
The New U.S. Meat Industry

By Alan Barkema, Mark Drabentott, and Nancy Novack

A new meat industry is rapidly emerging in the United States, as food retailers, meat processors, and farms and ranches coalesce into fewer and larger businesses. The industry's rapid consolidation in recent years has triggered alarms that the industry's new giants in retailing and processing could drive up food prices for consumers and drive down livestock prices for producers. How should public policy respond to the industry's consolidation? And how can all participants in the industry—producers, processors, retailers, and consumers—benefit from its new structure?

This article studies the striking changes in the meat industry in three steps. First it describes how the industry is changing. Then it examines the forces driving the industry's consolidation. Finally, it considers how consumers and industry participants are affected. While current evidence is scant that market power has hurt either consumers or producers, the industry's rapid consolidation nevertheless warrants vigilance. At the same time, public policy might also play a role in ensuring that all participants in the market benefit from its new structure.

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I. HOW IS THE MEAT INDUSTRY CHANGING?

A wave of consolidation is sweeping the U.S. meat industry. The trend is a relatively new phenomenon in food retailing but well advanced in meat processing and livestock production. The result is an industry of fewer and larger businesses. At the same time, a new supply chain structure is emerging in the industry, bypassing traditional market arrangements to forge tighter linkages among farms and ranches, meat processors, food retailers, and the consumers they serve.

Consolidation in food retailing

The wave of consolidation that began in the retail grocery industry in the 1990s was spurred by two key events. First, a handful of large grocery stores merged or acquired other stores, spawning several major grocery chains. As these chains grew, they soon spread into other regions of the country. Second, large general merchandise stores and warehouse clubs appeared on the retailing scene. Wal-Mart, for example, joined the ranks as one of the nation's top grocery retailers in the mid-1990s, and by yearend 2000 its Supercenter division had become the nation's top grocery retailer.

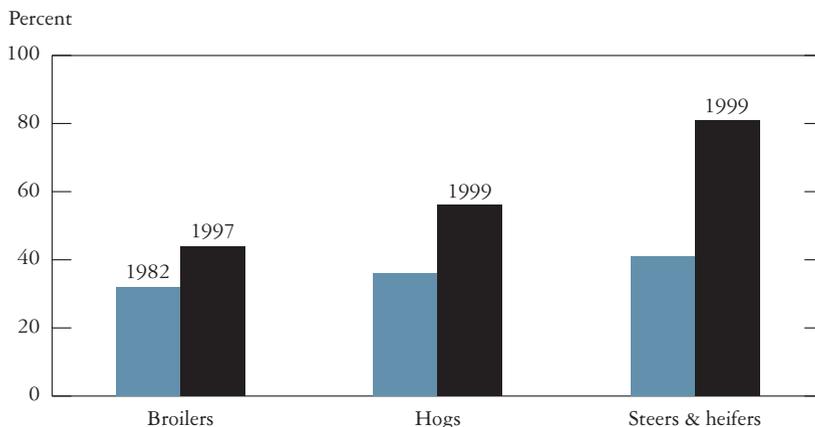
As a result of these megamergers and the emergence of other large new retailers, the large retail grocers have quickly gained customers at the expense of the smaller ones. From the mid-1990s to 2000, the market share held by the nation's top four food retailers—the four-firm concentration ratio (CR_4)—soared from 17 percent to 34 percent. Consolidation in metro areas has become even greater. The average CR_4 among grocers in the nation's 100 largest cities reached nearly 72 percent in 1998 (Kaufman).

Consolidation in meat processing

Unlike the food retailing industry, where consolidation is fairly new, the meat processing industry began its trend to fewer but larger processors more than a half century ago. Some consolidation occurred among poultry processing plants in the 1950s, but rapid gains in poultry consumption has supported an almost steady number of poultry plants

Chart 1

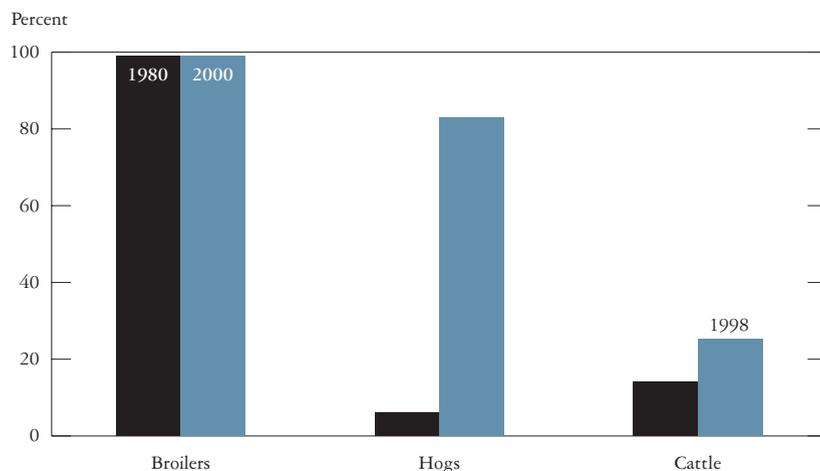
MARKET SHARE OF TOP FOUR PROCESSING FIRMS



