designed to determine if a management strategy for alfalfa deemed desirable or optimal from a yield maximization perspective results in the greatest net returns to the total farm firm, when other enterprises are considered. A linear programming model incorporating alfalfa management strategies was developed. Results indicated that a management strategy that resulted in maximum yields did not always result in the greatest profit to the entire farm.

"Social Costs of Illness Induced by Pesticides." J. C. Headley, University of Missouri-Columbia.

Costs of illness induced by pesticides are identified as: (a) cost of treatment, (b) cost of earnings due to morbidity, and (c) the present value of earnings lost due to premature mortality. Annual costs due to acute poisoning including 52 accidental deaths were estimated at about \$14,000,000. Annual costs of cancer mortality are conservatively estimated at from 14.8 to 18.8 million dollars for a 10 and 6 percent discount rate, respectively. Estimates of cancer mortality are crude due to lack of knowledge about the links between pesticide exposure and cancer incidence.

PRODUCER LEVEL MARKETING (Warren Couvillion, Mississippi State University)

"Development and Application of a Slaughter Lamb Marketing Tool." Clement E. Ward, Mark T. Detten, and Francis M. Eplin, Oklahoma State University.

There is no futures market for slaughter lambs and little lamb feeder-packer forward contracting is practiced. Thus, lamb feeders should market lambs when expected marginal revenue (MR) equals expected marginal cost (MC) from feeding lambs another week. A lamb marketing tool was developed to estimate expected MR and expected MC, using forecasted slaughter lamb prices and forecasted heavy-lamb price discounts. Rigid application of the tool compared favorably with net returns from marketing with perfect information, but the tool did not increase returns compared to other marketing strategies. A less rigid application of the marketing tool is illustrated.

"Computerized Marketing of Fresh Fruits and Vegetables—A Common Sense Alternative to Difficult Marketing Problems." John VanSickle, University of Florida; John Adrian Jr., Auburn University; and James Epperson, University of Georgia.

Electronic marketing has received much attention as a means for improving economic efficiency in marketing several agricultural commodities. A cost analysis conducted in this paper indicates a potential improvement in marketing efficiency from adoption of computerized marketing for selected fruits and vegetables. Cost comparisons between computerized marketing and the traditional marketing system indicate a potential savings of 90 percent in the cost of negotiating the sale. This cost savings combined with other potential benefits support the need for further research on the feasibility of computerized marketing for fruits and vegetables.

"The Participation and Potential for Participation of Women in Marketing and Supply Cooperatives in Kentucky." Ella K. Hensley, Lorraine Garkovich, Dawn Gyawu, Janet Bokemeier, and Dee Ann Wenk, University of Kentucky.

Studies have shown that farm women actively participate in farm operations. Questions about how their farm activities influence participation in agricultural marketing and supply cooperatives and questions about how these farm women view their agricultural cooperatives are explored.

An overall study of 2,000 Kentucky farm women, coupled with examination of their agricultural cooperative's organization, plus interviews with cooperative leaders was developed

by the University of Kentucky to help answer these questions. Results of the pre-test of a survey questionnaire administered to 44 women were reported.

"A Mathematical Programming Model for Vegetable Rotations." Wesley N. Musser and Vickie J. Alexander, University of Georgia; Bernard V. Tew, Colorado State University; and Doyle A. Smittle, University of Georgia.

Crop rotations help alleviate pest problems historically common to Southeastern vegetable production. Previous linear programming methodology could not readily accommodate rotational requirements included in this paper. Entering each possible crop rotation as a separate activity would be burdensome when large numbers of rotation alternatives are considered. Conventional double crop methodology reduces the number of necessary activities but cannot accommodate triple crop rotational requirements. This paper evaluates potential multiple crop production by adapting linear programming methodology. An example utilizing several vegetable rotation alternatives is provided which preserves the rotational restrictions while reducing the total number of necessary activities.

"An Economic Analysis of the Inter-regional Movement of Kentucky Feeder Cattle." David W. Pendlum, Joe T. Davis, and Barry W. Bobst, University of Kentucky.

