

Moving Toward a Food Systems-Based Agricultural Policy*

—by Neil E. Harl**

I. Price and Income Policy

As with most sectors of the world economy, agriculture in recent years has been a sector of great change. Closed markets are giving way to free trade, open democratic systems with decentralized decision making are gaining ascendancy over despotic regimes, technology is revolutionizing every facet of production and distribution and competition is assuring that consumers everywhere are elevated to a high pedestal faintly reminiscent of the kings of old.

It is assumed that the governing policy goals for the food and agriculture sector will continue to include—(1) availability of an abundant supply of food, at reasonable prices; (2) maintenance or enhancement of the productivity and environmental integrity of natural resources; and (3) a prosperous and productive economic climate for producers (including family farmers).

It has been clear for a decade and a half that the debate on U.S. farm policy has been dominated by agribusiness firms. The outcome has consistently been in accord with the objective of most agribusiness firms of encouraging maximum production of crops. Some have even been moved to observe that U.S. farm policy has been “high-jacked” by those who take a very narrow view of what is expected from the agricultural sector and what should constitute the parameters of farm policy.¹

This paper suggests that the expenditure of federal funds, which has reached record levels in recent years in support of federal farm programs, should be subject to the same kind of benefit-cost calculus applied for other federal expenditures and that the outcome of such analysis should help to shape federal farm policy.

Flaws in the 1996 farm bill

The 1996 farm bill, enacted during a brief period of economic euphoria in 1996, stripped the Secretary of Agriculture of all authority to manage inventories and set the stage for all-out production of the major program crops. From 1938 to 1996, the Secretary had been given authority to act, in effect, as the surrogate CEO of agriculture and to do what every other CEO does when inventories come to be viewed as excessive—idle workers and idle productive capacity. Those authorities were swept away despite overwhelming evidence that agriculture’s

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¹ See Harl, “Review for the Journal of Agricultural History of *Policy Reform in American Agriculture*,” (forthcoming).

capacity to produce has consistently exceeded the capacity of markets to absorb the production without unacceptably low prices.

The 1996 farm bill represented a significant departure from federal farm legislation since 1933. While the transition away from government programs will likely produce a more rational system of resource allocation, several important implications of the shift deserve mention.

- The loss of protection against low prices is proving to be a serious problem, as we had feared.

More fundamentally, the question is whether the Congress will allow the use of price to reduce supply. In October of 1998, Congress passed an economic assistance package totaling \$5.975 billion to insulate partially U.S. farmers from the effects of low prices. Legislation providing an even larger assistance package is expected in 1999. These amounts are in addition to AMTA payments, LDP payments, disaster assistance and marketing loan costs. The total outlay was more than \$15 billion in 1998, exceeded \$22 billion in 1999, rose to \$28 billion in 2000 and seems destined for much the same in 2001. A major question facing Congress is what U.S. farm policy will be for 2002 and beyond.

While some sectors of U.S. agriculture have enjoyed favorable prices until quite recently, low prices have returned. The result of an increase in supply is a disproportionate drop in price—and in profitability. That means consumers are in a very favorable position, assured of an ample supply of food and fiber at a relatively low cost, long-term. But, it means also that producers periodically endure periods of low prices.

The agricultural sector, in terms of policy, is characterized by two important features:

—First, the number of producers is so great that no single producer can influence price with their output decisions and so they may not cut back on production until price drops below variable costs or they are able to shift to a more profitable alternative crop. This feature makes it difficult for the sector to reduce supply without government assistance.

—Second, although we have become very clever in developing more effective chemicals, better seed varieties, larger and more efficient equipment and improved management, our cleverness still hasn't given us much influence with weather. Year-over-year, weather is the big factor influencing supply of the major crops in this country. Given the enormous capacity to produce, a series of years with favorable weather puts pressure on price. It was to be expected that farm commodity prices will be more volatile than during the era of farm programs. This is important to consumers as well as producers.

- Elimination of the federal farm programs was expected to mean less economic buoyancy from government. However, instead expenditures have risen to record levels.

- Another significant feature of the elimination of federal farm programs is the shift in land use patterns that will occur over time. Shifts in land use will be dramatic and will be felt across the agricultural sector, but the greatest shift will occur in areas of marginal land.

Under the farm programs from 1933 to 1996, government farm programs attempted to help balance demand and supply by idling land. Depending upon the year, the amount of idled land ranged from none to 70 to 80 million acres. The land was idled in checkerboard fashion, some of the very best land was idled and some of the poorest. This was not economically rational but it spread the burden of adjustment over the entire country and it did not squeeze producers economically as adjustments were made in the productive base.

Under the 1996 legislation, production decisions are left to the market. And the market doesn't adjust production in the same way as government programs. The market squeezes out the thinner soils and steeper slopes, the higher per-unit cost of production areas. With no land idled, production increases, crop prices fall, and land values come under pressure until there is less profitability for crop production on the least productive land than for the next most profitable use for that land. The least productive land then transitions out of intertilled crops to a less intensive use, to another crop or to grazing land. Depending upon the area, some might transition to wasteland. At least, the increase in supply of grazing land would assure that the less productive grazing land would decline in value.

Rather than having 70 to 80 million acres of farm land out of production on a checkerboard-pattern, there could be close to that many acres which would transition to a lower-valued use unless exports are maintained at high levels. However, the more productive land would not be among those acres moving to a lower-valued use. The transition would tend to be concentrated in areas with highly erodible, lower productivity land that has thinner soils and lower rainfall.

This movement of land to a less intensive use spells economic pain for producers everywhere. Adjustment pain is felt not just by those at the periphery of the core producing areas, but by producers everywhere. Beyond that, those geared up to sell inputs to or purchase outputs from a crop-based agriculture also would have to adjust. Indeed, the transition for farmers is expected to be shielded in part by the Conservation Reserve Program. Little or no adjustment assistance is expected for those who dry, store or ship grain or oilseeds or who sell seed, fertilizer, chemicals and equipment for a row crop-based agriculture as the area transitions to grazing.

