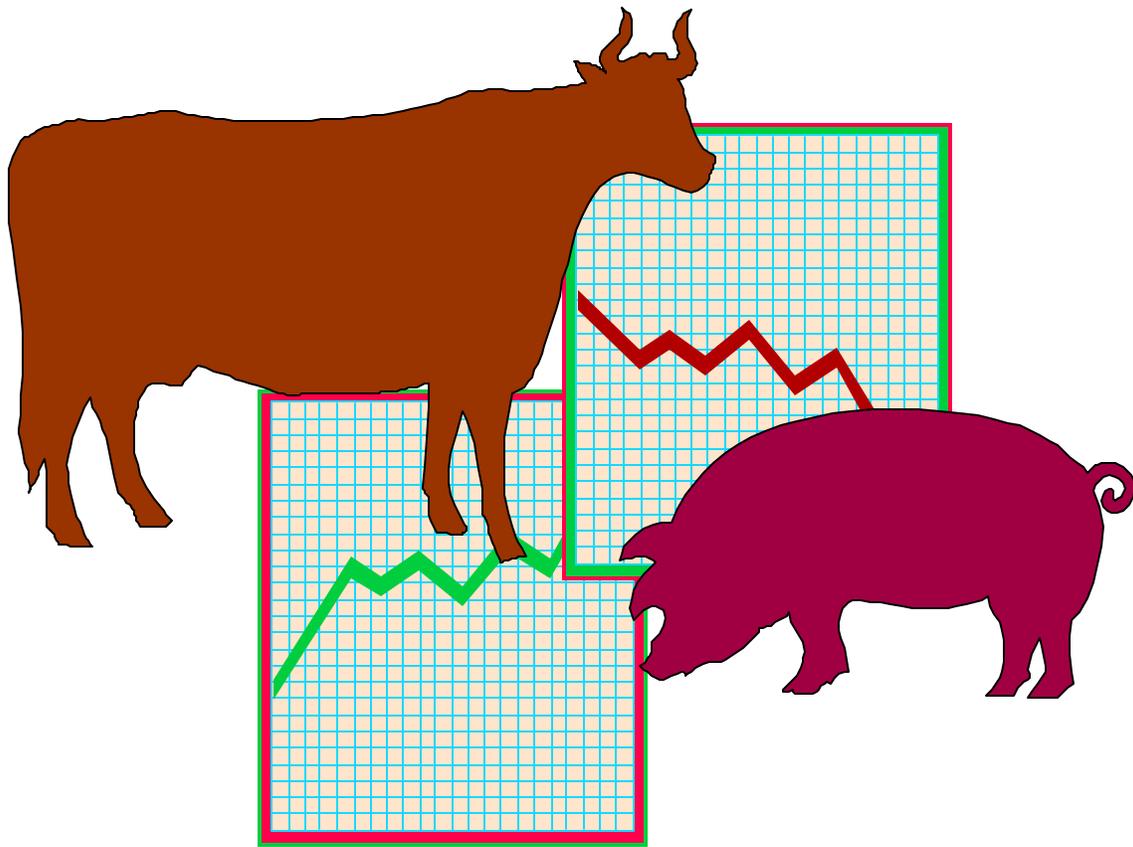


Assessment of the Cattle and Hog Industries Calendar Year 2000



United States Department of Agriculture
Grain Inspection, Packers and Stockyards Administration

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Executive Summary

This is the Grain Inspection, Packers and Stockyards Administration's (GIPSA) first annual report to Congress on the general economic state of the cattle and hog industries, changing business practices in these industries and areas of concern under the Packers and Stockyards Act.

General Economic State of the Cattle and Hog Industries

The cattle industry is nearing the end of a herd liquidation phase and beef production is forecast to decline in 2001. Cattlemen are experiencing profitable conditions. Cattle feeders are benefiting from higher fed-cattle prices than they received in 2000 and relatively low feed prices. Cattle prices are expected to remain relatively high through 2001. Beef packers are reportedly experiencing negative margins. Beef consumption and prices both increased in 2000, signaling an increase in demand for beef after many years of decline. Beef packers are producing larger quantities of beef products in case-ready packages and opening up new product development opportunities, which could increase demand in the future.

Hog slaughter could approach the capacity limits of pork packers in the fall of 2001. However, barring a loss of slaughter capacity, hog prices are expected to remain at levels that permit most hog producers to be profitable. Pork packers are expected to be profitable in 2001. Structural changes in the industry associated with increased production under production and marketing contracts, changes in production practices, improved genetics, and product development are expected to lower costs and increase demand for pork, but increases in production may continue to put downward pressure on prices.

Changing Business Practices

Cattle

Major changes in the cattle and beef industries include growth in size of feedlots and increased use of vertical alliances, value-based pricing, and case-ready packaging. The share of slaughter cattle from feedlots having more than 32,000 head of capacity rose from 29 percent in 1985 to 40 percent in 2000. Increasingly, beef production is characterized by large feedlots doing business with large packers. Four-firm concentration in steer and heifer slaughter rose sharply in the 1980s, but has remained at about 81 percent since 1993. Many producers are looking for opportunities to improve animal quality and to be compensated for better quality animals. Producers and feedlots are entering into vertical alliances that share risks and rewards associated with the cattle and beef markets.

Packers are purchasing larger numbers of fed cattle through non-spot marketing methods. More fed cattle also are being purchased on the basis of their individual quality merits, rather than purchasing all animals in a lot at a single price. “Spot market” refers to transactions in which the animals are ready for delivery and the price is determined at the time the agreement is entered. This includes transactions in which the final payment depends on carcass quality characteristics if the base price and the premium and discount schedule are specified at the time the parties agree to the transaction. Non-spot procurement methods include transactions arranged before the animals are ready for slaughter or transactions where the price is not known at the time of the agreement. It includes transactions in which the price is determined by a formula linked to prices not associated with this transaction, e.g., the price is based on average prices paid by a plant for animals obtained through the spot market or on a publicly reported price.

Technological developments have enabled packers to sell more beef in case-ready packages, which are ready for placement in retail meat cases without further preparation by meat cutters at the store. This development has opened the way for additional value-added beef products and increased use of brand name products.

Internet trading (e-commerce) has begun to be used for the sale of feeder cattle and meat products, but has not taken a significant volume of business from traditional marketing methods.

Hogs

The hog industry is continuing to undergo significant change associated with increased use of production and marketing contracts, changing swine genetics, and production of case-ready pork products. Hog farms are continuing to become larger. Between 1995 and 2000, the proportion of hogs on farms having over 5,000 head rose from 27 percent to about 51 percent—a dramatic change for a 5-year period. Pigs per litter, annual litters per sow, and average slaughter weights have continued to rise. Many hog producers are restricting their operations to include only a part of the total breeding, growing, and finishing process.

Concentration in pork packing is moderate, but rising. The four largest firms accounted for 56 percent of total slaughter in 1999, compared to 40 percent in 1990. Packers are buying more hogs on the basis of carcass quality and are turning more to electronic measurement devices to assess carcass quality for payment purposes.

A recent report by the University of Missouri and the National Pork Producers Council estimates that packers produce nearly 25 percent of all hogs. Hog production by packers, including production by subsidiaries and joint ventures, is increasing. Some major packers have affiliated with firms that control rights to produce hogs having genetic and other qualities desired by the packers.

A recent National Pork Producers Council survey found that nearly 75 percent of all hogs sold to packers are sold under some type of marketing contract. Hog producers use a

wide variety of types of marketing contracts. Contracts normally specify the type and quantities of hogs and method for determining price. Prices usually are determined by a formula in which the base price often is linked to a publicly reported price. Some contracts include a mechanism for packers and producers to share price risks if market prices fall outside a pre-determined range.

Like the beef industry, pork packers also have developed new case-ready products, many of which are branded and more convenient for consumers.

Market Operations and Activities Raising Concerns Under the Packers and Stockyards Act

A number of structural, organizational, and technological developments in the cattle and hog industries raise concerns under the Packers and Stockyards (P&S) Act. This report identifies issues of concern in the areas of concentration and structural change, changes in livestock pricing and procurement, changing forms of vertical and horizontal coordination, technological change in packing plant operations and marketing, and fair trade and financial protection issues.

Concerns about Concentration and Structural Change

The four leading steer and heifer slaughtering firms account for over 80 percent of steer and heifer slaughter. Concentration of the four leading hog slaughtering firms, now 56 percent of total hog slaughter, is rising. Because of producers' concerns about adverse economic impacts resulting from relatively high levels of concentration, some industry participants and observers want USDA to block mergers and break up large meatpacking firms. Others argue that, while structural changes in the livestock and meatpacking industries increase the potential for anti-competitive behavior, the changes are largely the result of normal economic forces that are occurring throughout the economy. Even those who believe that structural change is inevitable generally believe that broader enforcement of the P&S Act is warranted.

Merger Authority—USDA frequently receives requests to prohibit mergers and acquisitions involving meatpacking firms. The authority to challenge certain mergers prior to their consummation, however, rests with the Department of Justice and the Federal Trade Commission through the pre-merger notification requirements of the Hart-Scott-Rodino Antitrust Improvements Act. GIPSA's Packers and Stockyards Programs (P&SP) focuses its investigative and regulatory resources on monitoring industry behavior and conduct to identify the anti-competitive practices that may cause economic harm and violate the P&S Act.

Concerns about Changes in Livestock Pricing and Procurement

Packers Acting in Concert to Restrict Competition—Concentration in beef packing is high but stable. Concentration in pork packing is moderate but increasing. High

concentration, in and of itself, is not prohibited under the P&S Act. The concerns expressed by many people about industry concentration and structure stem largely from concerns about the potential for large packers to abuse market power. Members of the industry, especially producers, express concerns about possible concerted action by meatpackers to restrict competition. One specific practice that raises these suspicions is the allegation that there is a short trading window during which fed-cattle trading occurs.

Shared Agents—Auction market owners and livestock sellers have raised concerns that the use of common buyers by packers, or shared agents, reduces the number of competing buyers for cull cattle. These individuals believe that this practice has the potential for reducing competition. However, the issue is complicated by a general lack of buyers at many auctions.

Pricing Methods—Cattle and hog buyers use a variety of methods to establish base prices in formulas used for marketing agreements and other contracts. Several methods for determining prices paid for livestock under such pricing mechanisms are based on publicly reported prices or internal computations of prices paid by packers. Producers have voiced concerns about the potential for packers to influence or manipulate base prices under these types of pricing arrangements.

Thin Markets—Increased use of various production and marketing contracts has reduced the number of livestock sold through spot markets. When only a relatively small volume of trading activity occurs in a particular market, it is said to be a “thin market.” Producers have expressed concern about potential harm resulting from thin cattle and hog markets. Thinly traded markets would be a concern under the P&S Act to the extent that thin markets may make unlawful price manipulation or other anti-competitive behavior easier.