Source: USDA

since the 1960s (MacDonald, Madison, and Ollinger). In contrast, a much more rapid consolidation has recently swept beef and pork processing. Since 1980, the number of slaughter plants has plunged from more than 600 to about 170 for cattle and from more than 500 to about 180 for hogs. The number of meat processing firms has also dwindled rapidly, boosting the market share held by the industry's largest players, especially among beef processors (Chart 1).

The rapid consolidation has vaulted the beef processing industry into "highly concentrated" status, the highest rank in the classification scheme the U.S. Department of Justice uses in its antitrust oversight. The pork processing industry ranks "moderately concentrated." The Justice Department uses the Herfindahl-Hirschmann Index (HHI) to measure market consolidation, a gauge that is more comprehensive than the CR₄. The HHI is calculated by summing the squared market shares of all firms in a market. Industries with an HHI below 1000 are classified as unconcentrated, while an HHI between 1000 and 1800 is moderately concentrated, and an HHI above 1800 is highly concentrated. In 1998, the HHI was 1936 for beef processing and 1036 for pork processing.

*Chart 2***LIVESTOCK PRODUCTION IN SUPPLY CHAINS**

Sources: USDA and University of Missouri

Consolidation in production

Like most of production agriculture, the long-standing trend in livestock production has been toward fewer and larger farms and ranches. But more recently, a new trend has emerged in the industry. A growing share of livestock producers are joining “supply chains”—tightly orchestrated production, processing, and marketing arrangements stretching from genetics to grocery. Supply chains by-pass traditional commodity markets and rely on contractual arrangements among the chain participants to manage the transformation of livestock on the farm to meat in the cooler (Barkema).

The poultry industry pioneered the supply chain structure nearly a half century ago, and today nearly all the nation’s broilers are produced in supply chain arrangements (Chart 2). In recent years, hog production has rapidly followed the poultry industry’s lead. Since the early 1980s, the number of hog farms in the nation has plunged from nearly 500,000 to only 85,000. And following its striking consolidation, hog production has also shifted rapidly into supply chains (Barkema and Cook). A recent survey by researchers at the University of Missouri

found that the share of hogs sold to processors under some type of contractual arrangement climbed above 80 percent in January 2001, up from about 65 percent in 1999 (Doanes Agricultural Report).

Consolidation has been slower to take hold in cattle production, perhaps due to a structure that includes two disparate segments, feeder cattle production and cattle feeding. Farms and ranches that produce feeder cattle vary widely in size, ranging from many small “lifestyle” farms to huge commercial ranches, and relatively little consolidation has occurred in this segment of the industry.

In contrast, the consolidation trend is strong in cattle feeding. In 1980, feedlots with capacities of greater than 32,000 head of cattle accounted for less than a third of the cattle marketed in the nation’s leading cattle feeding states. By 2000, that share had climbed to almost half. And while supply chains are much less prevalent in cattle feeding than in poultry and hog production, the trend is gaining ground. The share of cattle marketed under supply chains doubled from about 10 percent in 1980 to more than 20 percent in 1998.

II. WHY IS THE MEAT INDUSTRY CHANGING?

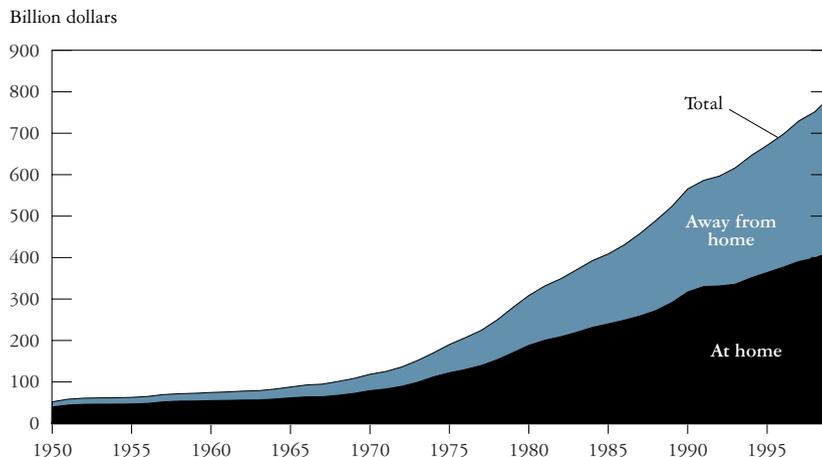
Two powerful economic forces are at the root of the meat industry’s transformation to a more compact structure: food demand and technology. Consumer food demand is shifting toward food products that are easy to prepare while also promising safe eating, improved nutrition, and greater consistency. The food industry’s efforts to fulfill consumers’ changing food needs have shifted competitive balances among food companies, triggering broad efforts to maintain or gain a competitive edge by trimming costs. The result is a sweeping trend toward consolidation in food retailing, meat processing, and livestock production.