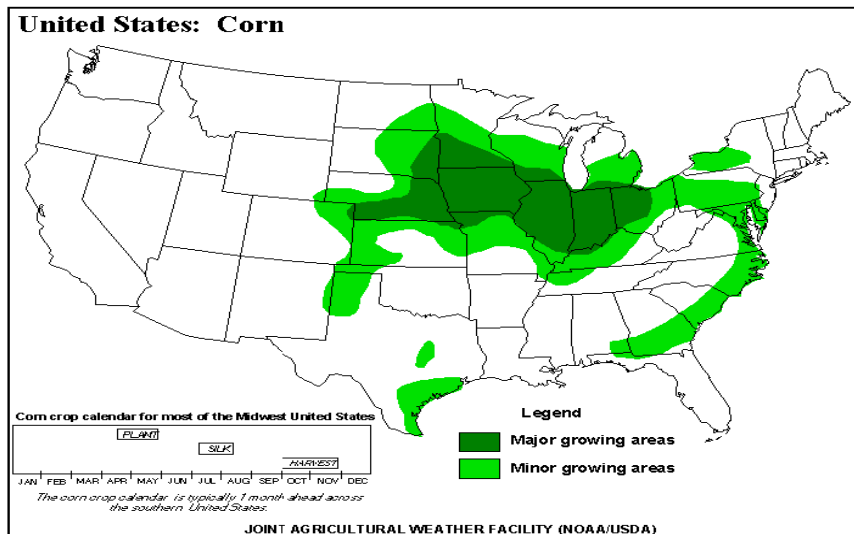
After a period of adjustment, the economic returns to labor and capital (unlike returns to land) will likely return to an equilibrium level.

Figure 1 illustrates the fact that, for each major crop, there will be a "core" area of production and a "swing zone" at the periphery.

That zone of thinner soils and steeper slopes at the periphery of major crop producing areas becomes a swing factor in production. In times of good prices, it swings back into intensive production; when prices fall, it's squeezed out again. This is the reason now why the most intensive resistance to the 1996 farm bill is in those swing areas where the next best use represents an economic jolt for producers and others involved. And it means another dimension of instability for those areas.

So, while the market is doing its job, the squeeze is felt even by those on the best, most productive, soils as the production of the major crops shrinks into a more compact area with 100 percent of the best land in production.

Figure 1.



These land use shifts aren't likely to be one-time events. As exports rise (or fall), domestic demand rises (or falls) and changes in supply from technology and weather occur, the zone of swing acreage at the periphery of the core areas will see shifts in land use occur.

All of this is rational, economically, but it adds enormous uncertainty for producers; those who supply inputs; and those who store, ship, dry or process outputs.

Thus implicit mechanism in the 1996 farm bill to adjust production in the face of low prices was economic pain. It should be abundantly clear, by now, that Congress does not like models of adjustment based on economic pain. That is precisely what the 1996 farm bill was designed to do—adjust output by inflicting economic pain on producers. The wheels fell off that wagon at the first turn, with low prices in 1998. Even though Congress voted, by a narrow margin, to enact the 1996 farm bill, by an even larger margin the Congress has cheerfully provided massive cash infusions since, in 1998, 1999 and 2000 and the Congress is poised to deliver yet another generous amount of cash in 2001. Perhaps to save face, Congress has been willing to do that rather than to face up to the inherent shortcomings in the 1996 legislation. The authors of a recently published policy text acknowledge the flawed nature of the FAIR Act in explaining that, “the 1996 law was an internally inconsistent policy mix, based more on compromise and convenience than on conviction. It led to larger outlays rather than smaller government outlays for agriculture and was market oriented for some crops but not others.”² That passage would suggest that the authors may be in agreement with this commentator who

² Orden, Paarlberg and Roe, Policy Reform in American Agriculture 216 (1999).

has stated publicly on more than one occasion that the 1996 farm bill was the second most irresponsible Congressional act in the twentieth century. The authors of that text rail at distortions from 1933 to 1996 but say little about the distortions of huge amounts of cash into the farm sector, much of which has been capitalized into, or propped up, cash rents and land values and dropped the cost of feed and other commodities to purchasers, in some instances to levels well below the cost of production.

A more rational approach

The apparent trend in thinking in recent years has been to evaluate farm policy solely on the basis of the cost of food at the farm gate and by the amount of resources utilized in the production of food and fiber. Regardless of which school of welfare economics one belongs, it would seem appropriate for policy reform in agriculture to embrace a greater range of policy objectives at least to the extent the expenditure of public monies is concerned.

For well over a half century, the expenditure of public funds for improvements in waterways, cancer research, environmental cleanup and numerous other federally-funded project areas has been subjected to the discipline of a benefit-cost calculus. In general, the benefits and costs considered have been all of those reasonably stemming from the project. That has not been the case with farm policy. As a consequence, the anticipated impacts on producers, rural communities, the environment, and taxpayers have not been taken into account. Moreover, relatively little effort has been made to provide useful policy-making information as to the impact on consumers in an increasingly concentrated world of input supply and output processing and handling firms..

It is disheartening to see the singular focus on the issue of how to squeeze the costs for commodities to first purchasers to the lowest possible level with no attention whatsoever to the other consequences which are both real and visible. Moreover, when federal funds are involved, as they most certainly are, it seems not only appropriate but essential that funds be expended in such a manner as to produce the greatest possible benefit to the human family. Seventy years ago, flood control projects were selected heavily on political bases. Legislation in 1936 and later has elevated the decision making process to a higher level such that political considerations, although still present, do not dominate the process as was once the case.

The same brand of discipline should be imposed on farm policy. Indeed, there is little reason not to do so. The great surprise is that farm policy has continued to be a highly political process, dominated in recent years by agribusiness firms with huge amounts of cash to influence the policy process. As Schertz and Doering stated, in their recent book, *The Making of the 1996 Farm Act,*” a consortium of agribusiness firms amassed a huge war chest to influence the analysis, shape the message and convince members of Congress to support their farm policy agenda.