Each year, Kentucky beef producers produce an excess supply of feeder cattle, i.e., produce more than they feed out. This study examines the interregional movement of these feeder calves and determines the optimum shipment pattern that maximizes producer profits. The study focused on the 1981 calendar year.

RESOURCE MANAGEMENT ISSUES (Sandra Batie, Virginia Polytechnic Institute and State University)

"Variable Cost Sharing as a Targeting Strategy Within an ACP Water Quality Project." William M. Park, University of Tennessee and David G. Sawyer, Soil Conservation Service, Washington, D.C.

Increasing demand for more cost effective federal soil erosion control efforts has led to implementation of a pilot variable cost sharing (VCS) program within the regular county component of the Agricultural Conservation Program (ACP). Based on data from an ACP special water quality project which employed uniform cost sharing, variable cost sharing is simulated in terms of its potential impact on the distribution of funds by pre-practice erosion rate

class and practice and the cost per ton of erosion reduction. In consideration of widespread implementation of VCS, several philosophical and practical concerns are raised.

"Agricultural Land Preservation: Understanding the Policy Issues." David Mulkey and Rodney L. Clouser, University of Florida.

Many agricultural economists analyze the agricultural land preservation issue from the land market prospective. The general consensus of these individuals is that the land market operates efficiently in allocating resources and there is no need for "special" programs to encourage preservation. Yet, this position seems inconsistent with actions taken by federal/state/local governments, who have adopted programs associated with preservation. This paper compares the general land market approach with an institutional approach to allocate agricultural land resources. The institutional approach to agricultural land preservation broadens the role of economists and helps explain the activity of government in adopting programs.

"A Simulation Model for Analyzing the Impact of Alternative Energy Sources in the Oklahoma Economy." Tesfa G. Ghebremedhin, Southern University, and Dean F. Schreiner, Oklahoma State University.

Energy policy is currently one of the most important national issues because of possible limitations on economic growth resulting from uncertainty over energy prices and potential energy supply disruption. State policymakers are faced with alternative energy choices but lack sufficient information for analysis of these choices. Results of the study indicated that a strong dependence on the conventional energy sources of natural gas and petroleum products may reduce substantially the energy Oklahoma will have for interregional trade in the future. Oklahoma's baseline energy projections and impact analysis lend importance to future policy decisions on alternative energy choices.

"Estimating Demand and Demand Elasticities for Water in Rural Areas." Gerald A. Doeksen, Oklahoma State University; H. L. Goodwin, Texas A & M University; and Robert L. Oehrtman, Oklahoma State University.

In planning for the future, rural water boards are confronted with the difficult task of trying to ensure adequate water services. An important facet of this process is the ability to estimate water demand as accurately as possible. The analysis put forth in this paper utilized primary data to identify a functional relationship expressing monthly water demand per customer. Price elasticities of demand were calculated using the resulting equation and mean values

for price and quantity. Results indicate the price elasticity of demand for inverse and log linear specifications to be $-.43$ and $-.40$, respectively. Demand estimating procedures and demand elasticities are extremely useful to rural water district board members as they plan system expansions and capital investments.

"Soil Conservation and Farmland Retention: A Case for Linking Land Use Policies." E. Jane Luzar and Patricia E. Norris, Virginia Polytechnic Institute and State University.

Recently redefined soil conservation policies and federal and state initiated farmland retention programs provide opportunity for policy linkages which would add consistency to national and local land use. This paper makes the case for linking soil conservation targeting strategies with farmland retention programs, specifically agricultural districts, to obtain their mutual policy goal of protecting the agricultural land resource base.

FARM MANAGEMENT (David Debertin, University of Kentucky)

"Microcomputer Budget Management System." James M. McGrann, Texas A&M University.

The enterprise budget and whole farm cash flow and income statement are fundamental tools of farm management. The "Microcomputer Budget Management System" (MBMS) is a microcomputer software package that facilitates storage and use of information for crop and livestock budgeting. It performs necessary calculations for several enterprise budgeting formats and preparation of whole farm resource use reports and cash flow and income statements. The MBMS includes internal machinery and irrigation cost calculation routines. This program is an enhancement of the Oklahoma Budget Generator. This paper presents a discussion of the computational procedures and capabilities of the microcomputer software.