Food retailing

Two trends stand out in retail food sales in recent decades. First, the U.S. food market is notoriously slow growing, with food spending rising more slowly than consumer incomes. As a result, the share of disposable income spent on food has declined steadily from nearly 14 percent in 1970 to less than 11 percent more recently.

Chart 3

CONSUMER SPENDING ON FOOD



Sources: Economic Research Service, USDA

Second, consumers are eagerly buying more conveniently prepared food products of consistent quality, despite the sluggish growth of overall food spending. The share of food expenditures that pays for processing, packaging, and transportation is climbing, while the share that pays for raw farm commodities is falling, down from nearly a third in 1970 to just a fifth in 1999.¹ And nearly 40 percent of the consumer's food dollar is spent in restaurants and other eating establishments—the ultimate in food preparation convenience and consistent dining quality (Chart 3).²

Demographic factors account for much of consumers' new penchant for dining convenience. A telling indicator is the increased participation of women in the American work force, which climbed from less than half in 1970 to nearly two-thirds more recently. As a result, household incomes have climbed and household schedules have tightened. Thus, consumers prefer more conveniently prepared food products, trading a portion of their bigger disposable incomes for scarce discretionary household time.³

With consumers seeking more convenient dining options, traditional food retailers are locked in a competitive battle with restaurants and other food service establishments, boosting their offerings of prepared or ready-to-eat foods. Such selections were sparse a decade or two ago, but by the late 1990s more than 80 percent of the nation's supermarkets sold prepared foods, including sandwiches, pizza, or pasta dishes (Kaufman). Some industry observers indicate an especially promising development area for new products is the "convenient meal solutions" category that provides consumers timesaving approaches to meal preparation (The Food Institute Report). As a result, the number of new food products each year soared to nearly 17,000 in 1995 before tapering off more recently.

While scrambling to meet competition from food service providers, food retailers also face new competition from Wal-Mart and other mass merchandisers. An important factor that makes the mass merchandisers such potent competition is the cost savings they reap by applying advances in information technology to distribution systems and inventory control. Supermarkets and other traditional food retailers aim to keep pace with their efficient new competitors by developing similar efficiencies in inventory management and distribution systems. One such strategy is called Efficient Consumer Response (ECR), which aims to improve the flow of products between food manufacturers and retailers. The ultimate objective is to ensure that "items will reach the shelf just before the consumer arrives to make a purchase" (Larson).

A parallel strategy focuses on merging into larger operations to capture economies of size.⁴ Economies of size in food distribution arise from the ability of big retailers to work directly with food manufacturers in three areas. First, big retailers can share scanner data from checkout lines with manufacturers to target shelf space for high-volume, high-margin products. Second, big retailers can also negotiate volume discounts on product prices in exchange for exclusive supplier arrangements, which might also ensure a more reliable supply of key food products. And third, big retailers can work with manufacturers to streamline distribution systems, enabling product delivery directly from food plant to retail shelf.

Meat processing

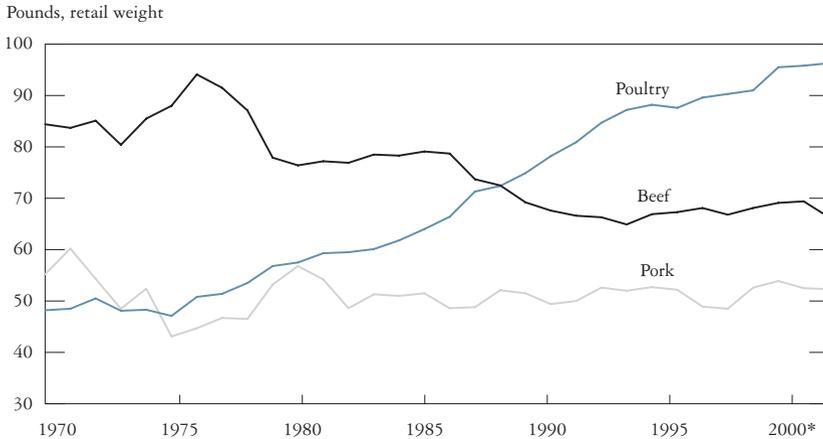
As in food retailing, shifts in consumer demand and efforts to trim costs are driving consolidation in the meat processing industry. Both factors drove the poultry business to a tightly consolidated structure in the mid-1990s. At the same time, the poultry industry's success in the retail marketplace triggered additional competition for the beef and pork industries.