Mandatory Price Reporting—In 1999, Congress enacted the Livestock Mandatory Reporting Act of 1999. Mandatory price reporting may eliminate some price series that are currently used in livestock procurement contracts. P&SP will monitor the impacts of the implementation of livestock mandatory reporting.

Concerns about Vertical and Horizontal Coordination

Captive Supplies—A decline in the use of spot markets and increased use of forms of vertical coordination, such as marketing contracts, have raised many concerns among producers and others about potential adverse effects on competitive behavior in the livestock and meatpacking industries. For instance, controversy surrounding the use and effects of captive supplies is especially prominent in the fed cattle industry, but parallel concerns exist in the hog industry as well. Captive supplies generally refer to animals acquired by or under contract to a packer before the animals are ready for slaughter.

Market Access and Price Differences—The changing nature of the organization of livestock production and procurement raises a number of producer concerns relating to market access and unjust discrimination. Some producers are concerned that few packing

plants are available in their area. Some producers express concern that they are unable to obtain a production or marketing contract. Others voice concern that some packers may not offer the same contract terms to smaller volume producers as they do to larger volume producers. It is not sufficient for P&SP to prove that a particular marketing arrangement results in higher prices for one group of producers than for others. P&SP must also prove that the higher prices were unjustly discriminatory.

Fair Treatment in Contracts—Increased use of contracting to procure livestock raises concerns about potential unfair treatment of livestock sellers. For example, some production and marketing contracts may stipulate that the producer must agree to keep the contract terms confidential. As a result, there is concern that producers may sign production and marketing contracts without fully understanding all terms or without first consulting with an attorney or financial professional for advice. Addressing these concerns as unfair business practices under the P&S Act must be tempered by the interest of producers in freedom of contract.

Authority Over Production Contracts—Many producers believe USDA has authority over all production contracts. However, the Department’s authority under the P&S Act is restricted to entities subject to the Act. The P&S Act only covers production contracts between a livestock producer and a packer or other entity subject to the Act. The Act does not cover production contracts between livestock producers or contracts between a producer and a feed company. P&SP thus cannot address producers’ concerns about these contracts.

Concerns about Packing Plant Operations and Marketing

Carcass Evaluation—Sophisticated electronic measurement devices are being developed to measure animal carcass quality characteristics. Industry-wide standards have not been developed for all electronic carcass-quality measurement devices, impeding monitoring of these devices. Recordkeeping systems of packers make it difficult to determine if the records fully disclose all relevant details of complex livestock procurement transactions.

Recordkeeping—Over time, procurement of livestock has evolved from simple purchase on a liveweight or dressed-weight basis to a myriad of contracts and formula-priced purchases. Terms and conditions for pricing formulas and contracts often contain complex, detailed calculations to determine base prices and final payments to livestock sellers. Recordkeeping systems may not be adequate in some cases for packers to accurately reconstruct payments to producers. Without accurate recordkeeping, P&SP’s ability to enforce the P&S Act quickly and efficiently is compromised. P&SP intends to address these concerns in the near future.

E-Commerce—Internet marketing (e-commerce) is a relatively new innovation in the livestock and meatpacking sector and has potential for significant changes in the way livestock and meat are marketed. P&SP will monitor developments and operations closely to help ensure that all parties are aware of, and conform with, the P&S Act’s requirements for financial responsibility and fair trade practices.

Concerns about Fair Trade and Financial Protection

String Sales—When negotiating spot market transactions, some custom feedyards, acting as marketing agents for owners of the cattle, may attempt to require that a packer purchase less desirable livestock as a condition to purchasing other, more desired quality livestock. This practice is known as string sales. Market agencies have a responsibility to obtain the best price possible for each seller of custom-fed animals. P&SP is considering whether string sales that result in average pricing violate the P&S Act.

Drug Residue Testing—As a result of recent reforms in meat inspection, packers are required to perform additional drug residue testing on meat destined for human consumption. Packers want to delay payment for cull cattle until drug residue testing can be completed, often presenting a conflict with the prompt pay provisions of the P&S Act.

Retaliation—Many producers have expressed concern about possible retaliation by packers if they challenge terms offered by the packers or file a complaint with P&SP against packers. Often, producers are reluctant to rely on the time-consuming, uncertain legal process under the P&S Act to protect them from retaliation.

Conclusions

Substantial changes are occurring in the structure and behavior of firms in the livestock and meatpacking industries. Many of the changes are driven by technological developments, changes in consumer demand, and other competitive forces. Many of the changes are healthy for the industries involved, for consumers, and for the Nation as a whole. However, the changes also bring the potential for anti-competitive behavior or unfair trade practices that are unlawful under the P&S Act.

USDA restructured its Packers and Stockyards Programs in the late 1990s and has sought additional funding to strengthen its capacity to investigate possible anti-competitive behavior in the livestock, meatpacking and poultry industries and improve its efficiency and effectiveness in enforcing the provisions of the P&S Act. P&SP has changed its staffing mix to add more employees with economic and legal expertise. P&SP is continuing its restructuring initiative by developing new investigative procedures, working more closely with the Office of General Counsel at the initial stage of case development, incorporating economists, most of whom have doctorate degrees, and legal specialists, all of whom currently have law degrees, in the investigative process, training new employees, and making other adjustments to strengthen its capacity to monitor and investigate the structural and behavioral changes in the livestock, meatpacking and poultry industries.

P&SP has about 185 employees throughout the United States. P&SP opened 1,898 new investigations in FY 2000, and closed 1,701. Of the investigations that were closed, 892 involved alleged trade practice violations, 783 were alleged financial violations, and 26 were investigations of alleged anti-competitive behavior. Competition investigations are

normally the largest and most complex investigations conducted by the Agency. During FY 2000, 17 decisions and orders were issued against 25 entities for violating the P&S Act. The decisions included 13 administrative decisions against 21 entities, and 4 decisions and orders obtained through the Department of Justice. The orders included more than \$117,000 in civil penalties and 24 cease-and-desist provisions involving unfair trade practices or anti-competitive activities.

P&SP will address the concerns discussed in this report by monitoring changes in industry structure and behavior, and examining practices that appear to be unlawful under the P&S Act. In addition to monitoring, P&SP's actions may include formal investigations, regulatory initiatives, or research and other analyses to assess the economic, competitive, and/or trade practice implications of the structural and behavioral changes.

Introduction

This report describes the general economic state of the cattle and hog industries, changing business practices in those industries, and activities in those industries that appear to raise concerns under the Packers and Stockyards Act of 1921 (P&S Act). The report is in response to a requirement in the Grain Standards and Warehouse Improvement Act of 2000 (Pub. L. No. 106-472), enacted on November 9, 2000, which amended the Packers and Stockyards Act of 1921. Specifically, the Grain Standards and Warehouse Improvement Act of 2000 states:

“Not later than March 1 of each year, the Secretary shall submit to Congress and make publicly available a report that –

- (1) assesses the general economic state of the cattle and hog industries;
- (2) describes changing business practices in those industries; and
- (3) identifies market operations or activities in those industries that appear to raise concerns under this [P&S] Act.”

The purpose of the P&S Act, which has been amended to keep pace with changes in the industry, is to promote fair competition and fair trade practices, safeguard farmers and ranchers, and protect consumers and members of the livestock, meat, and poultry industries from unfair business practices that can unduly affect meat and poultry distribution and prices.

The Secretary of Agriculture has statutory authority to enforce the P&S Act, and has delegated that responsibility to the Administrator of the Grain Inspection, Packers and Stockyards Administration (GIPSA). The U. S. Department of Agriculture’s Packers and Stockyards Program (P&SP), part of GIPSA, has monitored economic and trade practice developments in the cattle and hog industries since 1921.

General Economic State of the Cattle and Hog Industries

Cattle Industry

Cow-calf producers can expect positive returns and higher calf prices in 2001 than in 2000.¹ Stocker operations, which purchase calves and sell feeder calves, may experience profit pressures due to competition for a declining number of calves.² Projected fed cattle and input prices suggest that cattle feeders can expect positive margins in 2001.³

The United States Department of Agriculture's (USDA) Economic Research Service (ERS) estimates that feeding margins were positive between December 2000 and February 2001 after being negative for much of 2000.⁴ USDA's World Agricultural Outlook Board (WAOB) projects that fed cattle prices will remain at relatively high levels, averaging about 8 percent higher than in 2000, as the number of cattle slaughtered and volume of beef produced decline relative to last year.⁵ ERS reports that large stocks of corn and soybeans are expected to keep feed prices relatively low, but higher feeder cattle prices may restrain returns to fed cattle producers.⁶ ERS predicts that feeder cattle prices will rise about 3 percent in 2001, following a 13-percent increase in 2000.

Herd Expansion

Adjustments in cattle production historically have resulted in a cyclical pattern (cattle cycle), in part, because cattle have a relatively long reproductive cycle. A typical cycle consists of about 6 years of growth in the number of cattle as the size of breeding herds expands, followed by 1-2 years of relatively constant numbers (consolidation), then 3-4 years of declining cattle numbers as breeding herds are reduced (liquidation). As producers retain heifers for breeding during expansion, the number of fed cattle available for slaughter typically declines, putting upward pressure on fed cattle prices. The opposite price effect occurs during liquidation, when producers send a higher proportion of heifers (as well as cows) to slaughter.⁷

Expansion of the cattle herd may provide some upward stimulus to fed cattle prices in the second half of 2001.⁸ The cattle cycle has been in a liquidation phase for about 5 years.

¹ Hurt, Chris, "High Calf Prices Stimulate Slow Beef Cow Expansion," *Livestock Price Outlook*, No. 2, University of Illinois and Purdue University, February 2001. <http://web.aces.uiuc.edu/farm.doc/marketing/livestockoutlook/0201cattle.pdf> (20 Feb. 2001).

² Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-80, ERS-USDA, February 28, 2001.

³ Margins are the difference between the amount producers receive for an animal and the cost to the producers for the feeder animal, feed, and other variable inputs into feeding.

⁴ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-80, ERS-USDA, February 28, 2001.

⁵ World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-372, Office of the Chief Economist, USDA, March 8, 2001.

⁶ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-79P, ERS-USDA, January 24, 2001.

⁷ Mathews, Kenneth H. et al., *U.S. Beef Industry: Cattle Cycles, Price Spreads, and Packer Concentration*, Technical Bulletin No. 1874, ERS-USDA, April 1999.

⁸ Collins, Keith, "Statement Before the U.S. House of Representatives Committee on Agriculture," Office of the Chief Economist, USDA, February 14, 2001.