As the authors stated—

“The idea that farm programs had gone too far in withholding cropland from production was given a substantial boost with the preparation and astute promotion of a study sponsored by the National Grain and Feed Association through their foundation. The study, released in May 1994, concluded that ‘American farmers and the U.S. economy stand to reap substantial benefits from expanding

crop area and production.’³ Over 185 companies, most of whose profits are geared substantially to volume of commodities handled or processed, were involved in supporting the study prepared by Abel, Daft, & Earley, a consulting firm in the Washington, D.C., area. ...

The key conclusion of the study was that 38 million of the then 65 million acres of cropland held out of production at that time under the Acreage Reduction Program (ARP), the Conservation Reserve Program (CRP), and other, but smaller, programs could, under expected demands and yields, be brought back into production between 1994 and 2002 and commodity prices *would not be less than they were at the time of the study*. Politically, that is a powerful conclusion for there is a strong preference among politicians not to be accused of taking action which leads to lower producer prices. Central to this proposition was the conclusion that demands for U.S. farm commodities would increase enough so that farm commodity prices in the prospective future would not drop below then current levels, even if U.S. farm production increased as hypothesized. The implication for farm income was obvious—more production at the same or higher prices meant more income.”

If a proposed flood control project were to decimate a community, that would be viewed as a project cost. However, if a rural community is diminished economically by the farm bill, or farmers are harmed by the legislation, those costs are ignored and left to be dealt with, if at all, by other programs. The result is a dissociation of benefits and costs which distort economic reality. The country deserves better in the area of farm policy just as it deserved better before the landmark 1936 legislation on flood control.

A global food and agriculture policy

Farm policy debate in the United States in the 1920s was largely about whether it was appropriate to have a national food and agriculture policy.⁴ To a considerable extent, the decision was in the negative until 1933.

In many respects, farm policy today poses a similar question: should efforts be directed toward a global food and agricultural policy? In the opinion of this commentator, the answer is yes.

The globalization of food supply and demand and the position of the United States suggest that food and agriculture policy analysis should shift to a new level to encompass global food and agriculture issues. Such a policy would likely take years to accomplish and would require skillful diplomatic efforts, but the logic behind such an approach to policy is obvious.

A global food and agriculture policy should have several components—

- First, and probably foremost, is support for Third World economic development. With relatively high income elasticities of demand for food (70 percent or more of each additional dollar of income is likely to go for food purchases in some of the countries), it is clear that the last frontier for increasing food demand is the Third World. Moreover, adequate nutrition, worldwide, has the support of a wide array of groups and individuals.

³ Abel, Daft, and Earley, *Large-Scale Land Idling Has Retarded Growth of U.S. Agriculture*, prepared for the National Grain and Feed Foundation (Alexandria, VA: Abel, Daft, & Earley, May 1994).

⁴ See Taylor, Henry Charles, *A Farm Economist in Washington, 1919-1925* (1992).

If the poorest countries could be nudged into the development queue, with investment in education, health care and infra structure, plus progress in implementing more open and democratic governance systems, the long-pursued goal of elimination of world hunger could be within reach. Gifting food to low income countries, while laudable from a humanitarian point of view, destroys their internal agricultural economy.

- The issue of food safety, including animal diseases as well as genetic modification of foods, should be addressed in a global food policy.
- Food security should be a component of a global policy.
- Fair and equitable sharing of germ plasm should be assured. This could help allay fears of some countries that their germ plasm is being appropriated without compensation by First World countries.
- Trade in agricultural products and commodities is an obvious candidate for inclusion in a global food and agriculture policy as a supplement to negotiated trade agreements.
- Agreed-upon policies committing major food producing countries to managing excess inventories could be a part of a global food and agriculture policy. Countries would be urged to take action in unison whenever disastrously low food prices occur worldwide with comparable steps taken to reduce food production. The flow of development funds from the United States into the World Bank and IMF and in the form of direct assistance could be used to leverage such responses from other countries.

Choices in farm policy

Three choices. Congress faces three choices on how to proceed in the face of low commodity prices, high levels of budget outlays at the federal level and continuing economic problems on the part of producers.

- One possibility is to continue the heavy subsidization that has become the hallmark of the 1996 farm bill for the “program” crops. While the \$28 billion plus for the 1999-2000 federal fiscal year is a modest fraction of the country’s food bill, it is large enough to be a visible budgetary target.

If the country is in an economic downturn, as appears to be the case, that level of expenditure may loom even larger this coming year. With the budget surplus narrowing, or even disappearing, less money will be sloshing around Washington and additional appropriations for agriculture may be more difficult to obtain.

Another hazard is a change in priorities in the budgetary process with a majority in Congress concluding that other programs merit more funding and agriculture less in support.

- A second possibility would be to reduce—or eliminate—federal subsidies for agriculture. That would likely result in a reduction in land values. Much of the subsidies is being bid into cash rents and capitalized into land values. One cannot justify present land values on the basis of existing commodity prices. If investors were to develop an expectation of less

federal funding—or none at all—land values would likely decline. The drop would be severe if withdrawal of subsidies is abrupt. After all, land values are based heavily on expected profitability of the dominant crops in the area plus expected government payments.

Some have argued for a withdrawal of all subsidies with land values falling to a new lower level. Equilibrium would eventually be re-established for returns to labor and capital near present levels. But returns to land would almost certainly be re-established at lower levels on a more or less permanent basis. While that might be appealing to some, the ride down would be rough—possibly a greater decline in some areas than experienced from 1981 to 1986.

Yet, the awesome part of this is the growing vulnerability of the sector to just such an adjustment.

Even with the sharp declines in land values, pressure on prices would continue as supply fluctuates but with technology likely pushing the supply curve to the right faster than demand is likely to increase.

Those who point to high land values as a factor in international competitiveness are wide of the mark, however. It's been clear since repeal of the corn laws in Britain more than a century ago that land values are price determined, not price determining. Land values are not properly viewed as a cost of production but as the result of expected profitability. Thus, higher land values in the United States than in Brazil should not be viewed as a problem. What will drive down land values is a decline in expected profitability.