The poultry industry was the clear leader in developing products that promised consumers both nutrition and convenience at attractive prices and in shifting to a "conception to consumer" supply chain structure that ensured consistent, high quality of its new consumer-oriented poultry products (Barkema, Drabentstott, and Welch). These efforts paid off with a surge in poultry's share of the market, largely at the expense of the beef industry. During the past two decades, total per capita consumption of beef, pork, and poultry edged up about 20 pounds per year (Chart 4). But all of the gain was due to a surge in per capita poultry consumption, while beef consumption fell and pork consumption remained flat.⁵

With increased competition from poultry, profit margins in the beef and pork processing industries tightened. Some estimates suggest retail beef prices were about 50 percent lower in 1999 than if demand for beef had been as strong as in 1980 (Schroeder and others). These conditions encouraged a more rapid cost-saving consolidation, especially in beef processing. Economies of size played a key role in generating cost savings, with tight profit margins weeding out small, high-cost plants and focusing expansion on newer and larger, low-cost plants owned by fewer processing companies.⁶

The most recent evidence documenting economies of size in meat processing dates from the late 1980s and early 1990s. For example, a mid-1980s study found that combined cattle slaughtering and fabrication costs were about a fourth lower in 700,000-head-per-year plants than in 300,000-head-per-year plants (Ward 1988). A more recent study by the U.S. Department of Agriculture corroborated this work and found that slaughter and fabrication costs were about 30 percent lower in 1,100,000-head-per-year plants than in 300,000-head-per-year plants (MacDonald and others).⁷ The authors also noted that the big

Chart 4
PER CAPITA MEAT CONSUMPTION



*Projected

Source: USDA

plants' cost advantage fell to only 3 to 4 percent when the calculation included the cost of cattle procurement, which accounts for more than 80 percent of total operating costs. Still, the big plants' cost advantage was sufficient to encourage consolidation into larger plants, because overall profit margins were generally very thin.

The authors also noted that the big plants' cost advantage had grown steadily during the preceding 25 years. In the 1960s, labor costs were higher in big plants than in small plants. But big plant labor costs fell sharply in the 1980s, as the plants shifted away from a heavily unionized labor force to an increased reliance on lower wage workers, many of them recent immigrants.

The authors found a similar trend in hog processing plants, with slaughter costs (not counting hog procurement) in the biggest plants—those slaughtering 4 million head per year—about 25 percent lower than in 1-million-head-per-year plants. As for cattle plants, including livestock procurement costs in the calculation shrank the large plant advantage to only 3 to 4 percent.

Livestock production

Unlike the strong interest in factors underlying consolidation in meat processing, relatively few comparable studies exist of economies of size in livestock production. As in retailing and processing, however, most evidence suggests that economies of size are driving production onto larger and fewer farms and feedlots. At the same time, the pursuit of product quality is spurring hog and cattle production into supply chains, following the path blazed by the poultry industry a half century ago.

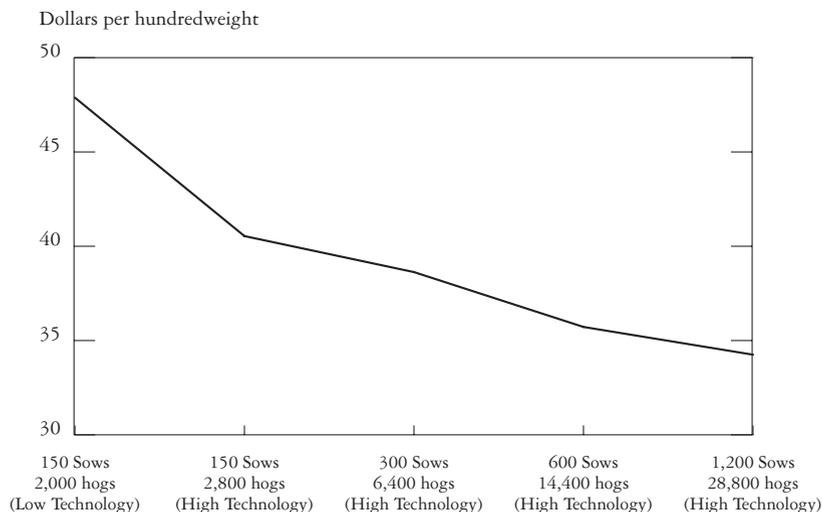
The limited data available on economies of size in livestock production are somewhat mixed. Some data suggest that big farms have little or no cost advantage over smaller farms. For example, a U.S. Department of Agriculture survey of hog farms in 1992 indicated that average production costs remained almost steady as the volume of production climbed above 1,000 head per year (McBride). In contrast, a Purdue University study indicated average hog production costs fall sharply as production volume climbs (Hurt and others). The Purdue researchers found production costs were about 25 percent lower on a large, high-technology hog farm producing about 15,000 market hogs per year than on a small, low-technology farm producing only 2,000 hogs per year. Doubling the size of the high-tech farm to nearly 30,000 hogs per year, however, yielded only a slight further decline in average costs (Chart 5).

