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A Farm Policy Objective: The Search Goes On

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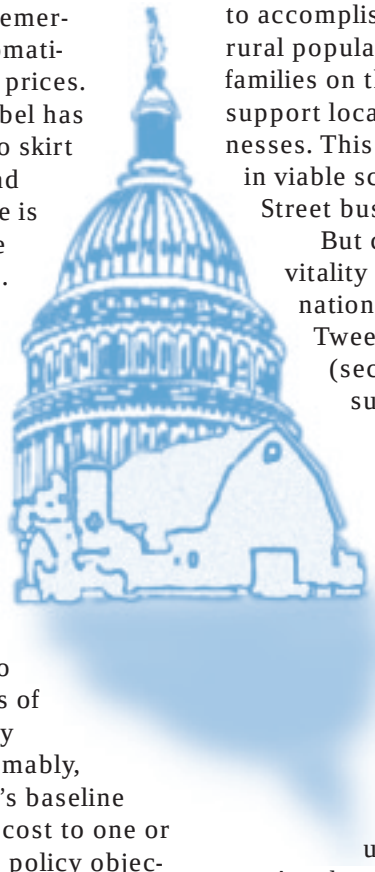
Next year the new Congress will again debate what to do about farm policy. Farm-state representatives and senators will offer various proposals to remedy the ills of agriculture. In turn, farm organizations, environmental groups, and other concerned parties will try to determine how the various proposals best serve their own interests. There is, however, a recurring, fundamental question that has yet to be addressed satisfactorily: What do we actually want farm policy to do? Some would argue for payments to maintain rural vitality. Others propose programs that would link farm income support with enhanced environmental stewardship. And still others suggest maintaining a minimum level of farm income through counter-cyclical payments.

In our governmental system, all proposed policy objectives need to be scrutinized by the public to determine 1) if those objectives are truly of broad public concern and 2) if they are achievable using means that are consistent with the way that most Americans want their economy to run: namely, that market forces ought to be the primary determinant of production and consumption decisions.

But in agriculture, even without such scrutiny the aid keeps flowing. Notwithstanding earlier statements that $8 billion in emergency payments was all that agriculture could count on this year, Congress is poised to spend an additional $2.0 billion in disaster assistance this fall. Direct payments for the 1998, 1999, and 2000 crop years are expected to total almost $60 billion. And, much of this $60 billion in support has flowed to agriculture either as "emergency aid" or aid automatically triggered by low prices.



The emergency label has enabled proponents to skirt the issue of what broad public policy objective is being met through the support of agriculture. The claim of an agricultural emergency seems sufficient to garner additional funds. However, if support is to be maintained at the high levels seen in recent years, proponents will be much harder pressed in each coming year to justify the aid in terms of meeting a broad policy objective. And, presumably, increasing agriculture's baseline budget will come at a cost to one or more other important policy objectives, including modernizing the military, enhancing environmental quality, and improving our educational system.

Increase Rural Vitality?

There are few in Congress who are as forthright as North Dakota Senator Kent Conrad in specifying what they want farm policy to do. In introducing new federal farm legislation last year, Senator Conrad stated, "The goal is a national farm policy that keeps America's farm communities strong and allows U.S. farmers to compete in world markets."

For Senator Conrad, the first objective of farm policy is to keep rural communities strong. The way to accomplish this is to maintain rural populations by keeping farm families on the land so that they can support local farm-connected businesses. This support, in turn, results in viable schools and rural Main Street businesses.

But can maintenance of rural vitality be the objective of a national farm policy? Luther Tweeten writing in *Choices* (second quarter, 1995) suggests that it can not. He notes that "...fewer than one-third of the nation's 2,400 rural counties are farm dependent, that is, receiving over 20 percent of their income from farm-related earnings." Of course, most of these farm-dependent counties are in the Great Plains, which makes Senator Conrad's position understandable.

Another factor, perhaps posing an even greater political difficulty in using rural vitality as the primary farm policy objective, is the large and increasing number of rural residents who have little connection with agriculture. And in many rural areas, new rural residents actually would prefer a reduction in land devoted to farming if that were to mean declines in livestock production, the burning of crop residue, and the application of pesticides.

A further difficulty is convincing urban residents that they have a stake in maintaining the rural economies of the Great Plains states. Most Americans live in concentrated urban areas on the East and West Coasts

Continued on page 2

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In This Issue

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and in the South. And those who live close to the Great Plains and Corn Belt states live in medium sized to large cities that have their own set of problems. Although urban residents may be able to make a general connection between federal farm policy and food, it may be difficult to convince them of the importance of specific agricultural support, such as the need to support farmers to decrease the out-migration from rural North Dakota.

A new trend that started in Western Europe and is spreading to the United States is the idea that urban residents may want to maintain and manage the rural landscape for their recreation pleasure. In that regard, most people probably would prefer that part of the rural landscape should include farms that are "visually appealing." And to many people, visual appeal means traditional buildings, crops and livestock in the fields, and farm families living on the land. However, the number of these traditional farms that would be required to meet the demands of urban residents is not likely to account for the 210 million acres of corn, soybeans, and wheat that will be planted in 2001.

Using Proposals to Find Policy Objectives

Most legislators are not as candid as Senator Conrad in that they do not state explicitly what they want farm policy to accomplish. But they are not reticent about proposing new policies, and these policy proposals can reveal unstated objectives.

