U. S. AGRICULTURE AT A CROSSROADS: IMPLICATIONS FOR AGRICULTURAL ECONOMICS

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INTRODUCTION

United States agriculture is at a crossroads. The current financial crisis in agriculture eventually will force the farm sector to follow one of two general directions for the future. One of those courses is to retreat from reliance on export markets, the loss of which triggered the current farm financial crisis, and to return to greater reliance on domestic demand. The other course is to return to a world market orientation, regain export markets lost during the 1980s, and develop and exploit a growing world demand for agricultural commodities. Each of these alternatives implies a different future for United States agriculture and a different future for the Agricultural Economics profession.

Neither course will bring a quick end to the current period of painful transition for farmers. This transition period will likely last another 3 to 5 years, assuming steady growth in United States and world economies. However, the transition will be quite different depending on which road to the future is chosen. The profession of Agricultural Economics has the critical functions of research, information, and education to perform during this transition period. Effectiveness in performing those functions could well determine whether or not Agricultural Economics remains in a viable profession after the transition is complete.

A return to a domestically oriented agriculture would mean a return to long term trends toward fewer farmers and fewer total resources devoted to agricultural production. Growing export demand in the 1970s slowed the decline in farm numbers, increased harvested acres, and increased capital resources devoted to agricultural production. Current agricultural production levels reflect a carryover of excess capacity developed for the growing export markets of the 1970s. A domestically oriented agriculture would require fewer resources and less production to bring supplies back to lower levels of domestic demand.

With a domestic agriculture, effective prices of agricultural commodities would be supported above world market prices to protect farm incomes and to moderate other negative economic impacts of world markets. This is the basic motivation for retreating from dependence on exports. Policies during a transition to a domestic agriculture would likely include producer buy-outs, long-term land retirement, and similar incentives to move resources into non-agricultural uses. Price supports would not end after the transition. Continuing reduction controls would be required to restrain production increases of more efficient producers. Such controls would likely include paid land diversion, production quotas, and various conservation schemes. These programs might be expected to grant future production rights for most commodities to current producers of those commodities.

A transition back to an export oriented agriculture would require that domestic prices for agricultural commodities be allowed to drop to world market levels. Export sales resulting from more competitive prices would minimize necessary production cuts. However, retention and recovery of lost export markets probably would mean lower net incomes for United States farmers during most of the transition period. An additional prerequisite would be an accommodating general economic policy and an effective general

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trade policy at the national level. Without these supporting measures, efforts to regain export markets would likely fail.

Attempts to regain export markets for agricultural commodities would require an eventual phase out of price supports and income subsidies for farmers. A drop in loan prices without lowering target prices would expose the federal treasury to higher farm subsidies. Greater budget exposure would bring increased pressure for abandonment of commodity oriented government programs. Many farmers with heavy debt loads would likely go out of business as target price and subsidized credit programs lose funding. An internationally oriented agriculture would be much more dependent on general economic policy and world politics than on any remaining domestic agricultural policy. Future production would shift toward more efficient producers, regardless of size. Less efficient producers would be unwilling or unable to produce and sell at lower world market prices.

THE NECESSITY OF CHOICE

The agricultural crossroads was apparent in opposing views regarding the 1985 Farm Bill. The initial administration proposal called for a phase out of target and loan prices which would have allowed United States prices to seek world markets levels. This proposal could have resulted in an export oriented United States agriculture. However, farm-state Democrats in Congress opposed any reduction of target and loan prices and supported paid diversion and conservation programs to take land out of production. These positions reflected effort to protect domestic agriculture from adverse international market forces.

Farm policymakers were faced with this choice between two conflicting alternatives. They chose both. Lower loan prices under the 1985 Farm Bill are consistent with an export oriented agriculture, particularly if full discretionary loan price cuts are exercised. Retention of higher target prices with paid acreage reduction and conservation programs are consistent with a domestically oriented agriculture. The gap between the two conflicting orientations was filled by increasing federal budget exposure for farm subsidies.