The authors also noted that building and equipment cost estimates in the study were based on estimated replacement costs. In contrast, actual production costs could be much lower if older, fully depreciated buildings and equipment were in use, as is likely on many small, low-tech hog farms. Still, such small farms might choose to exit the industry rather than invest in expensive modern equipment when old equipment and buildings wear out or become obsolete. Thus, bigger farms appear better positioned to take advantage of new production technology. By spreading investments in improved genetics, modern buildings, and high-tech equipment across big production volumes, bigger farms can hold down average production costs.

Relatively few data are available to document size economies in the cattle industry. In feeder cattle production, some data indicate average production costs are higher on small farms and ranches—many of

Chart 5

HOG PRODUCTION COSTS



Source: Purdue University

which are hobby or life-style operations rather than commercial businesses—than on bigger farms and ranches. But otherwise, average production costs change relatively little as the number of feeder cattle produced each year increases. Accordingly, little consolidation has occurred in feeder cattle production (Lamb and Beshear).

In contrast, economies of size have been found in cattle feeding, although recent studies are scarce and the data are mixed. A recent survey of 30 farm feedlots in Kansas indicated that those marketing 1,500 to 2,000 head per year held a modest cost advantage over most of the smaller feedlots (Porter and Jones). In contrast, a Texas study in the mid-1980s suggested economies of size are more pronounced among bigger feedlots, with costs in 50,000-head feedlots nearly 20 percent lower than in 2,000-head feedlots. As is the case in the pork industry, most of the savings were gained by spreading the costs of fixed investments across a larger number of animals, and most of the savings were realized at a production volume of only 20,000 head (Barkema and Drabenstott).

Efforts to capture economies of size are also working in concert with a new focus on product quality to drive hog and cattle production into supply chains with meat processors. One factor spurring supply chains is the bigger financial risk of investments in large, high-tech production and processing facilities. Unit production costs in big processing plants rise quickly when processing lines are operated at less than optimal volume. Similarly, big investments in modern production facilities expose livestock producers to a greater risk of loss if livestock markets turn down. Supply chains can help both processors and producers manage these business risks by ensuring a steady flow of livestock to processing plants (Barkema and Drabenstott).

A second factor spurring supply chains in the beef and pork industries is a new focus on the consistently high quality of food products demanded by today's consumers. Learning from the poultry industry, hog and cattle producers are working hard to improve their products.⁸ For example, new "grid" pricing techniques designed to reward producers for producing animals that yield higher quality meat are becoming more common in both pork and beef production. And new producer-led cooperatives and alliances are emerging that link producers and processors with a common goal of producing higher quality products that generate more profit.⁹

III. HOW SHOULD PUBLIC POLICY RESPOND?

The meat industry has obviously been undergoing rapid change, with some segments becoming highly concentrated. The pace and degree of change pose two critical questions for the industry and policymakers alike. First, has the type and amount of consolidation created concerns about the exercise of market power? And second, what—if anything—might industry participants and policymakers do to ensure that the emerging industry benefits everyone involved—consumers, producers, and businesses? The answer to the first question is, of course, important prologue to the second.

Is a more concentrated meat industry good or bad?

The consolidation of the meat industry has raised two obvious concerns in the public policy arena. The first is whether the meatpacking segment of the meat sector is becoming so concentrated that packers can push down the prices paid to livestock producers. The second is whether food retailers have sufficient market power to push up prices at the grocery—or to push down prices paid to meat processors.