- The third possibility is to return to the Secretary of Agriculture some of the authorities swept away in the brief period of economic euphoria in 1995-1996. That would enable the Secretary to act as the surrogate CEO of agriculture and to manage inventories as other CEOs do. Many companies occasionally experience excess inventories—Deere, Intel, Boeing, General Motors, indeed virtually every firm in the world. The time honored solution is to idle people and idle productive capacity.

If that is the direction the country takes in its farm policy, the programs should be designed to encourage resource idling at the periphery and to do so in a market-oriented manner. Programs should take into account the clear trend for technology to boost supply faster than demand is likely to increase.

Variable-term land idling (from as short as three years up to 20 years) designed to be particularly attractive in marginal production areas in the so-called periphery or "swing zones" is one possible shift in policy. The "swing zones" are the regions that are expected to be squeezed out of intensive crop production in times of low prices but get back into production when prices recover. Long-term land idling could help ease the economic and social costs of adjustment in those areas. It would mean reduced sales of fertilizer, chemicals, seed and machinery and so it would impact the communities. But those communities are hurting now and will suffer from the periodic market adjustments that will characterize their economic life from now on. The contracts could be set to terminate if prices rise above a specified level. Another alternative would be to allow farmers to bid land out of production on an annual basis with the reward of a

higher loan rate on the rest of the farmer's production.⁵ That option would be market-oriented and, under one proposal, would give farmers an option of idling up to 30 percent of their corn, soybean, wheat, cotton or rice acreage. For corn, soybeans and wheat, each one-percent set aside would be rewarded with a one percent loan rate increase. An analysis by the Food and Agricultural Policy Research Institute indicates that the program would boost farm income by \$5.4 billion per year at a budget cost of \$2.5 billion.

While there appears to be strong and growing support for additional conservation funding in the next farm bill, it is important to maintain a reasonable balance between commodity programs and conservation programs. Tilting too far in favor of conservation would likely result in an increase in value of highly erodible land and a drop in value for the least erodible (or otherwise environmentally vulnerable) land as federal subsidies are likely to be promptly capitalized into land values (or reductions in payments result in decapitalization).

Export trends

The 1996 farm bill was enacted in a time of optimism in U.S. agriculture. Agricultural exports peaked in 1995 and 1996 above \$60 billion. Exports have declined since and could go lower with agricultural exports totaling about \$49 billion in 1998-99, rising slightly in 1999-2000.

As can be seen in Figure 2, U.S. agricultural exports declined about 40 percent from 1981 to 1986. During that time, corn, soybeans and wheat piled up in storage, in barges on the Mississippi river and up and down main street. Government payments shot above \$25 billion in the worst of these years. While I am not predicting a 40 percent decline in agricultural exports this time, and I do not believe such a reduction is likely, exports could well go lower than at present.

Exports have fallen short of projections for several reasons.

- Increases in output in Argentina and Brazil, in particular, have been substantial and may well go higher.
- In countries with higher per-unit costs of production, as trade barriers fall, producers are unlikely to fold their tents and abandon their land. The more likely scenario is that land values will fall in those countries and producers will continue producing so long as they can more than cover their variable costs with the most profitable crop.

After all, land values are price determined, not price determining. Land has value as expected profitability is capitalized into the value of land. Some areas of the world can realistically expect significant declines in land values as trade barriers are demolished.

In conclusion

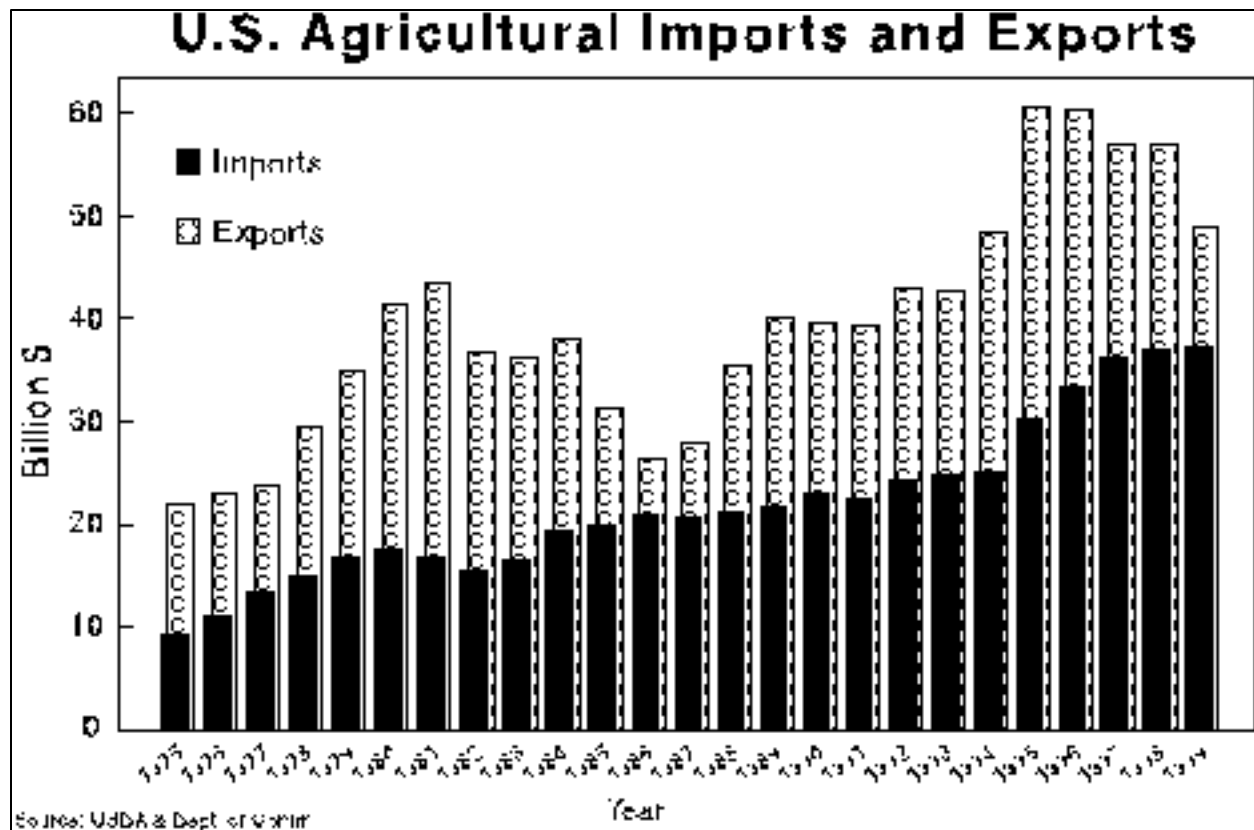
⁵ The author is indebted to Craig Blindert, Salem, South Dakota, and Phil Cyre, Hazel, South Dakota, for development of the "flexible fallow" program.