The liquidation phase may be slowing, as data reported by USDA's National Agricultural Statistics Service (NASS) in January 2001 indicated that producers held 2 percent more heifers for beef cow replacement than they held a year ago.⁹ However, large heifer slaughter in 2000 and large numbers of heifers on feed suggest that expansion continues to be delayed.¹⁰ High fed cattle prices and low feed costs may give producers an incentive to begin rebuilding the cattle herd in the second half of 2001, leading to reduced placements of heifers on feed.¹¹

Trade Prospects

The WAOB projects very small changes in imports and exports of beef in 2001, compared to 2000, with less than 2- percent increase in the volume of each.¹² The projections indicate that imports will exceed exports slightly in 2001, but the net difference will only account for about 2 percent of total 2001 U.S. beef production.¹³

Although sales of European-produced beef in European Union (EU) countries have plummeted due to concerns about bovine spongiform encephalopathy (BSE), also known as mad cow disease, the U.S. Meat Export Federation (MEF) indicates it is unlikely that the United States can increase its exports to the EU.¹⁴ The EU continues to ban imports of beef from the United States if the beef is produced using growth hormone implants. However, the MEF suggests there may be an opportunity for U.S. beef to replace European beef in the EU's traditional export markets, especially in the Middle East.

Demand Factors

Beef prices increased in 2000 as total beef production also increased, an indication of an increase in demand for beef.¹⁵ Analysts predict that sustaining the demand increase may be difficult if consumers face a slower economy in 2001.¹⁶ They note that increased energy costs are likely to require a larger share of consumers' disposable income and have a negative effect on consumer demand for beef. Beef will face increased competition from pork and chicken, as production of both is projected to increase in 2001.¹⁷ USDA projects slight increases in per capita consumption of pork and poultry in 2001 and a decline in per capita consumption of beef as production declines (table 1).

⁹ Agricultural Statistics Board, *Cattle*, MtAn 2 (1-01), NASS-USDA, Washington, D.C., January 26, 2001; Hurt, Chris, "High Calf Prices Stimulate Slow Beef Cow Expansion," *Livestock Price Outlook*, No. 2, University of Illinois and Purdue University, February, 2001. <http://web.aces.uiuc.edu/farm.doc/marketing/livestockoutlook/0201cattle.pdf>. (20 Feb. 2001).

¹⁰ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-80, ERS-USDA, February 28, 2001.

¹¹ Collins, Keith. op. cit.

¹² World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-372, Office of the Chief Economist, USDA, March 8, 2001.

¹³ Beef exports tend to be of higher-valued products than imports. In 2000, the import volume exceeded export volume by 22 percent on a weight basis, but the value of exports exceeded imports by 25 percent. Source: Foreign Agricultural Service, "Dairy, Livestock and Poultry: U.S. Trade and Prospects," DFLP 12-00, FAS-USDA, December 2000.

¹⁴ Kay, Steve, *Cattle Buyers Weekly*, January 29, 2001, citing Phil Seng, President, U.S. Meat Export Federation.

¹⁵ Lawrence, John, "Strengthening Cattle Market," *Iowa Farm Outlook Newsletter*, Econ. Info. 1803, Ames, Iowa, December 20, 2000. <http://www.econ.iastate.edu/outreach/agriculture/periodicals/ifo/121500.pdf> (8 Feb. 2001).; Hurt, Chris, "High Calf Prices Stimulate Slow Beef Cow Expansion," *Livestock Price Outlook*, No. 2, University of Illinois and Purdue University, February 2001. <http://web.aces.uiuc.edu/farm.doc/marketing/livestockoutlook/0201cattle.pdf>. (20 Feb. 2001).

¹⁶ Ibid.

¹⁷ World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-372, Office of the Chief Economist, USDA, March 8, 2001.

Table 1.—Annual per capita consumption, beef, pork, and poultry

Commodity	1999	2000	2001 (projected)
		<u>Pounds</u>	
Beef	69.1	69.5	66.8
Pork	53.9	52.4	52.8
Poultry	95.5	95.8	96.5
Total red meat and poultry	220.3	219.6	218.0

Source: World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-371, Office of the Chief Economist, USDA, February 8, 2001

Outlook for Beef Packers

Evidence indicates that existing slaughter capacity exceeds current requirements. For example, the recent closing of a major southwestern Kansas plant due to fire, with slaughter capacity of 4,000 head per day, did not appear to have an impact on fed cattle prices or producers' ability to secure outlets for their cattle in that major cattle feeding region.¹⁸ A new plant is scheduled to open this summer in south central Kansas with an estimated daily slaughter capacity of 2,000 head, and other plants are reportedly under consideration in the West and Southwest.¹⁹ Given projected decreases in cattle production, new capacity could contribute to downward pressures on beef packers' slaughter margins.

Trade press reports claim that packers are experiencing negative slaughter margins due to recent increases in fed cattle prices.²⁰ The uncertainties about sustaining beef demand cited above and projected increases in fed cattle prices in 2001 suggest that beef packers may face continued negative margins from their slaughtering operations.

Hog Industry

USDA projections indicate that hog producers are expected to earn positive margins in 2001.²¹ Hog producers enjoyed positive returns in 2000 for the first time since 1997, due to higher hog prices and relatively low feed prices. Production is expected to increase 2 percent over 2000 levels, and will be near the record level attained in 1999.²² Prices are projected to average \$40-\$43 per cwt, versus \$44.70 in 2000. Although continuing low feed prices are expected to allow producers to achieve returns above break-even for most of this year, projected prices in the fourth quarter may fall below production costs.²³ If

¹⁸ Mintert, James, "Livestock Update," *KSU Livestock Market Update* (Special Electronic Edition), Kansas State University, January 3, 2001. http://www.agecon.ksu.edu/livestock/Livestock%20Update%20Newsletters/lv_st0101.pdf (7 Feb. 2001); Kay, Steve, "ConAgra plant May Not Reopen This Year," *Cattle Buyers Weekly*, January 1, 2001.

¹⁹ Kay, Steve, "IBP Projects Sharp Drop in Beef Margins," *Cattle Buyers Weekly*, December 4, 2000.

²⁰ Kay, Steve, "Market Eases as Demand Weakens," *Cattle Buyers Weekly*, January 29, 2001; "Beef Prices Rebound on Tight Supplies," *Cattle Buyers Weekly*, February 19, 2001. Slaughter margins are the difference between the wholesale value of the meat produced from an animal, and the sum of the cost of the live animal plus costs of slaughtering the animal.

²¹ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-79P, ERS-USDA, January 24, 2001.

²² World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-372, Office of the Chief Economist, USDA, March 8, 2001.

²³ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-79P, ERS-USDA, January 24, 2001; Hurt, Chris, "Hog Industry Headed Back Toward Losses," *Livestock Price Outlook*, University of Illinois and Purdue University, January 2001. <http://web.aces.uiuc.edu/farm.doc/marketing/livestockoutlook/0101hog.pdf> (2 Feb. 2001)

so, there likely would be pressures for sow liquidation, which could result in some producers ceasing hog production.

Increase in Hog Production

Hog production is characterized by shorter production cycles than cattle because it takes much less time to produce a hog to mature weight and because of the large number of pigs per litter. Recent cycles have exhibited a long-term downward trend in the size of the breeding herd that is projected to continue.²⁴ Although evidence suggests little growth in the size of the breeding herd in 2001, increases in productivity per sow are expected to continue, with further increases in total production and total slaughter continuing after 2001.²⁵

Trade Prospects

The WAOB projects that imports and exports of pork will each increase about 3 percent in 2001 compared to 2000.²⁶ Projected exports will exceed imports by about one-third, but the net difference will equal less than 2 percent of total pork production in 2001. Concerns over BSE in beef in Europe may provide some stimulus to U.S. pork exports. EU pork consumption is expected to increase and EU pork is likely to become more expensive, providing an additional opportunity for U.S. pork in other markets.²⁷

Demand Factors

As in the case of beef, pork demand may be reduced if there is a slowing in the general economy, or if increased energy costs take a larger proportion of consumers' incomes. Increases in domestic pork demand would help absorb the increases in pork supplies expected later in 2001. Although there is evidence that demand for pork has increased since the mid-1990s, some analysts suggest the rate of increase slowed during 2000.²⁸ However, projected increases in beef prices relative to pork could cause consumers to demand more pork and pay higher prices for pork products in 2001.

Outlook for Pork Packers

Projected fourth quarter increases in the number of hogs for slaughter may approach slaughter capacity limits.²⁹ Any production above current projections, or any unexpected significant loss of capacity due to closing of plants could result in slaughter hog numbers that exceed normal capacity of existing plants. Plans have been announced for

²⁴ Young, Robert, et al. *FAPRI 2001 U.S. Baseline Briefing Book*, FAPRI-UMS Technical Data Report 01-01, Food and Agricultural Policy Research Institute, University Of Missouri, February, 2001.

²⁵ Ibid.; Grimes, Glenn, and Ron Plain, "Hog Outlook," University of Missouri, February 16, 2001.

²⁶ World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-372, Office of the Chief Economist, USDA, March 8, 2001.

²⁷ Commodity and Marketing Programs, "US Pork Exports Remain Strong," *International Agricultural Trade Report*, FAS-USDA, February 1, 2001.

²⁸ Mintert, James, "Livestock Update," *KSU Livestock Market Update* (Special Electronic Edition), Kansas State University, February 5, 2001. <http://www.agecon.ksu.edu/livestock/Livestock%20Update%20Newsletters/lvst0101.pdf> (12 Feb. 2001).

²⁹ Economic Research Service, *Livestock, Dairy and Poultry Situation and Outlook*, LDP-M-79P, ERS-USDA, January 24, 2001

construction of a major plant capable of slaughtering 4 million head per year in northeastern Kansas, but construction is not expected to begin until some time in 2001 and is expected to take about 2 years.³⁰

Projected increases in the number of hogs for slaughter are expected to provide positive returns to firms that slaughter hogs. Several firms that slaughter hogs have also integrated into hog production, and high hog prices in 2000 tended to support overall revenue for those firms. Any net revenue gains to packers due to reduced hog prices in 2001 would likely be relatively less for integrated firms than for hog slaughter firms that do not produce hogs.

Overall Assessment

Income prospects appear good for cattle producers and feeders. Projected prices and production may result in strong downward pressure on cattle packers' profitability. Although hog production is expanding, hog producers are expected to earn profits in 2001. Any unexpected events that reduce slaughter capacity could result in sharply lower prices. Hog packers are expected to be profitable in 2001.

³⁰ Seaboard Corporation, Quarterly Report (SEC Form 10Q), October 30, 2000. http://www.seaboardcorp.com/INVESTORS/pdf/2000_10q3.pdf. (21 Feb. 2000); "Seaboard Farms Finds Site For New Hog Plant," *Meat Industry Insights*, Meat Industry Internet News Service, August 31, 2000. <http://www.spnetwork.com/mii/2000/000879.htm>. (12 Feb. 2001).