Green Payments

For example, last year Senator Tom Harkin introduced the Conservation Security Act that would pay farmers to adopt environmentally friendly practices. Farmers' incomes would be supported only if the farmers became active, visible environmental stewards of their land. At least two policy objectives are revealed by this legislation. First, the incomes of participating farmers would be enhanced. Second, if the program were implemented carefully, environmental quality would increase. Many feel that tying farm support to environmental stewardship is a politically winning combination because it aligns the interests of farmers with environmental and urban interests. Such a combination proved critical to passage of the 1985 and 1990 Farm Bills.

This "green" policy proposal may serve another purpose as well: the financial benefits of the program may not flow as easily to absentee landowners as do the current program benefits. Of course, whether the policy would actually accomplish this distributional goal would depend critically on how it was implemented.

Will Congress be willing to pass a farm bill that supports farm income with tools aimed at environmental quality instead of income and price enhancement? Clearly, Congress has shown its willingness to support farm incomes. The critical policy question becomes: Can a change in land use and production practices impact environmental quality enough to justify the large payments that farm groups are growing used to? If not, then it would be difficult to justify Senator Harkin's approach as the central vehicle to deliver large amounts of aid to agriculture.

Counter-cyclical Payments

Another policy objective revealed through proposals is that of maintaining farm income at some minimum level. Proponents of payments that are counter-cyclical with respect to price, yield, or farm revenue must have this objective in mind. For example, Agricultural Market Transition Act (AMTA) emergency payments have been largely counter-cyclical with respect to price in the last three years, in that low prices have resulted in higher payments. Loan deficiency payments also are counter-cyclical with respect to price. In addition, crop insurance makes payments when yield is low, and revenue

insurance makes payments when revenue is low.

The initial reaction of many to a policy objective of guaranteeing a minimum income level for farmers is positive. The thought of a hardworking farmer putting food on our table, yet not being able to afford the modern amenities taken for granted by most of us, is a powerful image—emotionally and politically. An economic system in which a farmer cannot receive enough from the marketplace to cover production costs seems inherently unfair.

But our economic system is based on the underlying premise that if a company or individual cannot cover their costs of production from the sale of a product, then they should not be producing that it. Economists are quick to point out that the risk of not recovering costs from a venture is the reason why those who are willing to undertake the risk should, on average, be rewarded. That is, there is a basic tradeoff between risk and return in capitalism: the higher the risk of not covering costs, the higher the expected return. If there were no risk from producing a particular product, then everybody would immediately supply the product, which would guarantee that nobody made any money. This economic law must be kept in mind when designing a counter-cyclical policy.

Cost of Production Insurance. To see how a seemingly good idea can be extremely difficult to implement, consider cost of production insurance, a policy proposal included in this year's Agricultural Risk Protection Act. This type of insurance would make up the difference if farm revenue fell below the cost of production. This seems like a policy that we all could support. But how could it be implemented?

The first issue that arises for such a policy is to determine what costs to include. Clearly, variable production expenses such as seed, chemicals, fuel, labor, and fertilizer should be included. According to ISU Extension, these costs total $164/acre on 135-bushel corn land in Iowa. If the goal is to make sure that all of a farmer's expenses are met, then land ($120/acre) and other machinery expenses ($44/acre) also should be included, which makes total cost equal to $328/acre.

If there were no risk from producing a particular product, then everybody would immediately supply the product, which would guarantee that nobody made any money.

This "break-even" amount would need to serve as the basis for the cost of production insurance policy if we wanted to make sure that farmers at least cover their costs, without even considering the need for family living expenses. How much would such an insurance policy cost? The cost depends on the expected level of revenue that could be obtained from the marketplace. The higher the expected market revenue, the lower the cost of the insurance. As of this writing, the price for 2001 corn was approximately $2.40/bushel on the Chicago Board of Trade. With a 40-cent basis, this translates to a $2.00 local price. At an average yield of 135 bu/acre, this farmer can expect to receive $270/acre for next year's crop, or $58/acre below the farmer's cost of production.

The insurance premium of providing a revenue guarantee equal to $328/acre for this farmer would be $72/acre. This large premium reflects the fact that expected market revenue is below the guarantee. If the revenue guarantee were lowered to $270/acre, then the cost would fall to $32/acre. Currently, the highest revenue guarantee that the farmer could obtain (on a local basis) is $230/acre (85% of 270), which would cost a relatively modest $18/acre.

Of course, if 100% cost of production insurance were made available to this farmer, total production costs would increase by the amount of the premium, raising the total cost to $400/acre, which would raise the insurance premium to $136/acre. Implementation of this policy also would increase the value of land, because the risk of low revenue would be eliminated. The higher land cost would, in turn, increase the cost of production in a never-ending upward spiral.

But what if the government simply gave Iowa corn farmers this level of coverage, instead of charging the producer? Then the cost of production would not be inflated by the insurance premium. But land prices would immediately reflect the value of the government gift, which in turn would increase the cost of production.

This discussion shows the difficulty of trying to meet an objective of maintaining a minimum income level for farmers through counter-cyclical payments. Some might argue that Congress would never have this objective, at least not at such a high guaranteed income level. But Congress did implement a policy for the 1999 crop year whereby Iowa corn farmers were paid an average of between $90 and $100/acre through a combination of AMTA payments, supplemental AMTA payments, and corn loan deficiency payments. Such payments are consistent with the objective of making sure that Iowa farmers cover the cost of producing corn. Indeed replacing the existing policy tools with giving farmers a high revenue guarantee might, at least in the short run, have cost the government less than the existing policy.