Market studies suggest that while concentration levels merit close watching, thus far researchers find only scant evidence of market power at work. The meatpacking industry has been the object of many studies of market power. One benchmark study by the government's leading regulator of the industry (the USDA's Grain Inspection, Packers, and Stockyards Administration) looked at several issues arising from more concentrated beef and hog industries.¹⁰ Among the study's findings were these three important points:

- While beef packing plants have become extremely large, and these plants might dominate a local or regional market, the market "is essentially national in scope." Most plants buy 80 percent of their cattle within a 150-mile radius, but transportation costs are low enough to permit growers in other regions to take advantage of price differentials. On average, the plants in the study bought cattle from as far away as 650 miles.
- Larger plants with higher capacity use pay higher prices for cattle. This suggests that at least some of the cost efficiencies of larger plants are being passed along to producers in the form of higher prices.
- No concrete conclusions were drawn on the effects of concentration on cattle prices. While prices in regions are little affected by differences in concentration in those regions, it is not clear yet that large firms exercise market power in determining cattle prices nationwide.

While the study probably represents the most comprehensive analysis so far, it was completed in 1996. Since then both the beef and hog industries have become even more concentrated. A more recent study found some statistically significant evidence that packers could hold down prices to growers, but the effect on prices was modest (Koontz and Garcia). Using a different methodology, however, another study found no evidence of market power (Muth and Wohlgenant).

At the food retailing level, studies produce mixed findings but generally do not show evidence of significant market power excesses. Some analysts suggest that concentration leads to higher food prices for consumers (Cotterill). Others counter that higher prices often reflect consumers switching to products that include more services such as packaged, pre-washed lettuce (Newmark). Another analyst found that food prices actually fall when concentration increases, although questions have been raised about the data used in the study (Kaufman and Handy; Geithman and Marion).

While findings are mixed, one seasoned analyst, Jean Kinsey, points out that the broadest fact that must be recognized is consumers are spending less and less of their income on food. The obvious conclusion is that consumers seem “to have benefited from efficiencies in the retail food system.”

If this view is correct, there is a crucial tradeoff that policymakers and regulators must ponder in the rapidly changing food system. On the one hand, fewer firms *can* exercise market power and hurt either producers or consumers. On the other hand, emerging technologies are producing significant economies of scale that result in a more efficient food system. Regulators must weigh these opposing forces in the balance. At this point, most analysts agree that the economies of scale have been more powerful (Azzam; Morrison Paul). Yet the mounting levels of concentration in some segments of the meat industry call for vigilance.

Steps for ensuring a meat sector that benefits all

After more than a decade of rapid change, perhaps now is the time to consider steps that both market participants and public officials can take to ensure that the meat sector benefits everyone involved. The

stakes are high. Meat is the single largest expenditure item in the consumer grocery cart, and livestock represents the single biggest item on U.S. agriculture's income statement.

Three steps seem to have merit. First, antitrust enforcement will be an essential part of ensuring competition and avoiding any market power abuses. While the enforcement mechanism is well established, defining the market to examine will prove more vexing. Second, new policies or a refining of existing policies may help producers participate in a livestock industry that is fundamentally different than the one most producers grew up with in the 20th century. Third, new programs may help rural communities take best advantage of the new meat industry.

Market power issues. Reviewing mergers in the meat industry falls to the Justice Department, with significant input from the USDA. The process is founded on three major antitrust laws—The Sherman Antitrust Act, the Clayton Act, and the Federal Trade Commission Act. Together, these laws express the nation's commitment to a free market economy where competition benefits both consumers and businesses.¹¹

A critical factor in reviewing meat industry mergers is the definition of the "market." Market can be defined in two important ways: by geography and by product. Both are difficult to determine in the meat industry. From a producer point of view, mergers among packers often limit the number of markets within easy reach. However, it is possible to transport cattle and hogs fairly long distances, and some producers are willing to do so to take advantage of higher prices at more distant plants. Thus, regulators must decide what a "reasonable" definition of a producer market is. Moreover, with a grocery meat case where consumers frequently shift from one meat to another based on price, can a market be confined to "beef," or should it be broader?

Similarly, while many cities now have only three or four grocers, supermarkets account for only a small portion of the "food" marketplace. Consumers have a wide range of other food shopping alternatives available, including mass merchandisers (wholesale clubs), convenience stores, Internet grocers, and various food service providers. Supermarkets account for only about a fourth of the 127,000 retail grocery outlets in the nation and about three-fourths of grocery sales (Table 1).

Table 1

**TOTAL RETAIL GROCERY STORES:
SHARE OF STORES AND SHARE OF SALES—1999, U.S.**

Type	Number of stores	Percent units	Percent sales
Supermarkets	31,500	24.8	77.3
Chain	20,300	16.0	61.8
Independents	11,200	8.8	15.5
Convenience	57,500	45.3	6.2
Wholesale Clubs	800	0.6	4.8
Other	37,200	29.3	11.7
Total	127,000	100%	100%
Total Sales			\$472.7 billion

Source: The Food Institute

There is no easy answer as to how best to define markets. What researchers have shown, however, is that more aggregate definitions may bias the analysis against finding evidence of market power (Sexton). The issue of geography will be particularly important to producers, where local market access is a big concern with fewer and fewer packers, especially to smaller producers who may have greater difficulty shifting to more distant markets. At the retailing level, recent decisions by the Federal Trade Commission and the courts suggest a fairly narrow focus on concentration among supermarkets (Balto). However, the rapid rise of Wal-Mart and other nontraditional food retailers may make a narrow focus less meaningful in the future.

