

Economic Impact and Impacts of Continuing to Proceed as We Are Now⁺

³/₄ by Neil E. Harl^{*}

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 have contributed 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

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- A system of market protection (or antitrust) to penalize collusion and to prevent undue concentration of economic power.

The era of contract agriculture. The signs of increasing use of contracts are commonplace—especially on the production side of agriculture.¹ 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.²

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 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, suggest 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, 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

¹ 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.

² 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 of interest).

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.³ In addition to the federal Plant Variety Protection Act (PVPA),⁴ the Plant Patent Act of 1930⁵ and simply shrouding research efforts with secrecy, the ability to patent life forms provides a powerful tool to keep competitors at bay. On December 10, 2001, the U.S. Supreme Court examined the scope of plant patenting⁶ and held, in a 6-2 decision, that the intellectual property in seeds for new plants developed through genetic engineering or other breeding techniques could be protected under federal patent law. The court held that the Plant Patent Act of 1930⁷ and the Plant Variety Protection Act of 1970⁸ were not the exclusive means to protect intellectual property rights in seeds. The court ruled that seeds could be patented under general utility patent law which does not have a “saved seed” exemption and no research exemption.

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

Recent research by Hendrickson and Heffernan⁹ indicates that the top four firms have 60 percent of terminal grain handling, 80 percent of soybean crushing and 61 percent of flour milling. The top three firms control 81 percent of corn exports and 65 percent of soybean exports. Cargill and ADM are in the group for all five categories of concentration.

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

³ *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (bacterium having unique genetic characteristics is patentable subject matter under the general patent statute).

⁴ Pub. L. No. 91-577, 84 Stat. 1542 (1970), 7 U.S.C. §§ 2321-2581. See generally 12 Harl, *Agricultural Law*, Ch. 110 (2002).

⁵ Pub. L. No. 71-248, 46 Stat. 376 (1930); 35 U.S.C. §§ 161-164.

⁶ *J.E.M. Ag Supply v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001).

⁷ See note 5 *supra*.

⁸ See note 4 *supra*.

⁹ University of Missouri-Columbia.

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 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 show 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)

<u>Year</u>	<u>Cattle</u>	<u>Steer & Heifers</u>	<u>Cows/Bulls</u>	<u>Hogs</u>
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
2000	69	82	32	56

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

As is well known, in addition to pressure on suppliers, monopoly generally leads to prices higher than competitive levels plus the use of technologies that are less efficient than could have been used.¹⁰

As a group of Purdue agricultural economists has stated, “We see evidence of increased concentration to the point where public vigilance is warranted. Concentration indices are high and may be reaching the point where markdown pricing on hogs will be significant and place producers at a clear disadvantage.... Two major policy options are anti-trust activity on the one hand and increasing the market power of hog producers on the other.”¹¹

In short, whoever controls the limiting factor or controls the “hold-up” points in any process is in a position to exert influence over the entire process and, if the level of concentration

¹⁰ See, e.g., Holmes and Schmitz, “Competition at Work: Railroads vs. Monopoly in the U.S. Shipping Industry,” *Quarterly Review*, Federal Reserve Bank of Minneapolis, Vol. 25, No. 2, Spring, 2001, pp. 3-27.

¹¹ Paarlberg, Boehlje, Foster, Doering and Tyner, “Structural Change and Market Performance in Agriculture: Critical Issues and Concerns About Concentration in the Pork Industry,” Staff Paper #99-14, Purdue University, October 1999, submitted as testimony to the U.S. House of Representatives, Committee on the Judiciary, October 20, 1999.

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.

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,¹² 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.¹³

The Family Farmer Cooperative Marketing Amendments Act of 2001, which was introduced in the U.S. House of Representatives, would have addressed some of the same issues at the federal level.¹⁴

The 2002 farm bill (The Farm Security and Rural Investment Act of 2002)¹⁵ contains a section dealing with confidentiality provisions in contracts for the production of livestock or poultry or in any marketing agreement with a term of one year or more.¹⁶ The 2002 Act also includes “swine contractors” as a covered entity under the Packers and Stockyards Act of 1921.¹⁷

Position of small firms

A major issue is whether smaller input (and processing and handling) firms are likely to be able to compete. Certainly some of the small seed firms have survived 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. In most cases, the small firms have survived by becoming licensees of the giant firms or by becoming part of their marketing arm.