Farm Policy in 2001 and Beyond

In an ideal world, clear policy objectives and a good understanding of the impacts of alternative policy tools

Continued on page 7

Iowa's Agricultural Situation

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A warm and dry August, especially in the western Corn Belt, has lowered production estimates for this year's crops. These lowered estimates have resulted in a preharvest price rally that has moved prices for Iowa corn and soybeans off their mid-August lows (see charts). Excellent planting weather in the spring as well as the warm, dry August has helped crops mature weeks ahead of normal and points to an early harvest. In the livestock sector, large production streaming out of feedlots and finishing barns coupled with slipping demand has resulted in larger-than-normal seasonal price drops and, in some cases contra-seasonal price declines.

Early planting this past spring in conjunction with warm and dry August weather has speeded maturation of field crops in Iowa and the rest of the western Corn Belt. The U.S. Department of Agriculture's (USDA) September 12, 2000 *Crop Progress Report* suggested that 46 percent of the U.S. crop was mature, approximately 20 percentage points above the five-year average. The crop condition indicated that 62 percent of the crop was in good-to-excellent condition well below the July 24 report that pegged 75 percent of the crop in good to excellent condition. However, the September 12, 2000 *Crop Production Report* estimates only lowered the expected corn crop 7 million bushels, much less than the 160 million-bushel reduction many industry analysts were expecting. The same report had corn yields in Iowa estimated to average 155 bu/ac, well above trend, suggesting prices will decline seasonally as we head into a bountiful harvest. A small year-over-year decline in the world stocks-to-use ratio (see table) does not lend optimism for a large upward price move.

August weather prompted the USDA to reduce their estimate of the size of this year's soybean crop by 89 million bushels, to 2.90 billion bushels. The drop in production results from reducing the national yield 1.2 bu/ac to 39.5 bu/ac. Here in Iowa, the state average yield is predicted to be 47 bu/ac, a reduction of 2 bu/ac from August's estimate, based on the decline in the crop condition reports through August from 74 percent rated good to excellent to 56 percent. Although the news is price friendly, there is still a very large crop in the fields and a year-over-year increase in the projected world stocks-to-use ratio (see table) will dampen any price rallies as we look out over the next six months.

In the beef sector, the demand that carried the industry for the past 15 months appears to have waned in the August heat. The increase in demand helped support prices amid record production in 1999 that continued through the first half of 2000. Year-over-year larger placements of feeder cattle into feedlots returned in August, resulting in large cattle-on-feed numbers. The question that needs to be answered is, "Since

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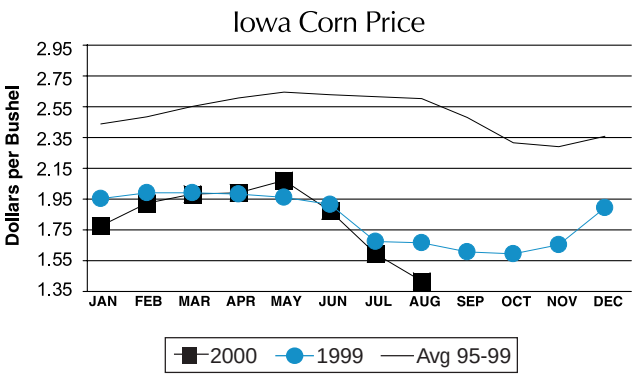