Changing Business Practices in the Cattle and Hog Industries

Structure of Cattle Feeding and Beef Packing

Beef produced in the United States comes from two main sources—fed cattle and cull cattle. Cull cattle are primarily mature beef cows, dairy cows, and bulls. Beef produced from cull cattle is primarily used to produce ground and processed beef. Beef that is produced from steers and heifers that are fattened to slaughter weight in feedlots (fed beef) is used to produce whole-muscle cuts like steaks and roasts. Fed beef usually is shipped as boxed beef to grocery retailers, hotels, restaurants, and other institutions directly by packers and processors or through wholesalers. Purchasers generally cut the boxed beef into retail cuts.

Beef packing plants usually specialize in either steer and heifer slaughter or cow and bull slaughter. Steer and heifer slaughtering is concentrated in the High Plains near large commercial feedlots. However, several plants are located near the Great Lakes and in the West. Cow and bull slaughtering plants are generally smaller than steer and heifer plants. Compared to steer and heifer slaughtering plants, cow and bull slaughtering plants are not concentrated in particular geographical areas, but many are located in dairy producing areas.

Feedlots buy feeder cattle to finish for slaughter and provide cattle finishing services for cattle owned by others. Feedlots that feed cattle owned by others are referred to as custom feedlots. “Custom-fed” cattle are generally either owned by ranchers who retain ownership of calves they produce, by investors who purchase feeder cattle, or by packers. Most feedlots own at least some of the cattle they feed. Many custom feedlots also offer financing, risk management, and marketing services to their customers.

Concentration of Cattle Feeding and Beef Packing

Most cattle feeding took place on farms throughout the first half of the last century. Commercial feedyards became prevalent during the 1960s and 1970s. Cattle feeding firms have grown in size to take advantage of economies of scale.³¹ Between 1985 and 2000, the percentage of slaughter cattle marketed from feedlots having more than 32,000 head of capacity increased from 29 percent to about 40 percent (table 2). The 20 largest feedlot firms increased their feeding capacity by 38 percent between 1988 and 2000.³² Although still relatively unconcentrated in comparison to the packing industry, cattle

³¹ Hurt, Chris, “High Calf Prices Stimulate Slow Beef Cow Expansion,” *Livestock Price Outlook*, No. 2, University of Illinois and Purdue University, February 2001. <http://web.aces.uiuc.edu/farm.doc/marketing/livestockoutlook/0201cattle.pdf> (20 Feb. 2001).

³² Kay, Steve, “Big and Bigger: In Cattle Feeding as in Packing, Big Players Build Momentum,” *Beef Today*, February 1998; Kay, Steve, “Feedlots Continue to Expand,” *Cattle Buyers Weekly*, October 30, 2000.

feeding has become more concentrated in recent years. A 1996 study found that 152 sellers accounted for 43 percent of all purchases of fed cattle by the Nation's 43 largest beef slaughtering plants in 1992. The plants accounted for over 90 percent of total beef slaughter that year.³³ In 2000, annual feeding capacity of the four largest feeding firms equaled 11 percent of total steer and heifer slaughter. Capacity of the 30 largest feeding firms equaled 38 percent of total slaughter.³⁴

Table 2.—Distribution of U.S. fed cattle sales by size of feedlot, selected years 1985–00

Year	Feedlot capacity (number of head)						
	Less than 1,000	1,000 to 1,999	2,000 to 3,999	4,000 to 7,999	8,000 to 15,999	16,000 to 32,000	More than 32,000
	<u>Percent</u>						
1985	19.0	4.0	6.1	7.3	15.0	19.7	29.0
1990	15.6	4.1	7.0	7.5	14.5	23.0	28.2
1995	9.7	4.1	5.3	8.1	14.2	21.1	37.6
2000	14.2	3.2	4.6	7.6	11.1	19.4	39.8

Source: Nebraska Agricultural Statistics Service. *Nebraska Agricultural Statistics*, Nebraska Department of Agriculture, 1996 and 2000 issues; Agricultural Statistics Board, *Cattle on Feed*, Mt An 2-1 (2-01) NASS-USDA, February 16, 2001.

Four-firm concentration in steer and heifer slaughter rose sharply in the 1980s, but has changed very little in recent years. The four largest firms accounted for 36 percent of total commercial slaughter in 1980, 72 percent in 1990, and 81 percent in 1999 (table 3). The Herfindahl-Hirshman Index (HHI) also increased during this time period, which indicates that the steer and heifer market became more concentrated in the 1990s. The HHI (Herfindahl-Hirshman Index) equals the sum of each firm's squared percentage share of the total market.³⁵ The Department of Justice (DOJ) and the Federal Trade Commission (FTC) consider markets with HHI values below 1000 to be unconcentrated. Conversely, DOJ and FTC view markets as highly concentrated if they have an HHI over 1800.

Table 3.— Steer and heifer slaughter concentration, selected years 1980–99¹

	1980	1985	1990	1995	1998	1999
Four-firm Concentration (percent) ²	35.7	50.2	71.6	80.8	80.4	81.4
HHI ³	561	999	1661	2036	1936	NA

¹ Data for 1980, 1985, and 1990 are based on firms' fiscal years as reported to P&SP. Data for 1995-99 are based on calendar year for federally inspected slaughter. NA denotes not available.

² Percentage of total commercial slaughter accounted for by the four largest firms.

³ HHI (Herfindahl-Hirshman Index) equals the sum of each firm's squared percentage share of total commercial slaughter.

Source: Packers and Stockyards Administration. *Packers and Stockyards Statistical Report*, reporting years 1980, 1985, 1990; Packers and Stockyards Programs. *Packers and Stockyards Statistical Report*, reporting years 1995-98.

³³ Slaughter Cattle Procurement and Pricing Study Team., *Price Determination in Slaughter Cattle Procurement* GIPSA-RR 96-2, GIPSA-USDA, September 1996.

³⁴ Kay, Steve, "Feedlots Continue to Expand," *Cattle Buyers Weekly*, October 30, 2000. Estimated annual capacity is calculated as 85 percent of maximum one-time capacity times 2.5 turns in 1 year. A turn is the number of times the lot could be filled and the cattle fed to slaughter weight during 1 year.

³⁵ Holmes, William C. and Dawn E. Holmes. *Antitrust Law Sourcebook for the United States and Europe, 2000 Edition*. West Group, 2000.

Slaughter plant size has also increased and with it the rate of output. Several plants can slaughter more than 5,000 head per day and can process 400 or more carcasses per hour to take advantage of economies of scale.³⁶ Between 1980 and 1998, the number of steer and heifer plants slaughtering 500,000 or more cattle annually increased from 8 to 20, with 14 of those plants slaughtering more than 1 million head each in 1998.³⁷ In 1980, plants slaughtering 500,000 or more cattle accounted for 22 percent of commercial slaughter; by 1998, they accounted for 76 percent.

Changing Production and Marketing Practices

Recent developments in the cattle feeding and beef packing industries have changed how cattle are produced and marketed. In the last several years, cattle weights have increased, and there has been a rise in e-commerce and an increase in use of marketing alliances.

Increased Slaughter Weights

The weight of slaughter cattle has been increasing for many years and is expected to continue increasing. Average live weights of cattle increased from 1,080 pounds in 1980 to 1,222 pounds in 2000.³⁸ Cow-calf producers have selected larger framed breeds of cattle, which leads to increased calf weights at weaning, heavier finishing weights in fed cattle, and heavier carcass weights.

E-commerce for Feeder Calves

Cattle feeders purchase feeder cattle directly from producers, as well as through auctions including satellite video auctions and via the Internet. Video auctions have been in operation for several years, but Internet marketing for feeder cattle is new.

Numerous sites are listed on the Internet for livestock marketing. Some of these Web sites have regularly scheduled auction sales. One Internet livestock marketer recently had more than 140 buyers nationwide logged on to bid for more than 9,000 head of cattle offered for sale in 11 States.³⁹ Some Internet marketers simply list cattle for sale. About half of these sites are not actively engaged in selling cattle on the Web, they simply maintain a Web site. Some traditional auction market facilities have posted Web sites to advertise the presence of their business but have not conducted any Internet sales.

Some of the larger custom cattle feeding firms have Web sites allowing feeder cattle producers to offer their cattle for sale to cattle feeders 24 hours a day, 7 days a week.⁴⁰

³⁶ McDonald, James M., et al., *Consolidation in U. S. Meatpacking*, Agricultural Economic Report No. 785, ERS-USDA., February 2000.

³⁷ Packers and Stockyards Programs, *Packers and Stockyards Statistical Report, 1998 Reporting Year*. GIPSA SR-00-1, GIPSA-USDA, July 2000.

³⁸ Livestock Market Information Center, "Analysis and Comments," Number 4, January 26, 2001.

³⁹ eMerge Interactive, "eMerge Interactive's Cattleinonet Hosts Record-Breaking Online Cattle Auction," January 29, 2001. http://www.emergeinteractive.com/emerge/site.show_Page?p_id=30143&p_content_id=81605 (21 Feb. 2001).

⁴⁰ See, for example <http://www.info@cactusfeeders.com>.

Cattle buyers working for the feeders review information received on the Web site. If a buyer sees an attractive offer, he or she contacts the producer to look at the cattle and complete the transaction.

Shared Purchasing Agents in Livestock Auctions

In the past, fed cattle were bought and sold through auctions and terminal markets. Currently, packers primarily use alternative procurement methods to purchase fed cattle, but continue to purchase most cull cattle through auctions. Auction and terminal markets accounted for about 60 percent of sales of cows and bulls, which are primarily cull cattle, between 1990 and 1998.⁴¹ In contrast, the share of packer purchases of steers and heifers from auction and terminal markets declined from 6.2 percent to 3.2 percent during this period.⁴²

Many livestock auction markets operate only 1 day per week. Buyers travel among the auctions to purchase cattle. Packers often hire buying agents to purchase cattle for them from the auctions. Sometimes competing packers use the same buying agents who are already active at certain auctions. Recent P&SP investigations found that packer use of common purchasing agents is increasing.

Alliances and Cooperatives

Use of vertical alliances is increasing in the cattle industry. Vertical alliances exist between packers and feedlots and between packers and wholesalers or retailers. Vertical alliances facilitate coordination across production or marketing stages, and generally involve more than price coordination but less than complete ownership.⁴³ Alliances between packers and feedlots are agreements in which the feedlots deliver cattle of specified type or quality to a packer in the future through an agreed pricing mechanism. Alliances between packers and wholesalers or retailers are agreements in which a packer agrees to deliver certain products to wholesalers or retailers. Horizontal alliances among individual producers, such as marketing cooperatives, are also increasing.