¹² 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).

¹³ 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).

¹⁴ H.R. 230, 107th Cong., 1st Sess. (2001).

¹⁵ Pub. L. No. 107-171, 107th Cong., 2d Sess. (2002).

¹⁶ *Id.*, Act § 10503.

¹⁷ *Id.*, Act § 10502, amending Sec. 2(a) of the Packers and Stockyards Act of 1921, 7 U.S.C. § 182(a).

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.

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 significant 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.

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.¹⁸ 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.¹⁹

¹⁸ See generally Neale, *The Antitrust Laws of the United States of America* Ch. XI (2d ed. 1970).

¹⁹ See Warren, *Antitrust in Theory and Practice* 192-202 (1974).

If the objective is to maintain significant levels of competition, FTC and the Department of Justice should scrutinize all agribusiness 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. 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.

Another competitive concern is discrimination in distribution of inputs. As an example, one major seed company provides up to a 21 percent discount for volume purchases. Legislation adopted in 1914 and amended in 1936 (the Robinson-Patman Act) outlaws the practice of price discrimination. Under that provision, it is unlawful for any “person” engaged in commerce, either directly or indirectly, to discriminate in price between different purchasers of commodities of like grade and quality where the effect of the discrimination “may be” to substantially lessen competition or tend to create a monopoly in any line of commerce or to injure, destroy or prevent competition with any person.²⁰ Exceptions are provided where differential prices are cost justified or used in good faith to meet an equally low price of a competitor.²¹

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.

Ending packer ownership of livestock. A necessary step, if agriculture is to be comprised of a sector of independent entrepreneurs, is to ban packer ownership of livestock. An effort was

²⁰ Robinson-Patman Act, § 2(a), amending Clayton Act of 1914.

²¹ *Id.*, § 2(b).

made, in the 2002 farm bill, to legislate such a ban in the form of the Johnson Amendment (Amendment No. 2534)²² included in S. 1731, the Senate-passed farm bill. The statute, with the amendment, would have read as follows—

It shall be unlawful for any packer with respect to livestock, meats, meat food products, or livestock products in unmanufactured form, or for any live poultry dealer with respect to live poultry, to:

(f) Own, feed, or control livestock directly, through a subsidiary or through an arrangement that gives the packer operational, managerial, or supervisory control over the livestock, or over the farming operation that produces the livestock, to such an extent that the producer is no longer materially participating in the management of the operation with respect to the production of livestock, except that this subsection shall not apply to—

(1) an arrangement entered into within 14 days before slaughter of the livestock by a packer, or a person that directly or indirectly controls, or is controlled by or under common control with, the packer;

(2) a cooperative or entity owned by a cooperative, if a majority of the ownership interest in the cooperative is held by active cooperative members that—

(A) own, feed, or control livestock; and

(B) provide the livestock to the cooperative for slaughter; or

(3) a packer that is owned or controlled by producers of a type of livestock, if during a calendar year the packer slaughters less than 2 percent of the head of that type of livestock slaughtered in the United States....²³

That amendment would have made it unlawful for a meat packer to own or control livestock intended for slaughter for more than 14 days prior to slaughter. Cooperatives or entities owned by them would have been exempt if a majority of the ownership interest in the cooperative was held by members who own, feed or control livestock that they provide to the cooperative for slaughter. Also, the amendment would have exempted packers slaughtering less than two percent of each species of livestock annually. Under the amendment, arrangements would not be illegal if the producer materially participated in the management of the operation with respect to the production of livestock.