Most farmers and landowners would prefer to make their own production decisions and to produce flat out. That is the first best solution for many.

But the first best solution may produce such budgetary consequences that it may not be attainable. If that is the case, what is the second best solution? Let land values fall? Or to try managing inventories for a change?

It's time to begin serious consideration of a second best solution.

Figure 2.



II. The Structural Transformation of Agriculture

A major concern as we move into the Twenty-first Century is the structure of the agricultural sector. By structure, is meant considerations of size and scale as well as who is to manage, control and finance farming and agribusiness operations.

Structure of the agricultural sector

With the dramatic increases in concentration in recent years of input supply and output processing firms and with striking increases in the level of vertical integration (the proportion of slaughter hogs sold under some type of marketing or production contract approaching 70 percent

for example), it is important to assess the implications for producers. Such a structural transformation of a subsector is not unknown—the broiler industry went that direction several decades ago—but it is a first for the Middle West.

The critical question: is it important to farmers—and to society—whether agriculture is populated by independent entrepreneurs or serfs? The structural change now occurring will determine which direction agriculture takes. A producer without meaningful competitive options is a relatively powerless pawn in the production process.

The evidence is overwhelming that the agricultural sector is undergoing the greatest structural transformation in the history of the sector. *Without much doubt, low commodity prices are contributing to the structural transformation of the sector.* A low risk, low return choice looks attractive if the alternative is bankruptcy.

Competition is the most critical element of a price oriented, market economy. Without competition, firms become complacent, are less likely to innovate, tend to become arrogant and indifferent and are inclined to produce less and obtain a higher price for their output.

To a considerable extent, structure will be driven by economic considerations. This country has been committed for some time to the notion that if someone can develop ways to produce goods or services at a lower cost, barriers are unlikely to be erected to prevent that from happening. In large part, the consumer is king and generally rewards the best value with purchases. However, for the economic system to function properly, it is critical to have—

- Policies in place to deal with cost externalities such as odors and stream and groundwater pollution, and
- A system of market protection (or antitrust) to penalize collusion and to prevent undue concentrations of economic power.

The era of contract agriculture. The signs of increasing use of contracts are commonplace—especially on the production side of agriculture.⁶ Specialty grains, feeder livestock, milk production, even fruits and vegetables, are being produced under contract and have for some time. So what's the concern about the rising tide of contract agriculture? Basically, the concern is a tilt in market power with a possible shift in bargaining power as input suppliers and output processors (and first purchasers otherwise) gain greater economic power, undoubtedly at the expense of producers.⁷

Concentration in input supply and output processing companies. Mergers, alliances and various other types of arrangements are reducing the number of players in input supply and output processing and handling and increasing the level of concentration. While the level of mergers, alliances and consolidations is not a completely reliable indicator of competition, the

⁶ See, e.g., Harl and Lawrence, "Long-term Marketing Contracts with Packers...A Journey Through the Downside," *Iowa Pork Producer*, Sept., 1998, pp. 5-7.

⁷ See generally Harl, "Contract Agriculture: Will It Tip the Balance?" 10 *Leopold Letter* No. 4 (1998); Harl, "Agriculture in the Twenty-First Century," <http://www.econ.iastate.edu/faculty/harl/papers>.

fact that nearly \$15 billion of such amalgamations has occurred over the past five years in the seed business, some at price levels difficult to justify under present economic conditions, suggests that—(1) some are discounting revenue from a pot at the end of some unknown rainbow; (2) irrational behavior is being displayed; or (3) some acquiring firms are assuming that a greater share of the world's food bill can be claimed by those who control the germ plasm involved in food production.

Increasing levels of concentration among firms do not tell the entire story. The revolution in ownership of germ plasm, the feature of cells that determines the characteristics of offspring, also is moving rapidly toward concentration in a few hands. The high-profile alliance (and now merger) between DuPont and Pioneer Hi-Bred International, the Monsanto acquisition of DeKalb, the Monsanto acquisition of Delta and Pine Land Company (since terminated) and the formation of Syngenta by Novartis and Astrazeneca are recent examples of how the ownership and control of genetic material in crops are falling into the hands of a few, economically powerful players. Increased concentration is also leading to control by a few firms over the major processes by which genetic manipulation occurs, thus enabling those controlling the technologies to block use by other firms.

This development is partly related to the changing role of the land grant universities, partly to the ability in recent years to manipulate germ plasm through genetic engineering, and partly to the consequences of the ability to obtain a monopoly-like position over unique life forms and over the process of genetic manipulation.

- For decades the land grant universities developed the basic genetic lines and made those lines available to the seed industry. Because of limitations on university funding and the near-revolution in genetic engineering, the private sector several years ago began pouring more money into basic research. Developments have progressed to the point that the payoff from research and development funding can no longer be used to compare the present with prior periods. Payoffs are expected to flow more readily than when biotechnology was in its infancy.

- The advent of genetic engineering meant that scientists could manipulate genetic composition—not through conventional crop breeding techniques but through laboratory procedures—to change the genetic makeup of plant and animal life. That has produced herbicide-resistant crops, for example.

- Finally, the U.S. Supreme Court in a 1980 landmark case determined that life forms could be patented.⁸ In addition to federal Plant Variety Protection (PVP)⁹ and simply shrouding research efforts with secrecy, the ability to patent life forms provides a powerful tool to keep competitors at bay.