United States farmers and their policymakers obviously would like to pursue both the domestic and international options. However, they cannot have both. An internationally oriented agriculture presumably would supply domestic as well as international markets but would be vulnerable to the adverse impacts of international markets. Commodity prices and profits of United States producers would be more dependent on international economic developments, trade policies, exchange rates, and world politics than on local weather patterns and changing incomes or preferences of United States consumers.

Agricultural policies required to keep domestic prices higher and/or more stable than world market prices ultimately would tend to isolate United States supplies from world markets. United States commodities would be overpriced, at least periodically, relative to their foreign competition. Selling on world markets under such conditions would require export subsidies. Export subsidies take many forms, such as the current wide gap between target prices and lower market or loan prices for wheat and corn. United States commodities would be priced out of world markets during periods when no such subsidies were available.

Import restrictions also would be necessary to restrict imports during periods of depressed world markets. The combination of unreliable export supply and periodic subsidies and tariff would greatly limit long-term export potential for United States commodities under domestically oriented policies.

Two price systems, as currently used for peanuts, have been proposed as a way of maintaining higher domestic prices while allowing a lower competitive price for exports. However, such programs also require import restrictions to maintain domestic prices above world market prices. Two price systems are a variation of export subsidy with costs paid by consumers rather than taxpayers. Such programs may work well for a few minor commodities but would likely provoke consumer revolt and foreign buyer rejection if adopted as a policy for agriculture in general.

United States agriculture ultimately will be forced to choose between the two basic roads to the future. The farm sector cannot take both roads, in spite of implications of the 1985 Farm Bill to the contrary. In fact, Breimyer (1985) has speculated that the 5-year Farm Bill of 1985 will prove to be a 1-year law instead with a huge build-up in stocks and high Treasury costs forcing a reconsideration of the Bill in 1986. Ultimately, the general public, as taxpayers or as consumers,

will force the agricultural sector to make a clear choice.

The choice between alternative future roads for agriculture is yet to be made. The choice will not be made by any single decision at any given point in time. It will be a process by which agriculture in general either returns to economics patterns and trends of the past or is transformed into a different industry, only glimpsed in the decade of the 1970s. A primary challenge for the agricultural economics profession in the coming decade is to ensure that this process evolves as a series of intelligent and informed decisions.

THE ECONOMIC ENVIRONMENT OF AGRICULTURE

Economic choices reflect the economic environment. History shapes perceptions of the future. And, perceptions of the future dominate decisions. A national conference on *Agriculture and Rural Areas Approaching the Twenty-First Century* was held in Ames, Iowa in the summer of 1985. Economists from throughout the profession participated in that conference. The following general issues surfaced as key factors expected to shape United States agriculture between now and the year 2000. These factors quite likely will dominate the choice among alternative futures for United States agriculture.

The single most significant agricultural development of the last one-third of the twentieth century might well be the internationalization of markets for United States agricultural commodities. Corn exports in 1979-81 accounted for more than 31.1 percent of total demand compared with only 8.5 percent of production in the 1959-61 period. Soybean exports moved from less than 30 percent of the total market in 1959-61 to 56.8 percent in 1979-81. The percentage for wheat rose from 50.6 percent to 63.9 percent during that same period (Bange). The real value of United States agricultural exports in total more than tripled between 1970 and 1980 (Schuh and Orden). Tweeten (1983) estimated that exports as a percentage of total demand for all commodities, including livestock and crops, peaked at about 27 percent of total demand in 1979-80.

Internationalization of United States agriculture in the 1970s revealed both potential payoffs and pitfalls associated with producing for international markets. Growing export markets of the 1970s spurred expansion of agricultural production capacity. This expansion was reflected in higher land prices and greater reliance on debt financing as farmers competed for scarce resources to supply profitable world markets. Optimistic expectations of United States farmers were shared by agricultural lenders and agribusiness firms who made decisions based on assumptions that trends of the 1970s reflected a permanent change in United States agriculture. All these factors left American agriculture vulnerable to severe adverse economic impacts from a partial loss of those export markets during the 1980s.