The bill introduced in 2003 (S. 27) is the same as the 2002 version except that—(1) the time the packer is allowed to own livestock prior to slaughter has been reduced from 14 to 7 (plus weekend) days; and (2) the size limitation (below which the legislation would not apply) is made consistent with the Mandatory Price Reporting legislation (125,000 annual cattle slaughter, 100,000 hogs per year).

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²² The provision would have amended the Packers and Stockyards Act of 1921, 7 U.S.C. § 192. See generally, McEowen, Carstensen and Harl, “The 2002 Senate Farm Bill: The Ban on Packer Ownership of Livestock,” 7 *Drake J. of Agr. Law* 267 (2002).

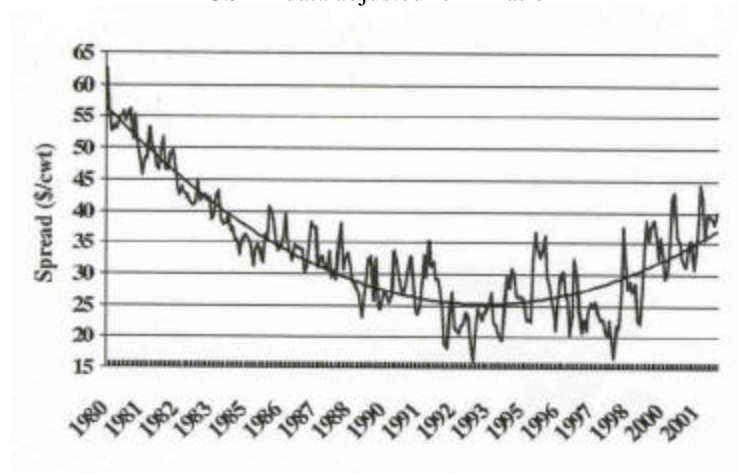
²³ S. 1371, 107th Cong., 2d Sess. (2002).

made consistent with the Mandatory Price Reporting legislation (125,000 annual cattle slaughter, 100,000 hogs per year).

A compelling reason for taking action to ban packer ownership of livestock is the behavior of the farm-to-wholesale price spreads in beef. In a competitive market, the farm-to-wholesale price spread should decline as per-unit slaughter costs decrease. Figure 1 (page 11) shows that was, indeed, the case through the mid-1990s. However, since the mid-1990s, the F-W price spread has trended strongly upward. This trend is inconsistent with what would be expected in a competitive market. This is confirmed by the higher profit levels being reported by the dominant firms in meat packing in recent years.

It is noted that Iowa has long had a ban on a processor of beef or pork “to own, control or operate a feedlot in Iowa in which hogs or cattle are fed for slaughter.”²⁴ Minnesota²⁵ and Nebraska²⁶ (as well as South Dakota²⁷) impose similar limitations.

Figure 1. Farm-to-Wholesale Price Spread for Beef
USDA data adjusted for inflation



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).²⁸ 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 1922²⁹ provides protection from antitrust challenge for producers who seek to bargain collectively with processors, handlers and input suppliers.³⁰ The Capper-Volstead Act provides that “persons engaged in the production of

²⁴ Iowa Code § 9H.2 (2001).

²⁵ Minn. Stat. § 500.24(3) (2001) (livestock feeding considered to be farming and thus covered by corporate farming statute).

²⁶ Neb. Rev. Stat. § 54-2602.

²⁷ S.D. Const. Art. XVII, §§ 21-24.

²⁸ Capper-Volstead Act, 7 U.S.C. §§ 291, 292. See generally 14 Harl, *Agricultural Law* § 137.04 (2002).

²⁹ 7 U.S.C. §§ 291, 292.

³⁰ See generally 14 Harl, *Agricultural Law* § 137.04 (2002).

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.”³¹ The Act goes on to allow “Associations [to] have marketing agencies in common; and such associations and their members may make the necessary contracts and agreements to effect such purposes.”³²

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 percent per annum; (3) not handle a greater amount of products from nonmembers than from members; and (4) not be operated for profit.³³

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.”³⁴

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.