While a major concern is over concentration in seeds and chemicals, there is also concern over concentration in livestock slaughter, grain handling and shipping, farm equipment

⁸ *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (bacterium having unique genetic characteristics is patentable subject matter under the general patent statute). The scope of plant patenting is back before the U.S. Supreme Court in the case of *Pioneer Hi-Bred International, Inc. v. J.E.M. Ag Supply*.

⁹ Pub. L. No. 91-577, 84 Stat. 1542 (1970), 7 U.S.C. §§ 2321-2581. See generally 12 Harl, *Agricultural Law Ch.* 110 (2001).

manufacture and food retailing. Indeed, rapidly rising concentration in food retailing may be the most worrisome development in recent years.

Driving forces to consolidate. One of the drivers in the trend toward greater concentration in almost all sectors of the U.S. economy is increasing concentration in markets *into which products are being sold.* Thus, the rising tide of concentration in food retailing leads to consolidation by suppliers to match the buying power of the retailers. The driving force is an increase in negotiating power, not necessarily an increase in efficiency.

Example: In late July, 2000, the merger announcement by Pillsbury and General Mills noted that a major reason for the merger was to position the resulting firm to better do battle with the major players in food retailing. The importance of getting shelf space at the retail level is another critical factor in food production and distribution. Concentration in food retailing leads to concentration among those who sell to the big food retailers which leads to concentration among those to sell to those who sell to the big food retailers and so on down the scale to the powerless producer. In early 2001, the president of Tyson Foods was quoted as saying that the proposed merger with IBP "should give us 100 feet of shelf space at Wal-Mart."

Just how concentrated is food retailing? In 1992, the five leading food retail chains controlled 19 percent of U.S. grocery sales. By 1998, the five largest chains (Safeway, Albertson's, Kroger, Ahold and Wal-Mart) controlled about 33 percent of U.S. grocery sales with that figure at an estimated 42 percent in 2000. Unless mergers are curbed, that figure is expected to reach 60 percent within three years.

Effect of contracts. An important question is the effect concentration will likely have on contract negotiations with producers. It depends on the options open to producers who don't like the terms of contracts offered to them. With numerous contract possibilities available, each offering inputs of roughly equal productivity and cost and each marketing option equally attractive, the answer is perhaps "not much."

But if there are just a few options, with the next best offering a much less attractive set of options, such as when a variety of seed is developed with significant yield premium over otherwise competitive varieties, the answer is "take what you're offered." A greater proportion of the value of the yield premium is expected to be captured by the seed supplier under those conditions than has historically been the case. The outcome is likely to be a tilting in the terms of contracts in favor of the input supplier. The division of revenue from production would be expected to shift over time in favor of the party with the monopoly or near-monopoly position. Input suppliers can be expected to drive the best possible bargain which means, in the case of seed, capturing the greatest possible percentage of the value from any yield premium.

- The outcome would be a smaller share of the revenue from production going to the producer, resulting in less compensation to the producer and less to capitalize into land values.
- Seed companies, for example, would end up with a larger share of the pie with more to capitalize into the stock of the input supply firms. Even if unique corn derivatives produce revenue of \$2 million per acre, it's fairly clear that whomever holds the rights to the technology involved will capture the lion's share of the revenue, not the producer.

A good argument can be made that this perception of potential profits in the future is part of what was driving the intense push toward concentration in control over germ plasm.

Thus, a major issue is whether a shift in market power occurs between input suppliers and producers, whether that shift in market power is translated into enhanced bargaining power and whether the enhanced bargaining power is employed to siphon a greater proportion of the economic return generated by the sector into the hands of input suppliers.

The “deadly combination.” Without much doubt, the greatest economic threat to farmers as independent entrepreneurs is the deadly combination of concentration and vertical integration. Producers are vulnerable to a combination of high levels of concentration in input supply and output processing and high levels of vertical integration from the top down.

Example: let's assume concentration in hog slaughter continues to increase (the four largest firms now control about 60 percent of hog slaughter compared to more than 80 percent for steer and heifer slaughter, as shown in Table 1.) and the hog slaughtering firms vertically integrate in the manner pioneered by Smithfield. Before dropping the Tyson merger, Smithfield would have controlled about 68 percent of its hog slaughter. Let's say we're down to two huge firms and each is 90 percent integrated. A producer with a five year contract with one of the two major firms comes to the end of the contract. The new contract is considerably less attractive than the expiring contract. The producer is told—take it or leave it. If the closest competitive option is 900 miles away—and is also heavily integrated—the producer seeking another option for hogs is highly vulnerable. If the producer had made a heavy commitment to facilities, the vulnerability is greater yet with significant barriers to exit. Clearly, a producer in that situation is likely to be squeezed.

Table 1. Four Firm Packer Concentration Ratios (in percent)

Year	Cattle	Steer & Heifers	Cows/Bulls	Hogs
1980	28	36	10	34
1985	39	50	17	32
1990	42	55	18	33
1995	69	81	28	46
1996	66	79	29	55
1997	68	80	31	54
1998	70	81	33	56
1999	70	81	32	56

Source: International Agricultural Trade and Development Center, University of Florida.

In short, whoever controls the limiting factor in any process is in a position to exert influence over the entire process and, if the level of concentration is high, exact a hefty charge against the fruits of production. In hogs the limiting factor is not capital or labor or buildings; the limiting factor is slaughter capacity or “shacklespace.” In food generally, an important limiting factor is shelf space.

Vertical integration. The moves made by the major players, both input suppliers and output processors and handlers, could lead one to conclude that the objective is to vertically

integrate the sector. Such an objective could be pursued for several reasons—(1) to gain and maintain greater control over patented products or products subject to intellectual property protection otherwise; (2) to apply economic pressure on producers to relinquish functions in favor of the integrator (such as risk management) or to merely provide an opportunity for risk to be off loaded onto the integrator; (3) to reduce costs (particularly acquisition costs for raw materials) of the integrating firm; (4) to achieve greater market share on an assured basis; or (5) to deliver with greater precision what consumers want. The latter point is debatable. In an early example, seed/chemical companies misjudged consumer acceptance of genetically engineered foods and stumbled badly in the process.