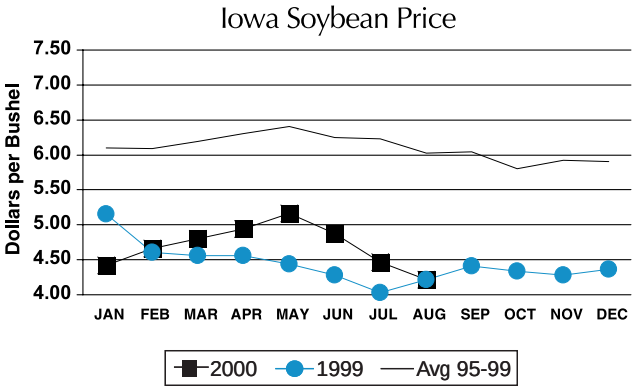

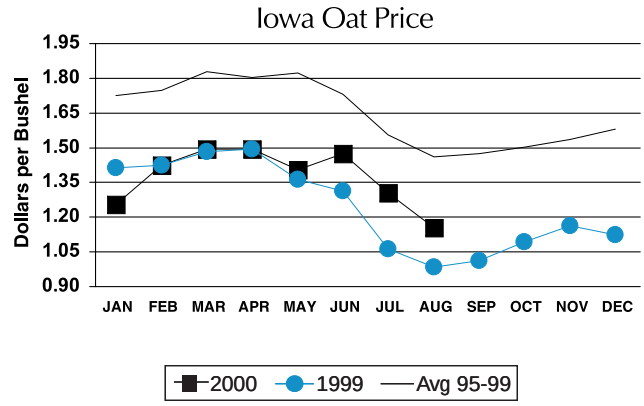

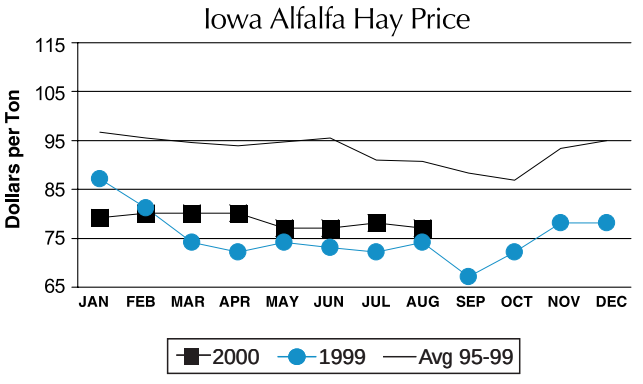

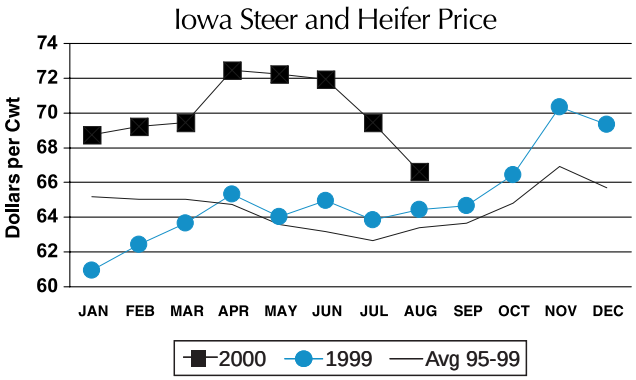

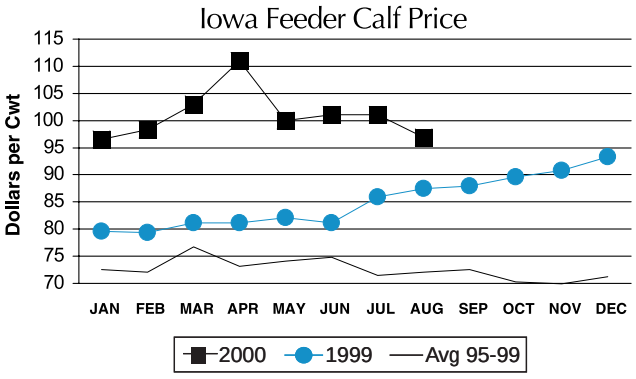

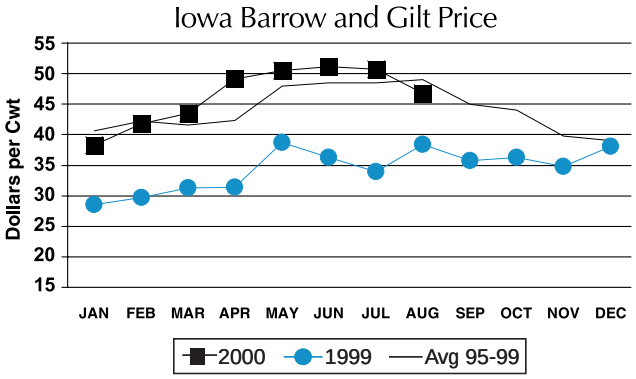

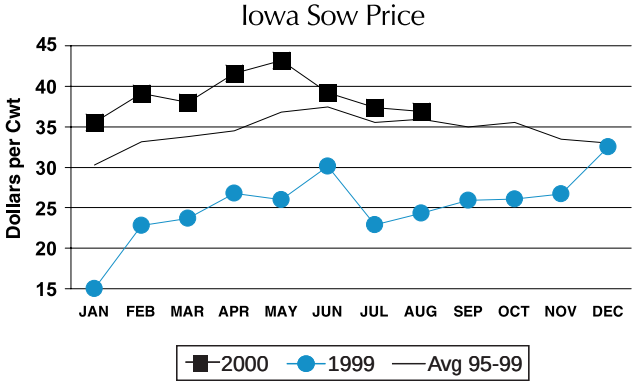

Iowa Cash Receipts Jan. – May 2000

	2000	1999	1998
		(Million Dollars)	
Crops	1,943	1,921	2,599
Livestock	2,520	1,855	2,093
Total	4,463	3,776	4,693

World Stocks-to-Use Ratios

	Crop Year (Sept. Projection) 2000/01	Crop Year (Estimate) 1999/00	Crop Year 1998/99
		(Percent)	
Corn	21.02	21.30	21.22
Soybeans	15.35	14.60	17.02
Wheat	19.04	21.34	23.19

Average Farm Prices Received by Iowa Farmers

	Aug* 2000	July 2000	Aug 1999
		($/Bushel)	
Corn	1.40	1.58	1.65
Soybeans	4.22	4.47	4.22
Oats	1.15	1.30	0.98
		($/Ton)	
Alfalfa	77.00	78.00	74.00
All Hay	75.00	77.00	74.00
		($/Cwt.)	
Steers & Heifers	66.70	69.50	64.50
Feeder Calves	96.85	101.00	87.40
Cows	38.80	41.80	38.30
Barrows & Gilts	46.90	50.90	38.60
Sows	36.90	37.40	24.30
Sheep†	31.00	31.00	30.30
Lambs†	85.10	84.90	80.00
		($/Dozen)	
Eggs	0.40	0.46	0.33
		($/Cwt.)	
All Milk	12.00	12.20	12.90

*Mid-month †Estimate

Comparing Grain Transportation in the United States and Argentina

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This report is extracted from a CARD publication titled *A Comparative Analysis of Agricultural Transportation and Logistics Systems in the United States and Argentina,* MATRIC Research Report 00-MRP 3.