Need for enabling legislation. It is unlikely that countervailing power can be achieved in one grand move to get large numbers of producers to bargain collectively for inputs and for the sale of commodities. Rather, greater market power is likely to be achieved, if at all, by bargaining groups of relatively modest size and comprised of producers committed to collective marketing and committed to producing commodities at a quality level desired by processors and on a schedule consistent with the purchaser’s capacity.

To facilitate the formation and operation of such collective marketing (and input supply) groups, enabling legislation at the state (or federal) level is needed to assure that—(1) agribusiness firms would be required to bargain in good faith; (2) would assure that recriminatory behavior would not be allowed by agribusiness firms; (3) members of the unit

³¹ 7 U.S.C. § 291. See *Green v. Associated Milk Producers, Inc.*, 692 F.2d 1158 (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).

³² 7 U.S.C. § 291.

³³ *Id.*

³⁴ 7 U.S.C. § 292.

would be required to be producers (to bring the group within the exemption from antitrust strictures found in the Capper-Volstead Act)..

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. *However, it should be made crystal clear that germ plasm from public funds should go into the public domain and not be channeled to the giant transgenic seed producers on a basis of exclusivity.* 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.

The future of biotechnology

As noted earlier, the ownership of germplasm through the patenting of life forms, including seed, is an important factor in the structure of agriculture. The recent approval by the Secretary of Agriculture to move forward with commercializing of the so-called “terminator” technology could have a significant impact on the structure of the agricultural sector within three to five years.

The controversy over genetic modification of crops is expected to be resolved on the basis of three economic relationships—(1) the demand for GMO and non-GMO crops; (2) the supply of GMO and non-GMO crops; and (3) the costs for maintaining a two-track or multiple-track production, marketing and handling system and who bears those costs.

Demand for GMO and non-GMO crops

The demand for GMO and non-GMO crops promises to be highly important to the future of agricultural biotechnology. That factor is squarely in the hands of consumers, worldwide, and in the hands of processors which continually endeavor to anticipate consumer demand.

Arguably, the labeling of foodstuffs as to the GMO status of ingredients will make more precise the demands of consumers. As noted earlier, consumers will ultimately get what they want. On May 3, the U.S. Food and Drug Administration closed a comment period to ascertain if the public wants genetically food labeled as such.

Some see in the estimated 20 percent per year growth in the organic food market in recent years (estimated to total close to a \$10 billion market in a March, 2001, report by Solomon Smith Barney) evidence that, absent labeling, consumers will seek organically grown foods. Regulations under the National Organic Standard Program, authorized in the 1990 farm bill, were recently finalized, reviewed by Congress and became law on April 21. The regulations, which become effective October 21, 2002, increase the minimum percentage of organic ingredients in products labeled “Made With Organic Ingredients” and impose limits on genetically modified foodstuffs in certified organic foods.

On April 5, 2001, the *Wall Street Journal* published a study of genetically modified foods. Twenty food products labeled as “non-GMO” or “GMO-free” were tested by a prominent food laboratory on behalf of the *Journal*. Of the 20, 16 contained evidence of genetic material used to modify plants. As the *Journal* article stated, “the problem, regulators say, is that some genetically modified crops—which have been designed to resist disease, pests and chemicals—can cross-pollinate freely with regular crops, passing along their altered traits to the next generation.”

Supply of GMO and non-GMO crops

The supply of GMO crops and non-GMO crops, the second critical economic variable in the future of agricultural biotechnology, is squarely in the hands of producers, worldwide, as producers make decisions about seed selection each year.

Notwithstanding the rapid adoption of corn resistant to the European Corn Borer and crops resistant to potent herbicides, the evidence is clear that, in the long-run, producers rarely benefit from new technologies and often suffer economically from their adoption.

As has been known for several decades, only early adopters benefit economically from output increasing technology—such as fertilizers, chemicals and better seed, such as Bt corn. That’s the type of corn that creates a substance toxic to the European Corn Borer so the technology increases yields.