Producers' use of cooperatives to market fed cattle has increased in recent years. In broad terms, a cooperative is a form of business organization in which independent firms can act collectively. A cooperative may enhance producers' marketing leverage in a market that is highly concentrated, and in which independent producers often feel disadvantaged. Cooperatives generally promote moving away from average pricing (offering one price for a pen of cattle) toward pricing cattle individually, which rewards producers for high-quality cattle and penalizes producers for low-quality cattle. Many

⁴¹ Packers and Stockyards Administration, *Packers and Stockyards Statistical Report 1990 Reporting Year*, P&SA Statistical Report Number 92-1, P&SA-USDA, November 1992; Packers and Stockyards Programs, *Packers and Stockyards Statistical Report 1998 Reporting Year*, GIPSA SR-00-1, GIPSA-USDA, July 2000.

⁴² Packers and Stockyards Administration, *Packers and Stockyards Statistical Report 1990 Reporting Year*, P&SA Statistical Report Number 92-1, P&SA-USDA, November 1992; Packers and Stockyards Programs, *Packers and Stockyards Statistical Report, 1998 Reporting Year*, GIPSA SR-00-1, GIPSA-USDA, July 2000.

⁴³ Ward, C. E., and T. L. Estrada, "Beef Industry Alliances: Motivation and Characteristics," OSU Extension Facts WF-563. Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK, August 2000.

cooperatives help their members improve the consistency and quality of their beef cattle by providing individual carcass data to the feedyards and producer-members.

For example, in July of 1996, cattle producers organized the marketing cooperative U.S. Premium Beef (USPB) and purchased a 29-percent share of Farmland National Beef Packing Company to slaughter their cattle.⁴⁴ In another example, several feedlots in Texas, Oklahoma, New Mexico, Colorado, and Kansas joined together in late 2000 and made commitments to market 2.1 million cattle through Consolidated Beef Producers (CBP). About one-fourth of the region's weekly fed-cattle supply will be under contract to CBP. CBP expects to start selling cattle within the first 6 months of 2001.⁴⁵

Mandatory Price Reporting

In 1999, Congress enacted the Livestock Mandatory Reporting Act of 1999. Currently, some packers and feedlots voluntarily report prices to USDA's Agricultural Marketing Service (AMS). Under the legislation, large meat packers will be required to report to AMS the prices they pay for cattle and hogs and prices they receive from sales of boxed beef. AMS will publish summaries of the data. Mandatory price reporting is expected to affect marketing practices by changing the amount and type of market information available to producers and packers. A stated goal of the program is to help level the playing field for small farmers and ranchers, allowing them to better compete in an increasingly concentrated agricultural economy.⁴⁶ The mandatory program is scheduled to take effect on April 2, 2001.⁴⁷

Fed Cattle Procurement Methods

Procurement methods refer to the methods used to purchase livestock, including purchases through the spot market, various types of contracts, and other marketing agreements. Within any procurement method, a pricing method is used to determine the price of the cattle. Live weight, dressed weight, and market average are examples of pricing methods. Pricing methods will be discussed in the next section.

Spot Market

Spot market refers to sales of livestock that are ready for delivery and the sale price is determined at the time the agreement is entered. Spot market sales include cattle priced on a live weight, dressed carcass weight, and grade and yield basis.

The use of the spot market to buy and sell fed cattle has long been an institution in the beef industry. The location at which trading occurs has changed, however. In years past most spot trading occurred at terminal markets and auctions. More recently, trading has

⁴⁴ Hunt, Steve, "USPB Just Got Better!" *USPB Update* Vol. 2 Issue 16, November 13, 1998.

⁴⁵ Kay, Steve, "CBP Appoints Kaplan," *Cattle Buyers Weekly*, January 22, 2001.

⁴⁶ USDA, "Glickman Announces Mandatory Livestock Price Reporting," USDA Press Release No. 0409.00. November 28, 2000.

⁴⁷ Agricultural Marketing Service, "USDA Announces New Launch Date for Livestock Mandatory Reporting Program," AMS Press Release No. 033-01. January 26, 2001.

shifted to feedlots, where packers purchase fed cattle directly from cattle owners, or from feedlot managers who represent the owners.

Spot market procurement of fed cattle generally occurs over a week-long period. At the beginning of the week, packer buyers visit feedlots where they receive a list of cattle (show list), which indicates the cattle available by pen. The buyers view the cattle on the show list to estimate their value. The feedlot manager informs each buyer of the asking prices for the cattle. The buyer may or may not make bids. The packer's head buyer, who is usually at the corporate headquarters, generally sets the maximum price a buyer can bid.

The process by which buyers and sellers arrive at bid and ask prices is part of the process referred to as price discovery. Among other things, the buyers and sellers monitor reported spot market sales, the Chicago Mercantile Exchange (CME) Live Cattle Futures quotes, and wholesale meat prices to help them determine how much they will bid or accept. In recent times, buyers generally increase bids in \$0.50 or \$1.00 per cwt increments in the bidding process.

The date and time of delivery and who pays for delivery also are important elements of a transaction. A packer may be willing to offer a price premium if, for example, a feedlot is willing to deliver the cattle in the early morning so the packer has an inventory of cattle to start its first slaughter shift of the day.

Managers of custom feedlots may contact the cattle owners (customers) before accepting a bid on behalf of the owners, to apprise them of offers or general market conditions, and make recommendations about whether to accept a bid. When a deal is struck, the seller and buyer then agree on a date and time when the cattle will be shipped.

Recently, many producers have reported the perception that there has been a reduction in the length of the "trading window." The trading window refers to the time interval during which the bulk of cattle are sold each week. Buyers and sellers engage in price discovery through the week, monitoring several information sources before making trades. Eventually, the market price is established and trade occurs. The bulk of trading may occur during a relatively short period. Some feedlot managers report that they often receive multiple bids in rapid succession, and must decide quickly whether to accept an offer or wait for a better offer. During its 1996 Texas Panhandle Fed Cattle investigation, P&SP did not observe the short trading window people claimed existed. The highest volumes of cattle were purchased on Wednesdays, but spot-market transactions occurred on every business day of the week. Nevertheless, the time within the week during which the bulk of spot market cattle are traded may be shortening over time.

Non-Spot Market Procurement Methods

The term "non-spot market procurement" refers to all transactions in which the cattle are committed to a packer before the cattle are ready for slaughter, and transactions in which the price is not established at the time the sales commitment is made. Three common

non-spot market procurement methods are marketing agreements, forward contracts, and packer fed cattle. Collectively, cattle purchased through these three methods are referred to as captive supplies.

Analysts have identified a number of reasons why feeders and packers enter into these arrangements.⁴⁸ Packers may gain a more predictable supply of cattle, be better able to utilize their plant capacities, reduce transaction costs, and reduce price risks. Likewise, feedlots may be able to better utilize feedlot capacities, reduce marketing costs, and reduce risks associated with variation in spot market prices.

Marketing Agreements—Marketing agreements, which may be written or verbal, establish an ongoing relationship for the sale of fed cattle, rather than negotiating single-lot transactions.⁴⁹ They often include minimum and maximum numbers of head to be delivered per unit of time, delivery specifications, auditing practices, and pricing method. Pricing often is by formula, based on average prices for other cattle slaughtered at the plant or publicly reported prices, with premiums and discounts applied for differences in cattle quality.

Marketing agreements generally permit the seller substantial influence over the week of delivery, while the packer usually determines the day of delivery within the week. In a typical marketing agreement, the feedlot manager will notify the packer buyer that the feedlot is ready to deliver a specified number of head for slaughter under the agreement the following week. The buyer may make a visual estimate of the cattle quality and agree on a delivery day.

Forward Contracts—A packer and seller who enter into a forward contract agree upon future delivery of a specific lot or quantity of fed cattle to the packer. Price may be fixed when the contract is entered into, but usually the parties agree to use a pricing formula that uses other information, such as futures market prices or publicly reported prices, to determine the base price in the contract. When the price is based on futures contract prices, the parties agree on a differential from futures market prices for a specified futures contract month. The differential is called the basis; hence these contracts are commonly referred to as “basis contracts.” Premiums and discounts are applied for differences in animal quality or other non-quality-related factors.

In a typical basis contract, feedlots and packers agree on a delivery month, the specific cattle to be delivered, cattle quality standards, and the price basis. The seller may lock in the price by selecting the date when the futures price will be locked, if selected before the delivery month. For example, a feedlot may place cattle on feed in March to be ready for delivery in June. The feedlot and the packer agree on a delivery month (June), a futures contract month (June), quality standards, and a basis (−\$2 per cwt, for example). As the delivery month approaches, the seller notifies the packer of the day he or she desires to

⁴⁸ Schroeder, Ted C., and Rodney Jones, “Captive Supplies in Fed Cattle Markets,” *White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry*, Research Bulletin 5-99, Research Institute on Livestock Pricing, Blacksburg, VA, May 1999.

⁴⁹ The term “lot” is commonly used to represent a group of cattle purchased as a unit in a transaction.

lock in the price. The locked price is determined by applying the basis to the futures market price for that date. The packer and feeder agree on a delivery date and time.

P&SP reports on the volume of cattle that packers report they have procured under forward contracts and market agreements. Between 1988 and 1998, the latest data available, the percentage of cattle the 15 largest packers reported procuring through marketing agreements and forward contracts ranged between 13 percent and 19 percent, with no upward or downward trend over the period.⁵⁰

Packer Feeding—Packers slaughter some cattle that they own and feed themselves, either in their feedlots or in custom feedlots. In some instances, the feedlot may be owned by a subsidiary of the packing firm, or by a subsidiary of a separate parent company of the packer. In some instances, packers may enter into joint ventures, sharing ownership of cattle with individuals or with feedlots where the cattle are fed. A joint venture is a profit sharing agreement in which the feeder and packer share the costs and revenues. When packer-owned cattle are ready for slaughter, the feedlot manager notifies the packer of the number of head and the week of delivery and the packer schedules the delivery day. Typically, feedlot managers will notify the packer when the cattle have reached the desired weight and degree of finish, and the packer has discretion in scheduling delivery for slaughter. Based on data reported to P&SP by the packers, packer-fed cattle as a percentage of slaughter declined from 4.7 percent in 1988 to 3.5 percent in 1998.⁵¹

Captive Supplies—Producers and others have differing concepts of what constitutes captive supplies. Some, including P&SP, define captive supplies as cattle that are owned by or under contract to a packer more than 14 days before the animals are ready for slaughter. P&SP's definition includes cattle procured through marketing agreements, forward contracts, and packer feeding arrangements. Some market participants define captive supplies to include all transactions in which price is based on a plant average price, while others define as captive supplies all non-spot market transactions. Some limit the definition of captive supplies to cattle committed to a packer for any period of time, while others require a set amount of time, which can be more or less than the 14 days used by P&SP. P&SP is undertaking a Congressionally-mandated study of the captive supplies issue.⁵²

Fed Cattle Pricing Methods

Pricing methods refer to the method used to determine the price paid for a specific lot of cattle. Examples of pricing methods include liveweight, in-the-beef, grade and yield, and formula. The same price may be paid for all animals in a lot (lot-average pricing) or different prices may be paid for each animal (carcass-merit or value-based pricing).