The farm financial crisis of the 1980s stems from factors largely beyond the control of individual farmers. Some farmers made unwise decisions in the 1970s but most made decisions consistent with the best information available at the time. However, an abrupt and unexpected change in United States and world economic conditions transformed the farming boom of the 1970s into the farm financial crisis of the 1980s. The real trade weighted value of the dollar rose more than 50 percent relative to ten major currencies between 1980 and 1984 (Schuh and Orden). Real value of United States agricultural exports dropped over 27 percent during that same period.

Farm land prices and farm wealth grew throughout the 1970s. Total farm assests tripled between 1970 and 1980. However, total farm debt also tripled during this period. Growing debts resulted in farm cash flow problems which began to develop in the late 1970s (Tweeten, 1979). Land prices then turned down in 1981 and had dropped 19 percent nationally by 1985. Corn Belt states reported 1985 land prices down an average of 44 percent from 1981 peak levels (Erickson). United States agriculture is now confronted by a major decapitalization of its capital asset base. Total farm equity dropped by $183 billion, about 20 percent, between 1980 and 1985 (USDA, ERS, 1985b).

Financial problems in agriculture are widespread but are not evenly distributed among all farmers. USDA estimates that farmers in the $50,000 to $500,000 annual sales class account for about 31 percent of all farms and 51 percent of all sales but own nearly two-thirds of all farm debt (USDA, ERS, 1985a). Approximately one-third of the farms in this size class, about one-ninth of all farms, owe about one-half of all farm debt. Most of

these farmers now face negative cash flows and declining asset values with little prospect for improvement in either in the foreseeable future.

The current farm financial crisis has broad implications for United States agriculture. Many of these problem farms are likely owned by younger farmers who began farming on their own or greatly expanded farming operations in the late 1970s. Breimyer states that the decapitalization of agriculture is dispossessing a generation of farmers (1985). The competitive structure of twenty-first century agriculture may be shaped in large part by the financial crisis of the 1980s. In addition, the current decapitalization of United States agriculture and the associated financial debt crisis is forcing many to advocate a return to a more stable economic environment characterized by the agriculture of the 1950s and 1960s.

Internationalization and decapitalization both have contributed to a growing interdependence between agriculture and its socioeconomic environment. Many family farmers have been forced to rely on income from non-farm sources to stabilize cash flow and supplement farm income. In addition, many full-time job holders have become part-time farmers and in the process have moved their families back to the country to live. Non-farm income now accounts for more than 70 percent of all income of farm families (USDA, ERS, 1985b). Part-time farming operations, in general, appear to be better able to survive the current financial crisis in agriculture than are most other types of farms.

Current trends toward more part-time family farming will cement a growing interdependence between family farms and rural communities. Community development, by providing local off-farm jobs, could be vital to survival of family farming (Deaton and Weber). Availability of farm based employees or part-time farming opportunities could be a vital element in decisions of some industries to move to rural communities. Such interdependencies will be important considerations in local public policy issues, in environmental questions and concern, and even in national policy issues related to structure and performance of the agricultural sector of the economy. Dramatic changes in farm financial institutions also may evolve as a consequence of the current financial crisis in agriculture.

Emerging technologies will change the basic nature of farming for those who survive the current crisis. Emerging electronic information technology will create opportunities for more efficient financial management and marketing for farmers through application of modern management practices and principles. Effective management decisions depend on accurate analysis of data relevant to logical decision alternatives. New information technology will facilitate development of better information, more efficient delivery of more up-to-date information, more accurate analysis of information, and, consequently, more effective decisions. The twenty-first century family farmer will have access to more information and computing power than did the twentieth century corporate business.

Emerging biotechnologies are expected to result in increased productive efficiency of the agricultural sector. Individual farmers will have strong incentives to adopt any new cost reducing technologies available during this time of depressed prices and profits. However, most recent estimates indicate that productivity growth in farm output per unit of farm input averaged nearly 1.8 percent per year during the decade of the 1970s without major biotechnological innovations (Tweeten, 1985). Domestic demand for agricultural commodities, on the other hand, is projected to grow at a rate of about 1.0 percent per year through the end of the century (Sanderson). This would point toward an annual growth in excess capacity of 0.8 percent per year over domestic demand if productivity gains of the past decade are continued.