Why do farmers not benefit from output increasing technology? With inelastic demand for most agricultural products, increases in output in the aggregate reward producers with a disproportionate drop in price and in profitability (although the farm program has shifted part of that cost to taxpayers). That outcome has been known and documented for decades. Farmers have been on a treadmill. They have to adopt technology to be competitive but they are rewarded by lower prices and profits if they do.

Even cost decreasing technologies, such as Roundup Ready Soybeans, are ultimately output increasing as such technology enables crops to be grown in areas where production would be uneconomic were costs higher. Thus, cost decreasing technology, also, ultimately leads to an increase in output which means a disproportionate drop in price and in profitability for the producer.

In recent years, the pace of adoption of new technology has been so swift both here and abroad as to leave little benefit for producers, even for early adopters.

The stream of output increasing and cost-decreasing technology has been a major reason why producers, particularly crop farmers, have been under economic pressure much of the time over the past 70 years.

The cost of maintaining segregated crop supplies

A major problem faced by the U.S. and other producers of genetically modified crops on a widespread basis is the feasibility and cost of a two track or multi-track marketing and handling system. For crops that are particularly susceptible to gene flow (such as corn because of pollen drift), the tolerance level (amount of GMO germ plasm in non-GMO crops) is critically important. Contamination can occur from several sources—(1) contamination of GMO germ plasm in non-GMO seed coming from the seed companies; (2) pollen drift in the field; (3) physical contamination in planter boxes, combines, augers, elevators, wagons and bins on the farm; and (4) physical contamination at the elevator or other handler of the commodity after it leaves the farm. Research indicates that the cost of segregation rises exponentially as the tolerance level is reduced.

The experience with StarLink™ corn in 2000 illustrates how widely unacceptable supplies of crops can become diffused throughout the food system. In that case, StarLink™ was approved for feed use but not for food use by the Environmental Protection Agency. As the terms of the registration stated, “none of the seeds, plants or plant materials in the StarLink™ plot, or within 660 feet of the field, may be used for food uses or may enter international commerce.” EPA was concerned that the CRY9C protein in StarLink™ possessed qualities that could cause allergic reactions in humans (although the Centers for Disease Control and Prevention, in mid-June 2001, announced that it was unable to conclude that reported illnesses were the result of the StarLink™ corn). After traces of the protein were found in various food products, starting with taco shells, an effort was made to locate and dispose of supplies of the StarLink™ corn from the 2000 (and earlier) crops.

Unfortunately, not all producers acquiring StarLink™ seed were advised of the limitation on use and disposition of the crop. The 11 licensees of the seed from Aventis Crop Science were the actual sellers of the StarLink™ seed and apparently, in some instances, did not advise producers of the limited registration and the possible consequences if other corn was contaminated with the StarLink™ germ plasm. Therefore, contamination occurred inadvertently at planting and harvest, pollen drift produced gene flow into non-StarLink™ fields and the StarLink™ crop was commingled with other corn in on-farm storage and at elevators. While the number of acres planted to StarLink™ totaled only 340,908, the number of bushels containing the StarLink™ protein was several times the production from those acres actually planted with StarLink™ seed.

EPA cancelled the registration on October 12, 2000. Aventis Crop Science moved quickly to isolate the corn containing StarLink™ and offered producers 25 cents per bushel premium over the October 2, 2000, market price for corn; agreed to compensate growers producing corn within 660 feet of StarLink™ corn with the same price premium; assured elevators that the company would pay elevators for “additional transportation, demurrage and testing costs incurred by a grain elevator because of commingled corn;” and agreed to “work

with” elevators to address problems related to discounts in value of StarLink™ contaminated corn.

Even with the aggressive efforts by Aventis Crop Science, augmented by pressure from state Attorneys General in several states, but particularly in Iowa and Missouri, the StarLink™ crop promised to continue to flow through the food chain for several months. The announcement by the Centers for Disease Control that StarLink™ was not the cause of allergic reactions may allay some of the concerns.