Although vertically integrating a sector or subsector may produce economies—including reduced costs for acquisition of raw materials—vertical integration by powerful integrators can have decidedly negative consequences. Among those negative outcomes is the demolition of open, transparent, competitive markets and replacement of those markets with negotiated prices. With a huge difference in bargaining power, as between the parties, the outcome is predictable. The party with the weaker market power tends to be the loser. Unless producers act collectively, producers tend to be the weaker party.

Are economies from vertical integration likely to be passed on to consumers? With a high level of concentration, that's doubtful. Actually, several possible outcomes could be occurring in the merger/vertical integration movement.

- If the structural transformation now being observed reflects efficiencies, lower costs could be passed to consumers if competition is present and the competitive system is functioning well.
- In the event gains from efficiency are not passed to consumers, but are passed to shareholders or used to pad costs within the firm, the trend is objectionable even though some would argue that system-wide gains in efficiency should be permitted even in the face of anti-competitive conditions.
- The third scenario, which is concerned with the distributional effects of competition policy, does not recognize gains from efficiency as a positive offset to an otherwise anti-competitive merger unless the gains are passed on to consumers.

Clearly, the higher the level of concentration and vertical integration, the greater the risk of unacceptable market conduct.

What all of this adds up to is this—*if farming is to be made up of independent entrepreneurs as producers, it is absolutely essential for producers to be assured of meaningful competitive options.* To assure that outcome, it is necessary to—(1) limit concentration in input supply and output processing or handling and (2) possibly limit the extent of vertical integration.

Barriers to entry. In general, one would expect high handed economic behavior by near monopolists to be met by entry of new competitors attracted by the generous terms of contracts in favor of the input suppliers. And that would likely occur if entry were possible. However, barriers to entry may be fairly high.

- One barrier is capital needed to mount the kind of research effort needed to maintain a product flow similar to that of the firms pressing for monopoly-like concentration levels. The capital needed is very substantial.

- Also, in the seed/chemical industry, existing patent and plant variety protection may mean that potential competitors are frozen out of competition as a practical matter for the duration of the patent or PVP certificates or the duration of a patent over processes by which genetic manipulation occurs.

Reform of contract practices. The great disparity in market power tends to lead to contracts with oppressive features (as viewed by the weaker party), retaliatory practices by the stronger party and vulnerability of the weaker party in terms of securing payment. The Producer Protection Act, which has been proposed and endorsed by 17 State Attorneys General, would take several steps as a matter of state law towards providing full information to the producer and lien protection to the producer to secure payment of amounts due and reducing the probabilities of economic retaliation in producer-processor contract relationships.

The proposed legislation contains six parts—

- Require contracts to be stated in plain language and disclose material risks;
- Provide contract producers with a right to review and a three-day cancellation period;
- Prohibit confidentiality clauses;
- Provide producers with a first priority lien for payments due under the contract;
- Prevent capricious or retaliatory termination of the contract; and
- Prevent retaliation against producers who participate in producer organizations.

Although the proposal has been criticized,¹⁰ the provisions all have precedent in other areas of the law, such as consumer protection legislation and trade regulation, and all are based on basic principles of fairness, full information and equity which are common throughout the law.¹¹

The Family Farmer Cooperative Marketing Amendments Act of 2001, which has been introduced in the U.S. House of Representatives, would address some of the same issues at the federal level.¹²

Position of small firms

A major issue is whether smaller input (and processing and handling) firms are likely to be able to compete. Certainly the small seed firms have remained surprisingly healthy in recent decades as performance traits of the varieties and hybrids developed by the larger firms have tended to outdistance the performance of seed marketed by small firms.

¹⁰ See Boehlje, Schrader, Hurt, Foster and Pritchett, “The Producer Protection Act—Will It Protect Producers?” 18 *Agric. Law Update* No. 2, pp. 4-6 (2001).

¹¹ See Harl, Stumo, McEowen, Heffernan and O’Brien, “The Producer Protection Act—Will It Protect Producers? A Rejoinder,” 18 *Agric. Law Update* No. 3, pp. 1-7 (2001).

¹² H.R. 230, 107th Cong., 1st Sess. (2001).

But the era of transgenic hybrids produces both the incentive to maintain greater control over high performing germ plasm and the technology and resources to challenge those who manage to obtain the germ plasm in clandestine ways. The larger firms may acquire some smaller firms to complete their distribution network and licensing germ plasm for a fee may well occur. However, it is unlikely that the dominant firms will generate additional competition by licensing to smaller firms.

Indeed, with the smaller firms predictably unable to maintain access to higher performing germ plasm, the price of lower performing seed varieties and hybrids is expected to reflect the economic disadvantage inherent in the lower performing varieties. At some point, many if not most of the smaller seed firms that are unaligned with the dominant firms will be unable to survive economically.

Antitrust surveillance

Another possible area of protection against a sharp tilt in the economic terms of contracts is vigilance by federal (or state) anti-trust agencies. Certainly the Federal Trade Commission and the U.S. Department of Justice should be sensitized to the potential for economic abuses down the road.

Further consolidation in any highly concentrated sector merits scrutiny under the Clayton Act rules that impose limits on mergers expected substantially to diminish competition. So-called horizontal mergers or mergers of competitors are the most likely to be challenged. Other areas of antitrust challenge involve production, including price fixing, agreements to divide markets and group economic boycotts. These are all per se offenses under federal antitrust law.

It's been well established for decades that firms with monopoly power over a product should not be able to "tie" other products to the transaction and extend the monopoly position.¹³ Such contracts are used to create "economic leverage" by using monopoly power in one market (the market for the tying good) to create monopoly power in a second market (the market for the tied good). Such arrangements, which involve tying products over which a firm does not have monopoly power (such as financing, insurance or risk management) to a product over which the firm does have monopoly power (such as a seed variety), are also illegal per se unless it can be demonstrated that the product in monopoly status wouldn't work as well with other firms' products. And, that is rarely the case.