The ultimate impact of biotechnological innovation could be even greater overproduction and/or greater excess capacity for agriculture in the twenty-first century. However, increased productivity from emerging biotechnologies could be an essential factor in maintaining a comparative advantage for United States producers in international markets. Thus, emerging technologies can mean either greater excess capacity for a domestic agriculture or increased ability for United States producers to compete in international commodity markets.

IMPLICATIONS FOR AGRICULTURAL ECONOMICS

Agricultural Economics is a mission oriented profession. As professionals, we draw upon principles and concepts from our parent discipline of economics and other arts and sciences to address economic problems

of significance in agriculture and related sectors (Conner, Harl). Johnson classifies agricultural economics research as either problem solving, subject matter, or disciplinary. The first two types clearly are mission oriented in nature. Opinions differ with respect to whether agricultural economics is a pure discipline, a branch discipline, an applied discipline, or is not a discipline at all (Ikerd; Conner; Harl).

However, there is no disagreement that agricultural economics has a mission to address real world problems and opportunities in agriculture and related sectors of the economy. The profession has discipline-like characteristics as well. But, as Harl stated in his 1983 presidential address to the American Agricultural Economics Association, *"agricultural economics is not a playground for agricultural economists."* Agricultural economists cannot simply do whatever they choose to do. They have a specific mission to perform.

The future of United States agriculture will set the future for agricultural economics research, teaching, and extension programs. Agricultural economists must provide the understanding and information needed to facilitate wise choices for that future. The basic mission of serving society through agriculture will be the same regardless of whether work is through a domestic or internationally oriented United States agriculture. However, the specific research, teaching, and extension programs may be quite different.

The purpose of the remainder of this paper is to suggest hypotheses concerning differences among programs of research, extension, and teaching under domestic and international alternatives. These suggested hypotheses are presented as departure points for discussion rather than definite conclusions concerning differences that would in fact evolve. The basic premise is that the profession should begin to seriously discuss the program implications of alternative choices for United States agriculture in the future.

The Domestic Alternative

A return to domestically oriented agriculture would continue the current trend toward a smaller agricultural sector. Major biotechnological innovations would increase the rate at which resources could be moved out of agriculture and into other uses. Domestically oriented agricultural policies would result in a more stable farm economic environment. Profits and losses of farmers would depend more on government programs and policies than on free market supply and demand.

Agricultural policy would likely dominate agricultural economics research programs under the domestic agriculture alternative. Fewer resources would be allocated to research in production economics and price analysis. International trade also would receive less attention. International development research would be limited to work motivated by humanitarian concerns. Domestic resource management and marketing systems programs might grow as a consequence of less competition for resources from commercial agriculture work.

Political pressures to reduce federal budget exposure for farm programs would maintain a continuing demand for policy innovations. Dependence of the agricultural sector on policy choices would support a continuing need for policy analysis and evaluation. Production efficiency would become less important as fewer resources are allocated to the agricultural sector. Some production economists might be expected to shift to work in natural resources and other resource allocation problems. Market and price analysis would become less critical as prices become more dependent on policy. Marketing research related to efficiency of marketing systems might receive more emphasis by default as was the case during more stable periods of the 1950s and 1960s.

Extension work in a domestically oriented agriculture would shift in ways generally consistent with changes in research. More emphasis would be placed on helping farmers understand policy options during the policy process and on assisting them in their response to policy provisions. There would be less need for market analysis and price outlook work in a more stable marked environment. Use of commodity futures and options markets would decline and would receive less attention in extension programs. Marketing firm work might gain in prominence among market oriented extension economists. The need for a more businesslike approach to farming would persist. Micro computers make such an approach feasible and practical and thus, might be a major factor supporting continued emphasis on farm business management work among extension economists.