"Economic Feasibility of Narrow Row Spindle Picker Cotton." Paul W. Teague, Marvin D. Heilman, and Ronald Lacewell, Texas A & M University.

Agronomic research has shown that cotton grown in narrower rows (30 inches) can exhibit a positive yield response when compared to conventionally spaced rows (40 inches). While narrow-row cotton can easily be harvested with a stripper-harvester, spindle pickers are not currently available with this capability. Recently, several independent producers devised a conversion procedure to allow a standard spindle picker to harvest 30-inch rows of cotton. This economic feasibility study of such a conversion

indicates that narrow-row cotton can produce a higher and more stable net return than conventionally spaced cotton when harvested with a converted spindle picker. This applies to the Lower Rio Grande Valley and can be extended to other areas which produce long staple cotton that requires spindle picking.

"An Investigation of Economically Optimum Timing of Nitrogen Fertilizer Applications on Rice." John M. Montgomery, Ronald C. Griffin, and M. Edward Rister, Texas A & M University.

Profit-maximizing levels and timings of nitrogen fertilizer applications on rice are investigated. Two different conceptualizations for modelling the fertilizer level and timing of applications are considered as well as two alternative production function forms. The influence of rice prices, fertilizer materials, and application costs and weather conditions are integrated into the analysis. Results indicate a narrow range of profits across a wide range of fertilizer levels and five alternative sequences of application timings among the four model conceptualizations/functional forms evaluated. The small range of profits suggest the need for further statistical testing of the economic results.

"An Economic Comparison of Eight Alternative Ground Management Practices Used in Staked Tomato Production in the Southeastern U.S." Edmund A. Estes, North Carolina State University.

Eight ground management systems used in staked tomato production are compared for differences in marketable yields, gross revenues per acre, costs of treatment, and net economic value. Overall, these data suggest that the use of a mulch material and herbicides will increase yields and net returns in the production of staked tomatoes over current ground management practices. Selection of a particular ground management strategy should be based on the added benefit-added cost principle rather than yield maximization or treatment costs.

"Estimation of Production Cost Relationships for Swine Producers Using Differing Levels of Confinement." James B. Kliebenstein and Michael L. Killingsworth, University of Missouri-Columbia.

Farm record data are used to estimate production costs for farrow-to-finish swine producers. Costs studied were average feed, labor, variable, fixed, and total costs per hundred-weight of pork produced. The study suggests that swine production can be effectively and efficiently adapted to production systems of various types and sizes.

COMMODITY FUTURES MARKETS (John Franzmann, Oklahoma State University)

"Modeling Daily Cash and Futures Cotton Prices." DeeVon Bailey, Utah State University; B. Wade Brorsen, Purdue University; and James W. Richardson, Texas A & M University.

The dynamic relationship between daily cash and futures prices for cotton was investigated. A dynamic model was developed using time series analysis. Validation of the model was performed with a stochastic, dynamic simulation of the estimated model over the observation period 1975-1982 and with a static, deterministic out-of-sample forecast from December 9, 1981 through March 9, 1982.

"Evaluation of Helmuth's Live Cattle Futures Trading Technique 1975-82." Darwin M. Pluhar, Carl E. Shafer, and Thomas L. Sporleder, Texas A & M University.

This study evaluated alternative versions of Helmuth's trading technique (HTT) for both speculative and hedging purposes in the live cattle futures market over three subdivisions of the July 1974-December 1982 time interval. The HTT proved valid only during the same period used by Helmuth. However, HTT worked in all periods when restricted regarding April futures trades. Three of four previously developed hedging strategies were not successful in the recent period. Hedging strategies synthesized herein were successful but were not tested out-of-sample. Weak form market inefficiency did not appear to be relevant *ex ante*.