Whether an individual or nation can compete in the global marketplace hinges on the ability not only to produce materials and goods demanded by customers but also to deliver those materials and goods in an efficient, timely, and safe manner. The transportation and logistics systems that serve a market are critical given that transportation costs typically represent more than one-half of a commodity's total landed cost. The agricultural sector of the United States enjoys considerable advantages in grain movement and storage, helping to explain the overall trade advantage of the United States over Argentina in common export markets. It is estimated that higher freight rates and inadequate transportation capacity result in a 10 to 20 percent increase in the cost of South American exports relative to the United States. It appears, however, that cost and performance differences are narrowing between the United States and Argentina. Argentina's rapid progress promises to diminish the advantage the United States has.

Motor Transportation

Motor transport almost exclusively serves as the mode for transferring harvested grains from the farm to the next-destination customer, usually either an elevator location or a processor. Although, the relative coverage of paved highways (as shown in Table 1) is fairly comparable across the two countries, the quality of U.S. roadways generally surpasses that of Argentine roadways. While roadway conditions do not impede grain transfer directly, they can lead to more frequent truck and equipment failure, transit time uncertainty, and overall higher costs. Continued privatization of the roadways in Argentina will increase the number of paved roads and improve existing ones, but this will result in high tolls paid by the users of the roadways. These tolls can easily exceed costs for fuel and other operating expenses along selected routes.

Overall, the general health of motor operations in both countries is relatively sound. However, growing congestion within major metropolitan areas and near port locations is a problem in both countries. Continued privatization of roadways in Argentina and intensified competitive pressures among motor carriers will result in continued efficiency gains in agricultural trucking in that country.

Rail Transportation

The unavailability of rail service in Argentina and its relatively poor service performance have limited its use as a primary means of grain movement. Five freight rail companies operate over Argentina's 34,572 kilometers of track. A major problem with the rail system is the variety of gauges (1.000 meters, 1.435 meters, and 1.676 meters) found among the respective rail lines. The burden of having to unload, transship, and reload shipments across rail lines creates prohibitive costs. In addition, the Argentine rail lines originally constructed by the British, French, and Germans during the late-1800s through the mid-1900s have not been well maintained over the past several decades, with many key segments inoperable today. At an estimated expense of $200,000 per kilometer to build a new line and $100,000 to repair one kilometer of existing line, the challenge of revitalizing the several thousand kilometers of rail in need of replacement or repair becomes apparent.

Despite these challenges, Argentina's rail freight traffic has increased by more than 10 percent in each of the past five years. Recent estimates indicate that 20 percent of Argentina's grain production moves by rail at some point. As a result of improved utilization and efficiencies, the cost of rail transportation has dropped by 25 percent in Argentina. Argentine rail operators expect business to increase dramatically over the next five years.

Unlike Argentina, the United States has traditionally relied heavily on its rail network to move grains from consolidation points to processors or export ports. Table 2 shows an emerging shift in modal usage for U.S. grain shippers in recent years, however. The early 1990s marked a general preference for truck transportation for movements outbound from the country elevator. This is true for all major grains except wheat, which continues to rely greatly on rail transport.

In sum, Argentina is making great efforts to rejuvenate its rail systems. Modernization efforts seem to be resulting in significant performance improvements and a substantial shift in traffic from motor to rail service. The United States, on the other hand, is relying somewhat less on its extensive rail network. Recent figures indicate that motor transportation has replaced rail as the preferred mode for movements from the elevator to processor or export port locations.

Water Transportation

The significance of motor and rail operations in all three settings has been clearly demonstrated but water transportation cannot be overlooked.

Table 1. Comparative Geography and Infrastructure

	Argentina	United States
Landmass (sq. km)	2.8 million	9.3 million
Paved highways (km)	57,000	255,650
Total rail trackage (km)	34,572	236,035
Navigable waterways (km)	11,000	41,935
Total grain storage (mt)	53.9	264

Sources: Bureau of Transportation Statistics website (www.bts.gov/programs/itt/latin/south), U.S. Department of Transportation for Argentina); *The Pocket Guide to Transportation 1998*, Bureau of Transportation Statistics, U.S. Department of Transportation (for U.S.).

Table 2 shows that approximately 20 percent of all U.S. grain movements from the point of consolidation to the processor or export port location are made by barge. In addition, more than 90 percent of U.S. grains moved by barge are ultimately destined for export markets. Barges serve as the primary mode of export movement for U.S. corn and soybeans (rail maintains a 60 percent share of wheat export movements). The use of waterways for export delivery is even more pervasive in South America.

Argentina and Brazil are currently looking to expand their already extensive network of navigable inland waterways. Significant investment in recent years extends the reach of barge and vessel traffic inland from the deep rivers of the region's major port cities along the Atlantic coast. Perhaps the most ambitious, and certainly the most controversial, of all South American transportation developments is the creation of the Rio Paraguay-Rio Paraná Hidrovia. The Hidrovia, or "water highway," is a multinational effort to extend the reach of inland navigation from Uruguay's Nueva Palmira to Cáceres in the Mato Grosso region of western Brazil, spanning 3,442 kilometers through all four Mercosur nations (Argentina, Brazil, Paraguay, and Uruguay) as well as Bolivia. The extensive dredging and realignment in South American rivers is anticipated to have a significant economic impact on producers and carriers alike. It is estimated that transportation costs for upstream shippers will be cut in half by using the river system rather than rail or truck.