The trend toward increasing numbers of part-time farmers will likely continue with either a domestic or internationally oriented agriculture. Domestic agricultural policies probably would be oriented toward maintaining a large number of relatively small and mid-sized family farms to ensure a competitive structure of agriculture. Smaller farming operations imply more part-time operations. Economic development and agricultural extension work may become one integrated program at the county level to serve this growing number of *hybrid* farmers. Hybrid farmers are likely to be at least as concerned with off-farm employment and community resource development as with their individual farming operations.

Resident instruction programs in agricultural economics could be expected to continue to lose student majors under a domestically oriented agriculture. Smaller numbers of commercial farms would continue to shrink the demand for farm managers. A smaller agricultural sector would reduce the demand for agriculturalists in general. A more stable economic environment would make economic decisions of farmers and agribusiness firms less critical to profitability and thus, would reduce the demand for agricultural economists in particular.

The most promising future for undergraduate programs in agricultural economics would seem to be in developing quality agribusiness programs. Agribusiness options within agricultural economics programs generally are not seen as comparable to professional business management programs. Professional business management programs have been among the fastest growing programs on most campuses while agricultural economics programs have declined. Quality agribusiness programs could include options in farm business management as well as agribusiness management. Current discipline oriented programs could be continued to prepare majors for graduate work in agricultural economics.

Graduate programs in agricultural economics likely would be dominated by policy oriented students. Resource economics might also gain greater numbers of students at the graduate level. Major declines would be expected in students with commercial agriculture interests such as production economics and price analysis. Pressures to limit the number of international students in agricultural economics might be expected to continue with a domestically oriented agricultural economy. Some graduate programs in agricultural economics might be forced to combine with economics programs to maintain minimum numbers of students needed for quality graduate education.

The International Alternative

Loss of export markets in the 1980s has raised questions concerning the ability of United States producers to compete in world markets. However, it seems unlikely that basic underlying comparative advantage relationships between United States producers and other countries have reversed since the 1970s. Changes in trade flows can be traced to changes in variables such as currency exchange values, international debt structure, and trade policies, none of which reflect a change in inherent comparative advantage.

The most important long-term obstacles to regaining international markets would seem to be the large and growing federal budget deficit which supports high real interest rates and a strong United States dollar. A primary question with respect to basic comparative advantage is the impact of persistently high real interest rates on economic efficiency of the highly capitalized United States agricultural economy. Nonetheless, internationalization remains a viable economic alternative for future consideration.

An international agriculture could mean a growing United States agriculture in the future. Growing international markets in the 1970s attracted more resources into the agricultural sector and temporarily reversed the long-term outflow. Major biotechnological innovations would increase the ability of United States producers to compete and would increase their share of world markets. However, commodity prices and farm profits could be expected to be much more volatile in a world oriented United States agriculture. Increased variability of farm prices and profits in the 1970s and 1980s compared with the 1950s and 1960s give some indication of the relative stability of international and domestic agricultural economies.

Demand for agricultural economics research in all major areas would be expected to grow with an internationally oriented agriculture. Major factors affecting an internationally oriented United States agriculture include: tight money, high interest rates, high

exchange value of the dollar, budget deficits, the tax code, the desperate financial plight of Third World countries, the EC's agricultural policy, and trade relationships with the Soviet Union, Japan, and Peoples Republic of China (Breimyer, 1984). All are economic factors.

Agricultural policy work would focus on impacts of macroeconomic policy on the agricultural sector and on international trade policy rather than domestic policy formulation. World competitive pressures would increase the demand for production economics and risk management research to improve efficiency of micro resource utilization. Volatile market prices would place a high premium on research related to market and price analysis, marketing alternatives, and management of risks inherent in uncertain prices.

Research in international trade would be given high priority since exports would account for a large share of total demand for United States agricultural production. International development would focus on processes of developing future markets for United States commodities in addition to addressing humanitarian concerns (Mellor). Resource economic research would focus on increased competition of a growing agricultural sector for scarce land and water resources and potentially negative environmental impacts of emerging technologies.

Profits of farmers in an international agriculture would be determined largely by factors beyond their individual control. Farmers would have to learn to cope with those things beyond their control. However, they can not effectively cope with things they do not understand. Extension programs in such an environment should give farmers the understanding to cope with the factors they can not control, the information and ability to manage the factors they can control and the wisdom to know the difference between the two.