Policies to help producers. New initiatives to help producers prosper in the new meat industry will almost certainly be a major focus for policymakers in the period ahead. Livestock production has been a mainstay for hundreds of thousands of farmers and ranchers. The meat industry that is emerging seems to offer two alternatives for producers in the future. The first is to become a large producer with strong, direct ties with meat processors and retailers. The second is for smaller producers to join forces and produce specialty products for niche markets.

The latter approach may be enhanced with new market mechanisms and new approaches to an old farm solution—farm cooperatives. With a meat industry in which many of the players are now very large busi-

nesses, there are legitimate concerns about how individual producers succeed in this environment. These concerns are not new, of course. More than 70 years ago, Congress passed the Capper-Volstead Act, giving farmers license to act together in marketing their products and thus gain some countervailing bargaining power with other market players.¹²

What is new is that producers may need to form different kinds of producer alliances to thrive in the 21st century meat industry. In particular, policies that support and encourage formation of so-called new generation cooperatives may need further attention. These cooperatives operate as closed-end investment units where membership is fixed and producers agree on exactly what product will be produced, how it will be produced, how it will be marketed and, in some cases, how it will be processed. The regulations on forming such coops, the financing they receive, the public support they receive in terms of technical assistance—all these issues may need fresh consideration. For instance, there appears to be significant variation across states in the securities laws that govern cooperatives.

More generally, producer-led attempts to form alliances may deserve new forms of public assistance. From a public point of view, producer-led alliances could provide an important market counterpoint to retailer or processor-led alliances. Producer alliances might also give consumers alternative food products, such as ones that might be grown under “organic” conditions, or grown entirely in the local area. Such producer efforts could be enhanced through additional product research, business assistance, or financing through new public-private partnerships. The value of such public steps, of course, must be weighed against the cost.

Policies to help rural communities. A final area where policy attention might be focused is on the impact of the new meat industry on rural communities. One set of issues will carry over from the past decade: the environmental impact of production and processing that has become highly concentrated geographically. With more geographic concentration, the consequences of failure in waste management systems can be serious. Some animal facilities also create quality of life concerns for neighboring areas. Two responses seem likely in the coming period. A national set of “threshold” regulations may be helpful in bringing some

standardization to what is now a patchwork of laws and enforcement. And new investments in research may open the way to new technology that could mitigate some of the most serious environmental threats.

A second set of policy issues surround the economic development choices rural communities face. For many communities in the Heartland, livestock production and meat processing are important economic cornerstones. Indeed, meat packing and processing is the single most important manufacturing activity in rural America (Drabenstott, Henry, and Mitchell). Yet changes in the industry now mean that economic activity is much more concentrated geographically. How should communities and public policy respond?

Public-private partnerships loom as important ways to maximize the economic benefits of the new meat industry while minimizing some of the potential problems. The sheer scale of some livestock production facilities and meatpacking plants pose significant environmental issues. Producers, companies, and the communities all share an interest in waste control systems that minimize risks to all concerned. The public interest may be served best by continued investment in technologies that offer improved environmental outcomes, reduced risk of failures, and greater efficiency.

Social issues may pose an even bigger problem. Labor is a major concern for meatpackers and processors and, to a lesser extent, for large livestock producers. Recent experience shows that many meatpacking jobs are filled by immigrants. Yet the resulting inflow creates strains on schools, health care, and in some cases, the social fabric itself. Thus, innovative ways are needed to bring community and industry leaders together for shared solutions. These might include industry support for school programs, shared funding of new infrastructure, and involvement of area community colleges in job training. State and federal policymakers might explore ways of encouraging such partnerships.

Communities may approach the new meat industry with a much more fundamental question. Is there an economic payoff if the meat industry locates in my community? Researchers offer relatively few good answers to this question, in part because the answer depends a lot on unique, local conditions. However, it is instructive to see how some communities have fared with the meat industry as an economic anchor. Dodge City, Kansas offers one glimpse into the economic benefits.

Dodge City is now home to two of the nation's largest beef packing plants, and the industry's presence has grown dramatically over the past two decades. From an economic point of view, the beef industry appears to have been a source of significant gains. Since 1981, jobs in Ford County, Kansas, where Dodge City is the major business center, are up 43 percent. Meanwhile, the county's payroll has jumped even more, 54 percent. While overall economic activity has increased, the local economy is now much more dependent on manufacturing than two decades ago, and somewhat less reliant on selling inputs to the region's farmers.