Some economists have criticized the antitrust treatment of tying contracts as not leading to economic leverage in all instances.¹⁴

If the objective is to maintain significant levels of competition, FTC and the Department of Justice should scrutinize all agri-business mergers carefully for anti-competitive consequences from the standpoint of producers (as well as consumers) and all practices by companies in tying credit, insurance, risk management or other needed inputs to potential items. One problem in relying on FTC or the Department of Justice is that both agencies seem to believe that the agriculture is the last bastion of perfect competition and is competitive by a comfortable margin.

¹³ See generally Neale, *The Antitrust Laws of the United States of America* Ch. XI (2d ed. 1970).

¹⁴ See Warren, *Antitrust in Theory and Practice* 192-202 (1974).

The problem is not one of diminished competition among producers but among those who supply inputs and process or handle products from the producing subsector.

The approaches used by the Antitrust Division of the Department of Justice and by the Federal Trade Commission (FTC) in analyzing mergers have traditionally focused on the probable impact on consumers. That has been the principal concern of the antitrust system. For agriculture, however, the concern is the impact on *producers*—assuring producers competitive options. Consumers may ultimately be affected but that is down the road. That's why a different approach is needed in the evaluation of agribusiness mergers if there is a shared vision of maintaining a sector of independent entrepreneurs as producers. Unless that vision is articulated by the Congress and the Administration, the chances of meaningful actions by the antitrust system are slight.

Solutions

If sufficient public interest and political will are generated, three solutions seem to lie within the feasible set.

Antitrust oversight. First, aggressive antitrust oversight at the federal level (and among the states) is the traditional way for proposed mergers and alliances, tying contracts and other anti-competitive practices to be evaluated on the basis of potential anti-competitive effects. The objective should be to insure that all sectors and subsectors have equal, and low, economic power. Because of the importance of food and the policy significance of maintaining a healthy producing sector, it may be necessary for the Department of Justice to be funded specifically to maintain a substantially higher level of oversight over structural shifts in food and agriculture.

Collective action by farmers. One possible strategy for farmers is to forge alliances among producers (which is specifically allowed by federal law so long as it does not "unduly enhance" price).¹⁵ The push to achieve such countervailing power was the driving force behind the formation of labor unions a century ago. Historically, however, farmers have been unwilling to accept such a disciplined approach to achieving bargaining power.

Section 1 of the Capper-Volstead Act of 1922¹⁶ provides protection from antitrust challenge for producers who seek to bargain collectively with processors, handlers and input suppliers.¹⁷ The Capper-Volstead Act provides that "persons engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers, may act together in associations, corporate or otherwise, with or without capital stock, in collectively processing, preparing for market, handling, and marketing in interstate and foreign commerce, such products of persons so engaged."¹⁸ The Act goes on to allow "Associations [to] have

¹⁵ Capper-Volstead Act, 7 U.S.C. §§ 291, 292. See generally 14 Harl, *Agricultural Law* § 137.04 (2001).

¹⁶ 7 U.S.C. §§ 291, 292.

¹⁷ See generally 14 Harl, *Agricultural Law* § 137.04 (2001).

¹⁸ 7 U.S.C. § 291. See *Green v. Associated Milk Producers, Inc.*, 692 F.2d 1153 (8th Cir. 1982) (transportation of milk is handling activity protected by Capper-Volstead Act; employees of dairy cooperative acting within scope of their authority could not be guilty of conspiracy with cooperative because employees and cooperative are part of same entity; cooperative members and cooperative are considered one entity and incapable of conspiring with each other).

marketing agencies in common; and such associations and their members may make the necessary contracts and agreements to effect such purposes."¹⁹

To come within the protection of the Capper-Volstead Act, an organization must—(1) be operated for the mutual benefit of its members; (2) either limit each member to one vote regardless of the amount of stock or membership capital the member owns or, if dividends are paid on the basis of members' stock or membership capital, the dividends must be limited to a maximum of eight per cent per annum; (3) not handle a greater amount of products from nonmembers than from members; and (4) not be operated for profit.²⁰

The grant of immunity from antitrust challenge was further limited by a provision that if the Secretary of Agriculture finds that an association "monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price of any agricultural product is unduly enhanced thereby he shall issue...an order...directing such association to cease and desist from monopolization and restraint of trade."²¹

The key question is whether producers will be willing to sacrifice independence of action in order to bargain collectively for access to inputs and for greater market power in marketing their products. The most likely avenue for such collective action is through organizations specifically created for that purpose.

The time may be near when that will be the only practical alternative to vulnerability and serfdom.

A level playing field. The provisions in the Producer Protection Act, proposed by 17 State Attorneys General, would constitute a modest first step toward leveling the field of contracting. Indeed, serious consideration should be given to adding such provisions to federal antitrust law.

More germ plasm in the public domain. Another potential solution for concentration in seed supply is for the public to increase its support for crop breeding by land-grant universities and other public agencies with transgenic hybrids and varieties made available to smaller seed companies. This would restore the land grant universities to the role played before the advent of genetic manipulation and the dramatic increase in private sector funding for new varieties and hybrids to the extent that public funds are used, however, the results should be in the public domain.

To a considerable extent, this possible outcome is dependent upon the perception in state legislatures and the Congress as to the public interest, long-term, in maintaining a greater degree of competition in seed supply. Legislative bodies are more likely to respond if convinced that dominance of seed supply by a few large firms, worldwide, could affect food costs by influencing the supply of food through contractual mechanisms.

¹⁹ 7 U.S.C. § 291.

²⁰ *Id.*

²¹ 7 U.S.C. § 292.

Role of institutions

Arguably what is likely to emerge over the next few years is a heightened awareness of the efficacy of institutions in limiting or constraining economic activity. To the extent that institutional intervention is successful, a major concern is how to keep institutions in adjustment with changing economic circumstances. Markets reflect changes day by day, minute by minute. Yet, institutions tend to remain in place, frequently producing economic rents for some, until sufficient momentum is generated to effect change. To a considerable degree, institutions limit (as well as facilitate) market operations but without the same self-adjusting features as markets.