Lot-Average Pricing

⁵⁰ Packers and Stockyards Programs, *Packers and Stockyards Statistical Report, 1998 Reporting Year*, GIPSA SR-00-1, GIPSA-USDA, July 2000.

⁵¹ Ibid.

⁵² Conference Report 106-948, 106th Congress, 2d Session, to accompany H.R. 4461, October 6, 2000.

Lot-average pricing is the traditional pricing method used in purchases of cattle. Price negotiations are based on the estimated average quality of all cattle in a lot. Lot-average pricing includes liveweight and in-the-beef pricing methods. In liveweight pricing, the buyer pays one price for each hundred pounds of live weight; the total amount paid for a lot of cattle is simply the total live weight multiplied by the price. In in-the-beef pricing, the buyer pays one price for each hundred pounds of dressed weight for all cattle in a lot. The dressed weight is the weight of all carcasses in the lot after evisceration. The amount paid for a lot of cattle is simply the total dressed weight multiplied by the price. Lot-average pricing is the most common method of pricing for spot market transactions.

Value-Based Pricing

Many packers and feedlots favor carcass-merit or value-based pricing because it allows prices to better reflect differences in carcass quality. In value-based pricing, cattle prices are based on carcass quality factors such as USDA quality grade or yield grade. Value-based pricing mechanisms often have a base price that is adjusted by a set of premiums and discounts for individual carcass quality characteristics. The final price cannot be determined until the cattle are slaughtered and the carcass merit factors determined.

Grade and Yield Pricing—A frequently used value-based pricing method is grade and yield pricing, which starts with a specified dressed-weight base price and a schedule of premiums and discounts that are applied to carcass attributes. The base price is typically specified for a carcass with a quality grade of USDA Choice and a Yield Grade 3.⁵³ Carcasses that perform better than this benchmark receive the base price plus a premium. Carcasses that grade below the benchmark receive discounts from the base price. Yield Grades 4 and 5, for example, might receive a \$10/cwt. discount. Grade and yield pricing is often used in spot market transactions.

Grid Pricing—Grid pricing is often used in non-spot market transactions. Grid pricing is very similar to grade and yield pricing.⁵⁴ Both determine the final price using a base price and a schedule of quality-based premiums and discounts. Instead of using a predetermined base price as in the grade and yield pricing method, grid pricing uses a base price that is determined after the transaction is negotiated. Often, the base price is calculated from an average price reported by AMS' Market News or from average prices paid by the packer for cattle purchased on the spot market during the week of slaughter or the previous week. Other plant average measures may be included as well. The packer calculates plant average prices.

Boxed-Beef Pricing—Many packers and producers believe that traditional pricing methods do not adequately relay consumer price signals to producers. Major beef

⁵³ USDA has a uniform system of grades for slaughter cattle. Quality grade represents palatability, a function of firmness of muscling and other physical characteristics. Quality grades for steers and heifers range from Prime, the most favorable, to Choice, Select, Standard, Commercial, Utility, Cutter, and Canner. Slaughter cattle also are assigned one of five yield grades, with Yield Grade 1 representing the highest degree of cutability. USDA, AMS, "United States Standards for Grades and Slaughter Cattle," July 1996.

⁵⁴ Grid pricing is frequently referred to as formula pricing. The term "formula" may refer to the use of an external price (such as a publicly reported price) to establish the base price in grid pricing, or may include calculation of the final price, including the application of all premiums and discounts.

packers are increasing their use of a relatively new pricing method that directly utilizes the wholesale value of beef (boxed-beef cutout prices) to determine cattle prices.⁵⁵

Changes in Beef Marketing

Changing technology and changing consumer preferences have been major driving forces in recent meat marketing developments.

Product Development

For the past few decades, packers have limited their businesses to slaughter and fabrication into boxed beef, with minimal fabrication into retail cuts. Recent developments in packaging and processing technologies now enable packers to further process beef and add value to their products by producing case-ready, branded, and convenience products.

Case-ready meats are retail cuts that are packaged at packing or processing plants and shipped, ready for the meat case, to retail outlets. Packages may be priced at the packing plant or at the retail store. Packers cite production of case-ready beef as a way to reduce the need for labor at the retail level, address consumers' concerns about food safety, and provide a more uniform product.⁵⁶

As packers produce more case-ready products, they also are increasing the use of brand names. Packers produce products under their own brand names, and for other brands, including a number of certification programs. By the end of 2000, the USDA Meat Grading and Certification Service had certified 40 different branded beef programs, an increase from only 11 programs in 1997.⁵⁷ The number of carcasses certified by USDA graders to meet certified beef programs has grown from 750,000 in 1993 to approximately 3.5 million in 2000. This number understates the total number of carcasses marketed under branded programs because some programs do not request USDA certification.⁵⁸

The oldest and most widely recognized beef certification program is the Certified Angus Beef Program (CAB). In 1999, 494.7 million pounds of beef were marketed as CAB products to retail, foodservice, and other outlets. In 2000, marketing rose to 555 million pounds.⁵⁹

⁵⁵ Cutout values are composite values of beef carcasses derived from the value of individual cuts.

⁵⁶ "IBP to Open Case-Ready Meats Plant in Texas," Meat Industry Insights News Article No. 000753, July 2000. <http://www.spnecnetwork.com/mii/2000/000753.htm>, (21 February, 2001); Smith, Gary S. and Morgan, J. Brad, "Understanding Today's Customers and Marketing to Their Needs; Industry Trends and Projections for the Future; Current and Future Food Safety Issues-Staying Ahead (1998-1999)," presented at the Wakefern Food Corporation Seminar, Edison, NJ, September 14-15, 1999.

⁵⁷ Agricultural Marketing Service. "USDA Certified Beef Programs: Individual Specifications and Contact Information," AMS-USDA, 2001. <http://www.ams.usda.gov/lsg/certprog/certbeef.htm>. (21 Feb. 2001).

⁵⁸ "Quality Audit Shows Improvement in Beef," *The High Plains Journal*, Dodge City, KS, February 12, 2001. <http://www.hpj.com/archives/feb01/0205ncba-qualityauditmrncjml.htm> (23 Feb. 2001).

⁵⁹ Certified Angus Beef Program, "2000 Statistics and 2001 Projections," 2001. <http://www.certifiedangusbeef.com/cabprogram/html/stats2000.html>. (21 Feb. 2001).

Branded product lines include value-added products that are already prepared for consumers, such as pre-cooked roasts or beef stews. Packers combine recent advances in food processing technology with research and experimentation to develop products that are convenient and can be prepared quickly and easily. Most of the products are seasoned, marinated, or prepared with gravy. Packers also produce precooked beef products that maintain their flavor and palatability under the stress of microwave preparation and reheating.⁶⁰

E-commerce for Meat

In the fall of 2000, the American Meat Institute (AMI) conducted a survey of its 300 member businesses to determine attitudes and preparedness for making e-commerce a part of their business practices. The information obtained from that survey showed: (1) 83 percent of surveyed companies are active on the Internet; (2) most companies use the Internet to send e-mail communications and promotions; (3) by 2002, 66 percent of surveyed companies will be moving to some kind of e-commerce strategy; (4) 83 percent of the companies are interested in e-commerce; and (5) about 50 percent of the surveyed companies have been contacted by suppliers to assess their ability to participate in Internet-based business initiatives.⁶¹

In March 2000 AMI announced an exclusive partnership with FoodUSA.com, an on-line meat exchange, to provide trading opportunities for the global meat and poultry industry.⁶² FoodUSA.com went on line April 12, 2000, and achieved some early success, with \$10 million in sales in its first 46 days⁶³ and \$30 million in sales by October 2000.⁶⁴ However, activity slowed and FoodUSA ceased operating in January 2001.⁶⁵ In April of 2000, IBP, inc., Tyson Foods, Inc., Gold Kist, Inc., and the red meat subsidiaries of Cargill, Inc. and Farmland Industries, Inc. announced formation of Commerce Ventures, a neutral, Web-based exchange open to the entire meat industry.⁶⁶ It has named a chief executive officer but has yet to go on-line with its operations.⁶⁷

E-commerce is still an emerging marketing trend in the beef industry. As supermarkets, packers, and meat product markets become more familiar with various aspects of e-commerce, it is anticipated that its use will increase.

⁶⁰ Thornsberry, Max D.V.M., "Producer Perspective on Direct Marketing," Presentation at the R-CALF Annual Convention., February 2, 2001.

⁶¹ Information distributed at AMI Foodservice Marketing & Technology Conference, Las Vegas, NV, October 12-14, 2000.

⁶² American Meat Institute, "Leading National Trade Association Announces E-Commerce Partnership with .Com," March 21, 2000. <http://www.meatami.com/Template.cfm?Section=Archived&NavMenuID=275&template=PressReleaseDisplay.cfm&PressReleaseID=29> (21 Feb. 2001).

⁶³ "On-Line Meat Exchange Closes \$10 Million in Sales," Meat Industry Insights News Article No. 000647, June 16, 2000. <http://www.spnetwork.com/mii/2000/000647.htm>. (21 Feb. 2001).

⁶⁴ Justfood.com editorial team, "USA: FoodUSA.com follows Foodline.com into oblivion," January 4, 2001. http://www.just-food.com/news_detail.asp?art=21371&c=1 (21 Feb. 2001).

⁶⁵ Feuerstein, Adam. "B-to-b food marketplace shuts down," January 3, 2001. <http://www.upside.com/texis/mvm/story?id=3a536f51a>. (21 Feb. 2001).

⁶⁶ "IBP, Cargill, Smithfield, Tyson, Gold Kist, Farmland plan e-commerce system for meat and poultry," Cargill. Press Release. April 11, 2000. http://www.cargill.com/today/releases/00_4_11tyson.htm. (23 Feb. 2001).

⁶⁷ "Online Meat Exchange Appoints CEO," Meat Industry Insights News Article No. 001210, December 5, 2000. <http://www.spnetwork.com/mii/2000/001210.htm> (21 Feb. 2001).

Changes in Hog Production

As with other sectors of the U.S. economy, changing business practices in recent years have influenced the hog industry. This part of the report discusses changes in technology, hog production, marketing and processing, the use of production and marketing contracts, and the marketing of pork.