"Temporal Relationships Between Cash and Futures Prices for Grains: Caveats for Data Selection and Analysis." Michael A. Hudson and Wayne D. Purcell, Virginia Polytechnic Institute and State University; and Ulrich C. Toensmeyer, University of Delaware.

Conventional theory attributes the role of price discovery in grains to the futures market. If price is discovered in the futures market, the futures market reacts to new information more quickly than the cash market. However, analysis of daily price series can lead to incorrect conclusions regarding the direction of lead/lag relationships because of when the cash and futures price quotes become available. The analysis of lead/lag relationships is further complicated by collinearity problems associated with the strong contemporaneous relationship between cash and futures price series.

"Marketing Alternatives: An Application of Multinomial Logit." Stanley M. Fletcher and James E. Epperson, University of Georgia.

The focus of this paper was on investigation of the relationship between the use of available marketing alternatives and characteristics of the producer and the farming operation. A multinomial logit model was used as the empirical qualitative choice model. A random sample of Georgia wheat producers revealed that education and use of price information from associations and groups were significant in influencing the selection of marketing alternatives. Information from this study would be beneficial in the design of extension programs by means of clientele segmentation.

"Hedging Strategies for Farmers: Current Knowledge and Research Needs." David Kenyon, Virginia Polytechnic and State University.

Research was classified by type of hedging strategy into routine, selective and multiple selective and the results compared using the expected income-variance framework. Three areas for additional research were identified. First, research should include production risk since its exclusion substantially underestimates risks faced by farmers. Second, economists need to continually evaluate the long-term usefulness of technical analysis. Research on the efficiency and distribution of futures prices should be updated and *ex post* studies of published technical systems outside their original data are needed. Third, more research is needed that simultaneously considers production, marketing, and financial risks.

LAND USE AND TAXATION (Buddy Dillman, Clemson University)

"Equity Implications of Differential Assessment for Farmland in the South." Fred C. White and Anthony L. Joseph, University of Georgia.

This paper analyzes differential assessment programs in the South by measuring the level of tax relief provided farmers, the amount of tax shifting to nonfarmers, and the impact on local government expenditures. Average tax relief in states with preferential assessment was 15 percent compared to 4 percent in states with deferred taxation. Differential assessment had a greater impact in rural areas where more farmland acreage was eligible for tax relief than in urban areas where each eligible acre of farmland received a larger level of tax relief. The lower level of tax revenue resulting from differential assessment reduced local government expenditure levels in most categories, with local education being most severely affected.

"Mandatory Use-Value Assessment of Farmland: Implications for Fiscal Stability." David E. Ervin and Paul D. Nolte, University of Missouri-Columbia.

Illinois, North Dakota, and Missouri have recently converted from voluntary to mandatory use-value assessment of farmland for property tax purposes. The general intent is to base tax liability upon recent past and current farm income conditions. Annual or periodic updating of use-value assessments due to net farm income swings could cause wide variation in the property tax base for some areas. Missouri data for a typical agricultural county show significant tax base variation when use-value assessments are simulated over the 1973-82 period. Techniques for smoothing such variations will be necessary to avoid fiscal instability in predominantly agricultural areas.

"Factors Affecting Agricultural Land Use: A Study of Citrus Acreage in Florida." Rodney L. Clouser and Jay W. Yingling, University of Florida.

The issue of agricultural land conversion is perceived by elected decisionmakers as a real problem, and these officials appear intent on doing something in the public policy process to alleviate the problem. However, limited information is available to decisionmakers on factors which influence the conversion process. A study was completed on Florida citrus acreage that attempted to identify factors influencing land use. Variables significant in determining county citrus acreage included tax rates, deflated realized net farm income, and county acreage in industrial parks.

"Selected Impacts of New Federalism in School Lunch Programs on Local Property Taxes." H. Al Pless and Josef M. Broder, University of Georgia.

The concept of New Federalism has been proposed to reduce federal budget deficits and to transfer fiscal and administrative responsibility of many social programs from federal to state and local governments. This paper develops a theoretical framework using public choice concepts to analyze New Federalism. The theoretical model is applied to identify and evaluate selected impacts of New Federalism in school lunch programs on local property taxes in Northeast Georgia. Equity issues and policy implications of New Federalism on local citizens and governments are also discussed.