Extension programs with an internationally oriented agriculture would have to be targeted to three specific types of farming operations. Large commercial farming operations would be expected to account for an increasing share of total production in a highly competitive, market oriented agriculture. However, *hybrid* farms could become an increasingly popular means of coping with a more risky, free market environment. Well managed, mid-sized family farms could remain competitive and would likely be the primary benefactors of remaining domestically oriented farm subsidy programs. Each type of operation would require a different extension program orientation.

County level extension programs could be oriented toward serving *hybrid* farmers through integrated programs of agriculture and community resource development. Emphasis would be on making such farms a profitable as well as a persisitent part of United States agriculture. Programs for mid-sized, family farms would focus on improved financial management and marketing programs. Increasd emphasis would need to be placed on decision risk analysis through integration of production, market, and financial risk considerations in the decisionmaking process. Programs for larger commercial operations would focus on modification of business management philosophies and strategies to fit the unique management environment of farming. Microcomputers and related telecommunications technology would play an important role in extension economics programs for all three types of farmers.

Resident instruction programs in agricultural economics might gain rather than lose student majors with a growing agricultural sector of the economy. Undergraduate programs might benefit from creation of quality agribusiness programs but would likely be less dependent on such programs for survival than would be the case with a domestic agriculture. Pressures for increased efficiency would create a continuing demand for a more businesslike approach to farming. Banks and other lending institutions might reestablish agricultural loan departments with a growing farm sector. International trade could represent a popular new undergraduate or masters level option as increasing numbers of marketing firms establish international marketing divisions.

Graduate programs in agricultural economics might gain in popularity. Commercial agriculture would regain popularity among domestic students. International trade and international market development programs might also attract larger numbers of students. International students in graduate programs might be viewed more positively as potentially valuable trade contracts for United States agriculture. Increased funding for agricultural economics in general would make possible more significant programs in disciplinary or basic research supporting graduate faculty interest in those areas.

CHALLENGES TO AGRICULTURAL ECONOMICS

The future of the land-grant concept of education, research, and extension, as well as the future of agricultural economics as a viable profession, may well be dependent on the choice between domestic and international alternatives for the future of United States agriculture. Support for agricultural programs of land-grant colleges in the past has come largely from innovative farmers who reap first round benefits from efficiency improving technology and methodology. Under the domestic alternative, farmers would continue to become fewer in number and less important politically. Potential for further social gains would become less as fewer total resources would be devoted to agriculture. Publicly supported agricultural research, extension, and teaching programs in the future would have to build a new support base outside of agriculture or face extinction.

An international agriculture could mean greater rather than smaller social gains from future agricultural research and education. Successful exploitation of international markets would require continued efficiency gains for United States agriculture and development of greater demand for United States commodities. However, exports would be competitive with domestic consumption and thus would support food prices at higher levels than would exist if similar quantities were added to domestic markets. Also, economic developmemt of foreign countries may develop competition for producers of specific commodities, at least in the near term. However, such development is essential in developing long-term markets for United States agriculture in general. Thus, support for export oriented programs might not be readily forthcoming from either domestic consumers or producers of agricultural commodities.

Agricultural economists are confronted with a unique challenge in explaining the potential benefits, as well as potential risks, from pursuing an international agricultural strategy. Farmers and consumers both are more familiar with costs and benefits of the domestic alternative. Neither consumers nor producers are likely to support an internationalized United States agriculture unless they understand the long-term sector and social benefits from exploiting our comparative advantage in producing food and fiber for world markets.

Agricultural economists are unique among agricultural scientists in understanding the nature of social benefits from efficient allocation of economic resources. The profession has failed to communicate past social benefits from lower food prices. Benefits from a more efficient internationally oriented agriculture will be even less direct and more difficult to communicate. In this case, agricultural economists must teach the concepts of social benefits and social costs to all public support groups. The profession has never had a more important challenge. The future of the land-grant university concept and of the agricultural economics profession may well depend on the choice between a domestic and international United States agriculture.

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