In late winter, 2000-2001, the U.S. Department of Agriculture asked 280 seed companies to test their seed supplies for traces of the StarLink™ protein and offered to purchase the seed supplies failing the test. Some lots were found to contain StarLink™ and USDA reportedly set aside \$20 million to purchase that seed. However, about one-fourth of the seed companies did not respond. The possibility is that part of the 2001 corn crop was planted with seed containing StarLink™ germ plasm.

This highlights a shortcoming of the oversight process over foodstuffs in the United States. The federal government lacks recall authority, on a mandatory basis, over commodities or other food ingredients. This lack of authority is especially notable if—(1) the crop is visually indistinguishable (which it was) and (2) there is a perception of value on the part of the producer.

The StarLink™ controversy focused attention on civil liability in such situations.

- A commercializing company or licensee that fails adequately to warn producers of limits on the production or marketing of the resulting crop could be liable to growers who suffer damages. Licensing agreements would presumably address problems of liability in this area.
- A producer who knowingly ignores limits on registration could be liable for damages suffered by owners of neighboring fields to which pollen drifts (for those crops susceptible to pollen drift).
- A producer who delivers a crop contaminated with unacceptable germ plasm could be liable to the elevator for damages suffered. Farmers who are deemed to be “merchants” under the Uniform Commercial Code are subject to—(1) express warranties made orally or in writing about the crop; (2) implied warranties of merchantability about the crop passing without objection in the trade; and (3) implied warranties of fitness that the crop is fit for the purpose for which it is to be used, if known to the seller.
- Firms processing, manufacturing and distributing food products could complain of damages to those who sold them ingredients unsuitable for use, presumably elevators and grain handlers and shippers. Claims could include actual damages from product recalls, increased handling and manufacturing costs and damages to brand identities and reputations.
- Consumers who suffer damages could have a claim against food suppliers and manufacturers if injury can be established and if damages can be proved.

- Finally, producers may have a claim, against the commercializing company or companies, if it can be proved that the offensive germ plasm resulted in a discount for the crop generally in the country. Several class action lawsuits have been filed in the United States alleging that corn producers in general were damaged by the StarLink™ episode even though there was no contamination of their crop by the CRY9C protein. In the first of these cases, on July 11, 2002, *In re StarLink Corn Products Liability Litigation*, the federal district court for the Northern District of Illinois dismissed the claims related to labeling but did not dismiss allegations relating to public and private nuisance, negligence and possible violation of the Tennessee Consumer Protection Act.

Possible outcomes

The development and production of transgenic crops is known to be a costly process. The process can only be supported, economically, if there is a robust revenue stream from sales of resulting products.

If consumer resistance stabilizes or wanes, the three economic relationships are likely to produce—(1) niche markets for non-GMO crops, in part on a country-by-country basis where gene flow from pollen drift and from mechanical contamination can be rather easily controlled; (2) a modest premium for non-GMO crops (sufficient to produce the supply to serve that market); and (3) disputes over trade rules imposed by countries which restrict GMO seed and commodities as to whether such rules constitute barriers to trade.

In the event consumer resistance increases, the countries with high rates of GMO plantings will be confronted with the choice of—(1) relinquishing the non-GMO market to other countries; (2) gearing up for simultaneous production of GMO and non-GMO crops (and maintaining acceptable levels of segregation of the crops); or (3) reducing GMO plantings. The outcome is almost certain to be resolved on an economic basis, in light of the three basic economic relationships outlined earlier. Any one of the three outcomes is likely to produce a reduced revenue flow to the commercializing companies.

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.

Conclusion

More than a century ago, the United States rejected the idea of unfettered economic activity by firms in highly concentrated industries. The wisdom of that conclusion has never been more clear and the need for aggressive implementation of that philosophy has never been more obvious.

To assure competition, the lifeblood of our economic system, it is vital that steps be taken now to increase competition in all areas where high levels of concentration exist and particularly in areas where high levels of concentration exist in tandem with efforts to integrate vertically the production and processing functions from the top down. The trend toward demolishing free, open, transparent and competitive markets as the even-handed referee in those markets must be halted if farmers and ranchers are to exist as independent entrepreneurs rather than as serfs.