"The Effects of the 1980, 1981, and 1982 Tax Laws on Texas Rice Farmers." James W. Richardson and Clair J. Nixon, Texas A & M University.

A whole farm Monte Carlo simulation model was used to simulate a typical rice farm on the Texas Gulf Coast for 10 years under the 1980,

1981, and 1982 income tax provisions. Results for this analysis indicate that the 1981 tax provisions were clearly more beneficial to farm operators than the 1980 or 1982 income tax provisions. While the 1981 and 1982 tax law changes clearly improved the cash flow of farm operators, they did not significantly improve the wealth positions of farm operators in the Texas Gulf Coast.

INTERNATIONAL ECONOMIC DEVELOPMENT AND TRADE (Gene Mathia, Economic Research Service, USDA)

"The Mexican Food System (SAM): Estimating Some Costs of Production Self-Sufficiency." Eduardo Segarra, Virginia Polytechnic Institute and State University; and David E. Ervin and Maury E. Bredahl, University of Missouri-Columbia.

Mexico's recently aborted program to achieve production self-sufficiency in basic food and feed grains (SAM) probably contributed to the country's current weak economic condition. Among other problems it appears that the SAM program did not fully account for production cross-commodity effects. Transfers to corn producers were estimated at \$52.9 billion pesos, or approximately 8 percent of the total Mexican federal budget. The efficiency cost of self-sufficiency in corn production is also evaluated from a free trade perspective. It is instructive to analyze SAM's strengths and weaknesses since other countries have tried and will continue to try such programs.

"Economic Evaluation of the Nutrition Assistance Program in Puerto Rico." Laura Blanciforti, Bureau of Labor Statistics, U.S. Department of Labor.

Food expenditures under the Nutrition Assistance Program, the replacement for the Food Stamp Program in Puerto Rico, are estimated using the 1977 Puerto Rican Household Food Consumption Survey. Though the programs are structured differently, it seems probable that increased purchases of many food items with substantial nutritional value will continue to occur.

"Nutritionally Adequate Low-Cost Diets for the Urban Population of Kinshasa, Zaire." Kalenda Mukuna, Jack C. Thompson, and Glenn C. W. Ames, University of Georgia.

Based on a 1981 survey of income and food preferences of 1,344 households in Kinshasa, Zaire, a cost-minimization linear programming model was used to develop a series of low-cost nutritionally adequate diets. These diets consisted of locally available foods, formulated to meet the recommended daily allowances for energy, protein, vitamins, and minerals as specified by the Food and Agriculture Organization of the United Nations. The least-cost basic diet was successively modified to account for the food habits of different segments of the population. The majority of the sample population was apparently unable to afford the least-cost nutritionally adequate diet.

"Endogenous Government Behavior and the International Transfer of Agricultural Labor." Robert E. Emerson and Rekha Mehra, University of Florida.

A comparative statics analysis of the Florida sugar industry is pursued from the perspective of commodity policy for sugar and the temporary labor transfer from the Caribbean Islands for harvesting the cane. The framework permits examination of changes in sugar policy on the labor market and producer welfare. The main focus, however, is on the functioning of the annual labor transfer. The impact of changes in the number of certified workers is examined as is the impact of variations in the governmentally determined adverse effect wage.

"U.S. Domestic Farm Policy and Export Subsidies." David L. Kendall, North Carolina State University.

With both the volume and value of U.S. farm exports down in 1982 and further declines expected for 1983, considerable attention has been focused on the EC's export subsidies and their effects on the United States' share of world agricultural markets. This paper shows how the United States' domestic farm programs for wheat and feedgrains can have the same effect on EC countries as would an explicit U.S. export subsidy policy. Consequently, from the viewpoint of European agricultural policymakers, U.S. policymakers' criticisms of the EC's export subsidy policy may appear highly hypocritical and self-serving.