The economic calculus does not include all the variables that count, of course. The city has also faced significant environmental and social challenges. Still, the city has far more economic resources to address those issues than it did before the meat industry presence grew so dramatically.

Looking forward, there is little question that many rural communities will count on the meat industry for economic gains. Many of these gains may depend on local initiatives, especially by producers. A recent study by the USDA found that new generation cooperatives, many of which will be focused on livestock and meat products, can have significant local economic benefits (Rural Business-Cooperative Service). That study identified several examples where new producer cooperatives brought direct and indirect economic benefits to rural America. Local initiative and control may be important factors in how much the meat industry boosts the economic outlook for many rural communities.

IV. CONCLUSIONS

Two factors appear at the root of the wave of consolidation in the U.S. meat industry: food demand and technology. The industry is restructuring itself to provide food products of the consistently high-quality today's consumers demand. And enabled by advances in technology, the industry is trimming costs by capturing economies of size. The result is a more efficient industry, but one with fewer and larger retailers, processors, and farms and ranches.

The rapid consolidation in recent years raises the concern that an industry of fewer and larger players could limit product offerings and raise food prices for consumers while driving down livestock prices for producers. Thus, a fundamental trade-off emerges between the promise

of a more efficient industry and the threat of market power. Most studies to date reveal little evidence of such market power at work. Still, the industry's rapid pace of change is outdistancing most studies—which rely on historical evidence—and steady vigilance is warranted.

Beyond a concern with market power, the meat industry's importance as the lead enterprise in U.S. agriculture and a key economic anchor in many rural communities suggest other concerns for public policy. How producers participate in the new meat industry and how rural communities take best advantage of the new meat industry are key concerns. Overall, the time appears right for market participants and policymakers to consider ways the new meat industry can benefit all involved.

ENDNOTES

¹ Meat products generally receive less processing before they reach the consumer than other kinds of foods, such as grain products. Thus, the farm share of retail meat prices averages well above the farm share of overall consumer food expenditures. Nevertheless, the farm share of retail meat prices has fallen sharply in recent decades from more than 60 percent to about 50 percent for beef and from 45 percent to slightly more than a third for pork.

² Other evidence indicates the *quantity* of food consumed away from home has not risen as rapidly as *expenditures* on food away from home. Nearly three-fourths of the quantity of food consumed is believed to be purchased in grocery stores (Carlson and others).

³ Kinsey and others summarize the effects of rising consumer incomes and tighter schedules on food demand, "In terms of the theory of household economics, wage rates exceed marginal productivity of household production (of food). This, in combination with the fact that the real cost of food to U.S. households has fallen by about one-third since 1960, leads to a great demand for value added services in the food sector." P. 3.

⁴ Economies of size are usually attributed to a larger firm's ability to divide tasks among more specialized workers, to use the most advanced technology, and to spread fixed costs across a larger volume of output.

⁵ Two explanations underlie the consumer's shift from beef to poultry, increased demand for convenient food products and a rapid decline in the price of poultry relative to beef (Barkema and Drabenstott).

⁶ For example, Ward (WF554) describes the meatpacking business as a high-volume, low-margin business, where thin margins are maintained by strict cost control. "Lower costs mean meatpackers could pay higher prices for fed cattle. Even a \$5 reduction in average slaughtering-fabrication cost per head potentially could translate into \$0.35-0.50/cwt. higher prices for fed cattle."

⁷ Cattle slaughter and fabrication plants with capacity of at least 1 million head per year accounted for nearly two-thirds of the nation's steer and heifer slaughter in 1998, up from less than a fourth in 1986 (GIPSA, 2000).

⁸ Joseph Luter III, chairman and chief executive officer of Smithfield Foods, Inc, the nation's leading integrated hog producer and pork processor, recently commented that Smithfield's business objective was to develop pork products with a consistent quality that could compete with poultry products. 'McDonald's (Corp.) built a franchise around consistency,' he said, 'but we couldn't build a franchise around pork because it was too inconsistent.' (Smith)

⁹ For example, U.S. Premium Beef, Ltd., a producer-own cooperative formed in 1996, aims to reward producers of cattle that yield high-quality meat products. The key elements of the new coop's strategy is control of the production process from 'conception to consumption' and a quality-based pricing system that that reflects consumer preferences (Katz and Boland).

¹⁰ A concise, useful summary of the lengthy GIPSA study can be found in Ward.

¹¹ For a comprehensive summary of antitrust guidelines see Justice Department.

¹² For a summary of Capper-Volstead, see Rural Business and Cooperative Development Service.

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