Over 96 percent of the hogs slaughtered in the United States are barrows and gilts. Cull breeding stock account for the remaining slaughter.⁶⁸ The majority of barrows and gilts are produced in confinement and, to a lesser degree, pasture (free range) environments in one of four types of production operations: (1) farrow-to-wean farms that sell weaned pigs, weighing up to 15 pounds to nursery or finishing farms; (2) farrow-to-nursery farms that sell feeder pigs weighing 50 pounds to finishing farms; (3) finishing farms that feed pigs weighing from 50 pounds to their market weight of around 250 pounds; and (4) farrow-to-finish farms that include all stages of production from breeding through finishing to market weight.

Barrows and gilts generally are marketed directly to packing plants, or to one of several regional buying stations established by a packer and located nearer to producer operations. Sows and boars generally are marketed through auction markets or dealers to packing plants. Meat products from packing plants are sold to processors, retailers, and foodservice operators as fresh or processed primals, subprimals, or case-ready pork. Case-ready refers to retail cuts that are packaged at packing plants and shipped ready for the meat case.

Most hog packing plants in the United States are located in Midwestern States, including Illinois, Iowa, Minnesota, Nebraska and South Dakota, and in Southeastern States including North Carolina and Virginia. The geography of the hog production landscape is changing, however. A 2000 USDA report states, “[h]og production has expanded in recent years in areas in the South and in nontraditional areas of the West, and a number of counties that were only minimally involved in the hog industry as of 1992 now have significant numbers of hogs.”⁶⁹ Although environmental laws are becoming more stringent, and hog production is shifting to non-traditional areas, a number of studies have found that the former is not the cause of the latter.⁷⁰ Hog operations tend to move to locations where efficiencies can be gained and the unit cost of production is lower.⁷¹

Producer Numbers Are Decreasing, Herd Sizes Are Increasing

⁶⁸ Livestock Marketing Information Center, Lakewood, Colorado, “Analysis and Comments,” Number 4, January 26, 2001.

⁶⁹ Economic Research Service, “Environmental Regulation & Location of Hog Production,” *Agricultural Outlook*, ERS-USDA, September 2000.

⁷⁰ Metcalfe, M, “Location Of Production And Endogenous Water Quality Regulation: A Look At The US Hog Industry,” 1999 American Agricultural Economics Association Annual Meetings selected paper, April 27, 1999; Park, D., A. Seidl, S. Davies, and W.M. Frasier, “Environmental Policy Influences on Livestock Stocking and Location Decisions,” Paper presented at the Western Agricultural Economics Association Annual Meetings, Vancouver, B.C. June 29-July 1, 2000; Economic Research Service, “Environmental Regulation & Location of Hog Production,” *Agricultural Outlook*, ERS-USDA, September 2000.

⁷¹ Economic Research Service, “Environmental Regulation & Location of Hog Production,” *Agricultural Outlook*, ERS-USDA, September 2000.

The size of the typical hog production operation has changed in recent years. Hog producers are moving toward fewer and larger integrated operations.⁷² In the past, many smaller volume producers supplied a majority of the Nation's hog supply. Today a few larger volume operations produce most hogs. The number of operations with less than 100 hogs on hand has decreased from 96,730 (3.5 percent of the hog inventory) in 1995 to 47,560 (1.5 percent of the hog inventory) in 2000 (table 4). In 1995, operations with 5,000 or more hogs had 27.5 percent of the hog inventory. By 2000, the same size operations comprised 50.5 percent of the hog inventory. Overall, there were 82,690 fewer operations in 2000 than there were in 1995.

Table 4.—Number of operations and percentage of hog inventory by size of operation¹

Head	1995	1996	1997	1998	1999	2000
1-99	96,730 (3.5)	81,930 (3.0)	69,460 (2.0)	61,670 (2.0)	52,880 (1.5)	47,560 (1.5)
100-499	44,140 (18.0)	35,585 (15.0)	28,095 (11.0)	27,135 (9.5)	22,810 (8.0)	17,695 (6.0)
500-999	15,160 (17.0)	12,960 (15.0)	11,670 (12.0)	11,350 (11.0)	9,255 (9.0)	7,745 (8.0)
1,000-1,999	7,420 (17.0)	6,830 (16.0)	6,755 (14.5)	6,825 (14.0)	6,500 (13.0)	5,870 (13.0)
2,000-4,999	3,615 (17.0)	3,490 (17.0)	4,355 (20.5)	4,765 (21.5)	5,110 (22.0)	4,795 (21.5)
5,000 or more	1,385 (27.5)	1,585 (34.0)	1,825 (40.0)	1,905 (42.0)	2,055 (46.5)	2,095 (50.5)
Total	168,450	142,380	122,160	113,650	98,610	85,760

¹ An operation is any place with hogs and pigs on hand at any time during the year. Percentage of inventory in parentheses. Source: National Agricultural Statistics Service, *Hogs & Pigs*, December issues, 1995-00.

Increasing Litter Size, Litters Per Sow, Carcass Weights

Changing swine genetics have improved many aspects of production efficiency. Litter size, litters per sow, and carcass weights have all increased with genetic improvements. From 1995 through 2000, the number of pigs per litter increased 6.25 percent (table 5).

Table 5.—Average number of pigs per litter

1995	1996	1997	1998	1999	2000
8.32	8.5	8.66	8.71	8.79	8.84

Source: National Agricultural Statistics Service, *Hogs & Pigs*, December issues, 1995-00.

⁷² Park, D., A. Seidl, S. Davies, and W.M. Frasier, "Environmental Policy Influences on Livestock Stocking and Location Decisions," Paper presented at the Western Agricultural Economics Association Annual Meetings, Vancouver, BC, June 29-July 1, 2000.

Larger operations have consistently produced larger litters. In 2000, the largest volume producers, on average, produced 1.4 (18.47 percent) more pigs per litter than the smallest producers did. Smaller volume producers, however, have seen a greater increase in their pigs per litter since 1995 than the larger volume producers (table 6).

Table 6.—Average number of pigs per litter by size of operation, 1995-2000

Year	Pigs per litter on operations having					
	1-99 head	100-499 head	500-999 head	1,000- 1,999 head	2,000- 4,999 head ¹	5,000 or more head
1995	7.22	7.76	8.02	8.30	8.71	
1996	7.35	7.90	8.13	8.43	8.78	
1997	7.43	7.88	8.18	8.48	8.63	8.95
1998	7.38	8.03	8.33	8.53	8.78	8.93
1999	7.65	8.13	8.30	8.58	8.78	8.95
2000	7.58	7.98	8.30	8.63	8.78	8.98

¹ 2000 or more head in 1995 and 1996.

Source: National Agricultural Statistics Service, *Hogs & Pigs*, December issues, 1995-00.

Annual litters per sow have increased from an average 1.68 in 1995 to 1.75 in 1999, a 4.2-percent increase (table 7).

Table 7.—Annual litters per sow

1995	1996	1997	1998	1999
1.68	1.64	1.75	1.73	1.75

Source: National Pork Producers Council, *Pork Facts 2000/2001*.

Improved genetics have also led to heavier carcass weights. The average carcass weight for commercial hogs increased an average of 5 pounds, or 2.7 percent from 1995 through 1999 (table 8).

Table 8.—Average carcass weight of commercial hogs

1995	1996	1997	1998	1999
185	185	<u>Pounds</u> 187	188	190

Source: Economic Research Service, "Average Commercial Dressed Hog Weight," *Red Meat Yearbook*, ERS-USDA, Sept. 2000.

Specialized Production

Compared with past years, fewer producers today are operating farrow-to-finish operations. Instead, they engage in specialized farrowing, nursery, or finishing operations. Specializing in a particular stage of hog production allows producers to perfect their production methods. Some producers raise hogs in specialized operations

under production contracts available from one of several contractors.⁷³ A survey of 8,300 farmers in 1997 showed that producers who were involved in contract production accounted for 40 percent of all farrowed pigs and 44 percent of all finished hogs. Pigs raised for others under contract accounted for 17 percent of all farrowings and 30 percent of all finished hogs (table 9).

Table 9.—Hogs farrowed and finished by producers using production contracts, 1997¹

Size class (1000 head)	Total farrowing	Total Finishing	Contract Farrowed	Contract finished
<u>Percent</u>				
1-49	10	14	1	8
50-499	8	9	4	7
500 or more	22	22	11	16
Total	40	44	17	30

¹Total farrowing and total finishing represent the percentage of total production from operations of producers who raised their own pigs plus their contracted operations (i. e., as contractors, they had other producers raise their pigs under production contracts). Contract farrowed and contract finished represent the contract production of these producers as a percentage of all production.

Source: Lawrence, J., G. Grimes, and M. Hayenga, "Production and Marketing Characteristics of U.S. Pork Producers, 1997-1998," Staff Paper 311, Iowa State University, Department of Economics, December 1998.

New Genetics

Changes in swine genetic technology have had a major impact on the hog industry in the past decade. Some large volume producers adopted genetics on their own accord or adopted genetic lines offered in contracts by packers.

For example, in 1995, Smithfield Foods, Inc. (Smithfield) introduced a new product line utilizing its line of NPD hogs. The National Pig Development Company of East Yorkshire, England developed NPD genetics. Smithfield holds exclusive rights to NPD genetics in the United States and uses them in each of its largest hog production companies: Brown's of Carolina Inc., Carroll's Foods, Inc., and Murphy Farms, Inc.⁷⁴ Many U.S. hog producers, including the second largest producer, Seaboard Farms, Inc., utilize genetics from the world's largest swine breeding company, Pig Improvement Company.⁷⁵

The emergence of swine genetics as a marketable commodity has persuaded many non-producers and non-packing firms to enter the industry. DeKalb Choice Genetics, a subsidiary of Monsanto Agriculture Co., does not operate a pork packing plant but is the second largest swine genetics company in the United States.⁷⁶ Farmland Industries Inc. instituted a "Uniform Pork" program that requires hog producers to use the services of DeKalb Choice Genetics.⁷⁷

⁷³ National Pork Producers Council, *Guide to Contracting*, 2000.

⁷⁴ Smith, Rod, "Smithfield Restructures Unit to Emphasize Lean," *Feedstuffs*, March 20, 2000.

⁷⁵ Smith, Rod, "DeKalb to Offer Accelerated 'Choice' in Swine Genetics," *Feedstuffs*, June 19, 2000.

⁷⁶ Smith, Rod, "DeKalb to Offer Accelerated 'Choice' in Swine Genetics," *Feedstuffs*, June 19, 2000.

⁷⁷ Kenyon, David E. and Wayne Purcell, *Price Discovery & Risk Management in an Industrialized Pork Sector*, Department of Agricultural and Applied Economics, Virginia Polytechnic Institute and State University, October, 1997.