Progressive barge carriers in Argentina are already achieving considerable efficiencies within the nation's current network of navigable waterways. Foreign investment has dramatically expanded barge and towing capacity while also improving the navigability of large tows. Satellite tracking and guidance systems are helping South American barges to operate with efficiencies on a par with those of the United States. U.S. shippers and barge operators, on the other hand, are concerned with an aging waterway infrastructure. After several decades of extensive use and reliance on the river system for efficient bulk materials movement, the rivers are in need of renewed attention. Special concern is directed toward the aging lock system of the Mississippi River. The Mississippi serves as the backbone of efficient grain movement in the United States. The proximity of growing areas for corn and soybeans to the Mississippi and its tributaries make the system imperative for low cost exporting. The ability to quickly and efficiently access port facilities located at the mouth of the Mississippi River in Louisiana has proven critical to the export success of these U.S. crops.

If the United States wants to maintain the comparative advantage that it has long enjoyed with inland navigation, it will need to make a significant investment in its aging lock and dam system. This holds particularly true given the aggressive advances South American shippers are making to their own river system.

Continued on page 8

A Farm Policy Objective
Continued from page 3

would guide the actions of legislators. Those policy tools that achieved the desired objective at least cost to society would be selected. In theory, if policy were made in this manner, the greatest good for the greatest number of people would result, and taxes would be used efficiently.

But to suggest that policy is made with an eye towards only the efficient use of taxpayer's money is an oversimplification. Every policy involves winners and losers. Rather than passively accepting their fate in the name of policy efficiency, prospective losers often join together and lobby legislators for a policy that cuts or eliminates their losses. Their success in changing policy depends on the political pressure that they can generate relative to 1) the pressure that prospective winners from a policy can generate, and 2) the public pressure on legislators to adopt policies that meet broad public policy objectives.

As the search for farm policy objectives continues, agriculture needs to address head-on the question of what broad public policy objectives are being met through the federal support of agriculture. These objectives can be stated in either regional terms (such as enhanced water quality in a watershed) or in national terms (such as income support for food producers). But if agriculture is to compete successfully for expanded federal dollars in the next farm bill, urban legislators will need to be convinced why more federal support is needed and what is the ultimate objective of such support. An annual declaration of agricultural emergencies can go on only for so long before the emergency situation is recognized for what it is: the normal course of events. ◆

Table 2. Average Annual Grain Tonnage by Mode, U.S.

Grains/Years	Motor	Rail	Barge	Total
	(thousand tons)			
Corn	41,634.0	48,677.2	31,980.0	122,291.2
Wheat	8,760.2	48,186.6	14,574.8	71,521.6
Soybeans	28,054.0	11,295.4	16,973.8	56,323.2
Other grains	10,724.4	13,700.0	2,681.6	27,106.0
Total, 1981-85	89,172.6	121,859.2	66,210.2	277,242.0
Corn	66,132.4	62,601.4	31,997.4	160,731.2
Wheat	11,034.4	44,048.2	12,231.6	67,314.2
Soybeans	25,326.4	14,995.4	15,722.4	56,044.2
Other grains	15,543.2	15,314.6	3,318.4	34,176.2
Total, 1986-90	118,036.4	136,959.6	63,269.8	318,265.8
Corn	84,779.4	63,351.6	36,673.6	184,804.6
Wheat	13,965.8	42,872.2	13,188.2	70,026.2
Soybeans	29,789.0	15,356.2	17,632.2	62,777.4
Other grains	13,516.2	13,053.0	3,223.2	29,792.4
Total, 1991-95	142,050.4	134,633.0	70,717.2	347,400.6

Storage

The United States enjoys far greater grain storage capacity than Argentina. In fact, storage capacity on South American farms is virtually nonexistent. Rather than building storage facilities on the farm, most Argentine farmers prefer to invest in improved production. The current thinking among South American farmers seems to be to produce at maximum levels and rely on quicker access to market rather than storage. As a result, farmers continue to invest in technologies that improve yield, accelerate harvesting, and facilitate delivery to the elevator.

Given this rush to deliver grains upon harvest, the worst bottleneck in commodity movement and storage throughout Argentina is that which occurs at the country elevators during peak harvest. Literally hundreds of trucks can linger for several days awaiting an opportunity to unload at the elevator. The transportation vehicles themselves serve as an important form of temporary storage. Commodities that cannot be immediately transported must often sit exposed to the elements until a truck is available.

Summary

A review of the comparative transportation and logistics systems demonstrates that U.S. agricultural shippers maintain a significant advantage over their peers in Argentina. This advantage in movement and storage capacity is substantial enough to create an overall comparative advantage in the serving of common export markets. There is evidence, however, that the gap is closing. While the U.S. has benefited from several decades of substantial public and private investment, yielding perhaps the world's most advanced logistical infrastructure, Argentina has languished from minimal development of its own infrastructure. An influx of investment from domestic and foreign sources is largely responsible for Argentina's diminishing disadvantage in movement and storage. The privatization movement has achieved great progress in a very short time. The rate of change in the Argentine logistics environment is anticipated to remain high, well into the foreseeable future. As Argentina's infrastructure develops, time-to-market and costs will be reduced simultaneously, enhancing the country's already considerable competitive position in common export markets. ◆

Iowa's Ag Situation
Continued from page 4

we have been in the reduction phase of the cattle cycle for the past four years, with a smaller cow herd, where are all of the feeder cattle coming from?" The front-end supplies (cattle on feed more than 120 days) continue to grow along with the average carcass weights of slaughter steer, which reached 851 pounds for the first week of September. It will take well into the fourth quarter to work through the current backlog; after that feeder calf supplies, and ultimately fed-cattle supplies, are expected to tighten as producers start to retain heifers to rebuild the cow herd. Fed-cattle prices should recover as we move toward 2001 and remain strong as rebuilding takes hold.

The pork sector is facing some of the same problems as the beef sector: slipping demand and heavy slaughter weights (brought on partially by low feed costs), as well as the seasonal increase in slaughter that is expected to top 2 million head a week later in November and December. Although slaughter numbers are expected to stay below last year's levels, heavy weights will offset decreased volume, resulting in a production level similar to that in 1999. Live prices are expected to continue to slip through the fourth quarter before seasonally climbing toward the upper $40/cwt. late next spring. ◆

Competitiveness and Protection of Chinese Agriculture

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In the context of the likely accession of China to the World Trade Organization (WTO), it is useful to gauge the protection or taxation affecting the production of China's major agricultural crops and to assess the competitiveness of these crops. Because Chinese agriculture differs by regions, we consider early indica rice, late indica rice, and japonica rice grown in different parts of China, south wheat, north wheat, south corn, north corn, sorghum, soybeans, rapeseed, cotton, tobacco, sugarcane, and a subset of fruits and vegetables. We use 1996 to 1998 data, which are the most recent available data.

Distortions in Chinese Agriculture

China's rapid economic growth and gradual transition toward a market economy have brought about significant changes in production and consumption patterns and trade behavior in agriculture. To a considerable extent, however, the government, still distorts and controls input supply, output procurement, and trade flows, especially in the grain sector. China's leaders, as in many Asian countries, have been defining food security as grain security, thus bringing on policymakers' active interference in grain and oilseed markets and trade, effectively closing their borders beyond preset import quotas levels. Despite the substantial rural and economic reforms toward free domestic markets, which have occurred since 1978, there is still a high degree of state intervention in Chinese agriculture. Cropping patterns are still partly determined by nonmarket influences such as the state purchase contracts and the associated input distribution systems.

The effective protection coefficient (EPC) is a ratio of value-added of a sector in distorted prices (i.e., the prices paid and received by growers) to its value-added in world prices. This coefficient indicates the degree of policy transfer arising with output and tradable input policy distortions. An EPC greater than one indicates that the sector receives a "net" subsidy for its activities. Conversely, if the EPC is less than one, it indicates that the sector is penalized by a net taxation when both tradable input and output distortions are accounted for.

The values of the EPC reported in Table 1 show that there is a big difference in the degree of policy transfer across commodities. Corn, sugarcane, and sorghum enjoy a heavy support on three-year average (1996 to 1998) of 32, 10, and 36 percent, respectively, for their value-added, whereas japonica rice, late indica rice, and leaf tobacco face a net tax of 49, 21, and 17 percent, respectively, on average on their value-added.

Looking at input and output distortions separately reveals that agricultural protection in China is still reminiscent of the import-substitution era and shows systematic patterns of input subsidization and output taxation through foreign exchange rationing and overvalued currency.

Competitiveness

A common indicator of competitiveness is the domestic resource cost (DRC), which indicates how much foreign exchange is saved by producing a good domestically instead of importing it. A DRC of less than one indicates that the country is competitive at producing the good; conversely, a DRC greater than one indicates the lack of competitiveness—it is cheaper to import the good than to produce it.

The DRC indicator for various crops is shown in Table 2 and leads to the same conclusions as the protection indicator. Protection goes to crops that are not competitive. The DRC values for competitive activities such japonica rice, cabbage, green beans, tobacco, cotton, apples, and oranges are less than or close to one and clearly are smaller than those for most grains, oilseeds, and sugarcane. Most oilseeds and grain crops are protected and produced inefficiently in China, with the DRC value greater than one, with the notable exception of japonica rice. The results show that government policies on grain self-sufficiency lead to inefficient allocation of resources in Chinese agriculture and that there are significant differences in DRC values between the different types of rice, wheat, and corn. Japonica rice production is more competitive than early indica rice production. North wheat and north corn are produced more efficiently than south wheat.

China has limited arable land and an abundant labor force. These resource endowments give China a certain comparative advantage in labor-intensive goods in world

Table 1. Chinese Agricultural Protection

	EPC		
	1996	**1997**	**1998**
Rice	0.76	0.75	0.77
Early Indica	0.97	1.07	0.94
Late Indica	0.80	0.76	0.81
Japonica	0.52	0.44	0.57
Wheat	0.97	0.91	1.03
Corn	1.11	1.33	1.52
Sorghum	0.94	1.09	1.28
Soybeans	0.96	1.06	0.90
Rapeseed	0.80	0.83	1.02
Cotton	1.03	0.98	0.81
Tobacco	1.28	0.61	0.59
Sugarcane	1.25	1.31	1.53

Continued on page 10

Table 2. Chinese Agricultural Comparative Advantage

	DRC		
	1996	1997	1998
Rice	0.83	1.02	0.94
Early Indica	1.09	1.54	1.32
Late Indica	0.95	1.14	1.06
Japonica	0.43	0.40	0.46
Wheat	1.42	1.39	1.76
South Wheat	1.84	1.82	2.65
North Wheat	1.24	1.17	1.43
Corn	1.54	2.03	1.91
South Corn	2.14	2.34	2.51
North Corn	1.27	1.77	1.53
Sorghum	1.48	2.45	1.62
Soybeans	1.32	1.58	1.25
Rape-seed	1.74	1.65	2.19
Cotton	1.06	0.94	0.79
Tobacco	1.07	0.72	0.88
Sugarcane	1.04	1.11	1.36
Apples	0.93	1.10	0.78
Oranges	0.84	1.19	0.85
Cabbage	0.77	0.65	0.59
Green Beans	0.68	0.70	0.67

markets. Labor-intensive crops, such as vegetables, tobacco, cotton, and fruits would be better suited for Chinese agriculture than grains. Among grain and oilseed crops, japonica rice has higher comparative advantage and late indica rice and north wheat have lower comparative "disadvantage" over the other crops in the group. Hence, China's grain self-sufficiency policy goes against its comparative advantage, except for japonica rice production.

Efficiency gains should result from the new grain policy that started in 1999, which promotes high-quality rice and wheat production and discourages low-quality rice and wheat production. Over 90 percent of exported rice is low-quality indica rice and only about 5 percent is high-quality japonica, which is produced mostly in Northeast and North China. Over the long term, however, the potential to increase the high-quality grain production likely will face increased water constraints. In the North China plain, both agricultural and nonagricultural uses have put high pressure on available water resources over the past 20 years, resulting in sharply cut river flows and reduced aquifer levels.

The cotton case deserves an additional qualifier. Since 1996, China has expanded its production of cotton and has accumulated large stocks, which are reflected in expectations of low world prices. One can reasonably guess that the DRC for cotton evaluated at 1999 prices would be greater than one and that China would be ill advised to expand its cotton production further. Assessing this conjecture, however, requires data not yet available.

China's accession to the WTO will induce the eventual reduction and elimination of many policies distorting trade, production, and consumption of agricultural commodities that are inconsistent with WTO principles. Reducing domestic and trade distortions would realign relative costs to relative world prices; reduce the production of importables, such as grains and oilseeds; and promote the production of exportables, such as vegetables, fruits, tobacco, and cotton. Hence, with accession to the WTO, China's agricultural trade patterns would be expected to increase China's dependence on world grain and oilseed markets to satisfy domestic demand and to absorb its exportable agricultural production. China's current long-term grain self-sufficiency policy is costly, which suggests that access to the WTO would benefit China as well as the rest of the world.

For more information, see CARD working paper 99-WP 223, "Food Self-Sufficiency, Comparative Advantage, and Agricultural Trade: A Policy Analysis Matrix for Chinese Agriculture" by Cheng Fang and John Beghin, August 1999 (revised version October 2000). ◆

Meet the Staff: Frank Fuller

"FAPRI (the Food and Agricultural Policy Research Institute) is one of only a few organizations around the globe that focuses on providing model-based economic policy analysis for the agricultural sector," says Frank Fuller, the technical director for FAPRI models. "It remains free from political pressures that can influence and censor outcomes of policy analysis. Consequently, FAPRI is well regarded for its contribution to domestic and trade policy debates," he says. FAPRI is part of the Trade and Agricultural Policy Division at the Center for Agricultural and Rural Development (CARD).

Frank started working on FAPRI's China model in May 1996 as a postdoctoral research associate. He officially joined the FAPRI staff in July 1997 as a livestock trade and policy coordinator. His primary responsibility was to maintain and improve the international livestock and dairy models. He also was responsible for coordinating livestock model development with grain sector analysts and with the U.S. sector modelers for FAPRI at the University of Missouri-Columbia.

This fall he assumes oversight of the technical aspects of the international grain and oilseed models as well as the livestock and dairy models. As an adjunct faculty member in the economics department, he teaches an introductory undergraduate course in agricultural marketing: "Agricultural Firms, Markets, and Prices."

Frank earned a doctorate in economics from Iowa State University (ISU) in May 1996. His fields of specialization were international trade and agricultural marketing. His undergraduate degree was in economics from the University of Wisconsin-Eau Claire. Before coming to ISU in 1991 to begin his doctoral program, he spent a year as a Fulbright scholar at Christian Albrechts University in Kiel, Germany.

"I enjoy seeing other places and meeting people from other cultures," he says. "One of the greatest satisfactions of working with FAPRI is being able to present research in a wide variety of venues and to hear the positive comments and appreciation of the audience. There is a great demand for policy analysis." Frank has traveled extensively, doing collaborative research and/or presenting papers in Canada, China, Japan, France, Ukraine, Turkey, and even the central Asian country of Kazakhstan.

"My greatest challenge at FAPRI is to balance my time between the demands of maintaining models and undertaking publishable economic research," he says. "The environment at CARD/FAPRI is rife with opportunities for research." Among his recent

Frank Fuller

journal publications, coauthored with other FAPRI staff, was an article in the *Canadian Journal of Agricultural Economics* titled "The Impact of the Berlin Accord and European Union (EU) Enlargement of Dairy Markets." His latest CARD working paper, coauthored with Dermot Hayes, was "Optimal Chinese Agricultural Trade Patterns Under the Laws of Comparative Advantage" 99-WP 233.

Outside of work, Frank serves as missions board chairman of the First Evangelical Free Church in Ames. In addition to participating in church activities, he and his family enjoy traveling together. His wife Cindy, an avid reader, works as a paralegal for a law firm in Ames. Their older son Franklin, 14, is a freshman at Ames High School. His interests include science, cross-country track, and the saxophone. Their younger son Joseph, 12, a sixth grader at Meeker Elementary School in Ames, enjoys flag football, drawing, and the trumpet. ◆

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