Structure of Hog Packing

Increased Packer Concentration

Concentration has increased in the pork packing industry. In 1980, the four largest firms accounted for 34 percent of the U.S. commercial hog slaughter (table 10). In 1990, four-firm concentration increased to 40 percent and by 1999, the top four firms slaughtered 56 percent of commercial hog slaughter. The increase in concentration is also reflected in the Herfindahl-Hirshman Index (HHI). The HHI equals the sum of each firm's squared percentage share of the total market. The Department of Justice and the Federal Trade Commission view markets as highly concentrated if they have an HHI over 1800.⁷⁸ The pork industry was well below the moderately concentrated threshold of 1000 in 1980 with an HHI of 436 (table 10). In 1995 the index value was 769 and by 1998 it was over 1000. The 1998 HHI of 1036 indicates that the pork industry is moderately concentrated.

Table 10.—Hog slaughter concentration¹

	1980	1985	1990	1995	1996	1997	1998	1999
Four-firm concentration (percent) ²	34	32	40	46	55	54	56	56
HHI ³	436	456	593	769	961	976	1036	NA

¹ Data for 1980, 1985, and 1990 are based on firms' fiscal years as reported to P&SP. Data for 1995-00 are based on calendar year for federally inspected slaughter. NA denotes not available.

² Percentage of total commercial slaughter accounted for by the four largest firms.

³ HHI (Herfindahl-Hirshman Index) equals the sum of each firm's squared percentage share of total commercial slaughter. Source: Packers and Stockyards Administration. *Packers and Stockyards Statistical Report*, reporting years 1980, 1985, 1990; Packers and Stockyards Programs. *Packers and Stockyards Statistical Report*, reporting years 1995-99.

Changes in Slaughter Practices

Hog slaughtering practices have changed in part due to the development of technologies for measuring carcass quality factors. Instead of pricing hogs on live weights, as they have traditionally done, packers increasingly price hogs on various measures of carcass characteristics for each individual hog. The new technology has resulted in integration of evaluation devices into slaughter lines, requiring additional steps in slaughter procedures.

To meet consumer preferences, and to capture carcass or meat value from quality improvements, packers may use devices to measure desired carcass or meat traits.⁷⁹ As consumer preferences for desired meat traits are identified, tools have been developed to measure the presence of those traits in hog carcasses. Packers pay producers for delivering hogs with preferred quality traits through a system of premiums and discounts.

⁷⁸ Holmes, William C. and Dawn E. Holmes, *Antitrust Law Sourcebook for the United States and Europe, 2000 Edition*, West Group, 2000.

⁷⁹ David Meisinger, "Pork Quality: Where are we at?" *Being Competitive & Successful in the Pork Industry: Competitive Seminar For Pork Producers*, National Pork Producers Council, Des Moines, IA, 1998, p. 193.

When packers purchase hogs through carcass merit pricing programs, the appropriate application of those devices affects payment. Electronic grading devices measure and record carcass quality traits, such as backfat and loin eye depths. These measurements are used in a statistical formula to estimate the percentage of lean meat in a carcass. The lean percentage is then used to determine the payment amount. Payments to producers are intended to reflect the quality of each carcass.

Most devices described below are used to estimate the percentage of lean meat in a hog carcass. Additional devices that measure color, pH, and tenderness are in the experimental stage, but have not yet been adapted to current plant line speeds and conditions.

A number of packers currently use optical probing devices to measure loin eye and backfat depth in individual hog carcasses. Because backfat reflects more light than is reflected by red meat (muscle), these devices are able to measure both fat and muscle thickness.⁸⁰ A prediction equation converts the measurement into percentage-lean estimates needed to calculate payments due producers.

Another carcass evaluating device uses ultrasonic sound waves to measure loin eye and backfat depth and muscle mass. Like the optical probe described above, readings are taken between the third and fourth last ribs but unlike the optical probe, it is non-invasive. A prediction equation converts the measurement into percentage-lean estimates needed to calculate payments due producers.

A third class of carcass evaluating devices in use in the hog industry uses pulse echo ultrasound to measure muscle and backfat depths. These devices create a three-dimensional ultrasonic image to estimate fat and muscle mass. Producers are paid on a percentage-lean basis or according to the estimated primal meat cuts available from each carcass.

A final class of carcass evaluating device uses an electromagnetic field, similar to that used in Magnetic Resonance Imaging (MRI) in the medical field, to estimate carcass composition. As the carcass passes through the device, it absorbs electromagnetic energy differentiating between bone, fat, muscle, and skin. The energy absorption is recorded as a bell curve and is used to estimate the weight of primal cuts. The estimated weight of primal cuts is used to determine payments due producers.

Procurement and Pricing Methods

In the past, hogs were typically sold on the spot market, and priced predominantly based on live weights. A 2000 survey of 10 of the 13 largest pork packers revealed that spot market purchases had declined in the past 3 years. Spot market purchases accounted for

⁸⁰ Eric P. Berg, editor, *Composition and Quality Assessment Procedures*, National Pork Producers Council and American Meat Science Association, Des Moines, IA, 2000.

43 percent of packers' total slaughter in 1997, and had declined to 26 percent in 2000.⁸¹ Today, large farms produce most U.S. hogs, and deliver directly to the packer, where price is based largely on carcass merit.⁸² The share of hogs purchased on a carcass basis increased from 42.9 percent of all purchases in 1995 to 70.1 percent in 1998.⁸³

A recent P&SP investigation revealed that smaller volume producers tended to sell hogs more frequently on the spot market than under marketing contracts. Investigation results showed that smaller volume producers, on average, received lower prices for hogs, but also generally produced lower quality hogs.⁸⁴ Hogs sold on the spot market during the investigation period generally produced lower Fat Free Lean Index (FFLI)⁸⁵ scores than hogs sold under marketing contracts. The investigation also revealed that smaller volume producers might not receive quantity premiums because they failed to meet delivery volume thresholds. Quality premiums, which may be specified in marketing contracts or as part of packer grade and yield programs, are offered to sellers who are able to deliver a minimum number of hogs during a certain time period.

Increased Use of Production and Marketing Contracts

Use of production and marketing contracts is increasing. According to the NPPC, contractors, packers, and contract producers are motivated to use contracts for a number of reasons (table 11). Risk sharing appears to be the most common motivation for entering into a contract. Contracts allow each party to share risks associated with price, supply, quality, and/or income. Contracts analyzed by P&SP range in length from 3 months to 20 years, with most averaging about 7 years. Some contracts are open-ended with a provision that requires one party to give notice of termination up to 1 year before actual termination. According to NPPC, a producer can generally expect to pay for capital inputs within 10 years of continuous contracted hog production.⁸⁶

Table 11.—Motivations for contracting

Production contracts		Marketing contracts	
Contractor	Contract grower	Packer	Producer
Expand operation	Reduce price risk	Supply assurance	Shift price risk
Improve health	Specialization	Quality assurance	Market assurance
Decrease production risk	Investment alternative	Shift price risk	Reduce marketing Management
Increase profits	Means of entry Income diversification		Supply assurance

Sources: National Pork Producers Council, *Guide to Contracting*, 2000.

⁸¹ Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study," University of Missouri and National Pork Producers Council, March 7, 2000.

⁸² McDonald, James M., et al., *Consolidation in U. S. Meatpacking*, Agricultural Economic Report No. 785, ERS-USDA, February 2000.

⁸³ Packers and Stockyards Programs, *Packers and Stockyards Statistical Report 1998 Reporting Year*, GIPSA SR-00-1, GIPSA-USDA, July 2000.

⁸⁴ Grain Inspection, Packers and Stockyards Administration. "Western Cornbelt Hog Procurement Investigation," October 9, 1998. <http://www.usda.gov/gipsa/newsroom/backgrounders/hogback.htm> (21 February, 2001).

⁸⁵ The Fat Free Lean Index is a measure of the percentage of lean meat in a hog carcass.

⁸⁶ National Pork Producers Council, *Guide to Contracting*, 2000.

Contractors entering production contracts with producers include packers, other producers and agricultural corporations not involved in hog slaughter. In production contracts, contractors own or purchase hogs, and contract with producers for the hogs' care and raising. Generally, a production contract specifies time and quantity for delivery to the contractor. Production contracts also outline specific care and feeding requirements, waste disposal, and payment calculations.

Packer ownership of hogs has increased in recent years. A survey of the largest pork packers, where 10 of the 13 largest packers responded, showed that 6.4 percent of hog production was vertically integrated, i.e. produced by packers, in 1994, and 9.9 percent in 1997. By 2000, the number of hogs owned and slaughtered by packers increased to 24 percent.⁸⁷

Marketing contracts enable packers to control both the carcass quality characteristics and the number of hogs delivered for slaughter during a given time period. Generally, a marketing contract specifies the types of hogs to be delivered by the producer, the number of hogs to be delivered each month, and the method or formula for determining price. Unlike production contracts, however, marketing contracts are for the sale of producer-owned hogs to a packer.

A January 2000 study by the National Pork Producers Council (NPPC) indicates that nearly three-fourths of all hogs are sold under some type of marketing contract.⁸⁸ As the number of hogs raised under production contracts or sold under marketing contracts has increased, the contracts themselves have undergone numerous changes. Contract language has become more complex; the contracts contain more requirements relating to genetics and feed use; contract prices are more likely to be based on markets other than swine; and new ledger contracts (discussed below) have been put in use.

Pricing Methods for Non-Spot Transactions

Hogs purchased in non-spot transactions generally are priced on a formula basis. In many cases, the formulas have base prices that are determined by some publicly reported spot market price. In other cases, the base price is tied to a futures market price or to publicly-reported prices for major feed ingredients, such as corn. Some contracts use pricing methods that provide for sharing risks of price variation between the packer and producer. Often these take the form of "window" contracts, where the contract specifies maximum and minimum prices. Regardless of the method for determining base price, premiums or discounts will usually be applied based on quality characteristics of the hogs or other criteria.

In 2000, packers reported using formula pricing based on reported spot prices for 47.2 percent of their hog purchases, up from 44.2 percent in 1999 and 39.1 percent in 1997

⁸⁷ Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study." University of Missouri and National Pork Producers Council, March 7, 2000.

⁸⁸ Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study." University of Missouri and National Pork Producers Council, March 7, 2000.

(table 12). Packers purchased 8.5 percent of their hogs in 2000 using a fixed price tied to a futures market price, up from 2.9 percent in 1997. Purchases using a fixed price tied to a feed ingredient price increased to 12.3 percent in 2000, up from 5.3 percent in 1997.⁸⁹

Table 12.—Percentage of U.S. hogs procured through various pricing methods

Pricing method	1997	Jan. 1999	Jan. 2000
		<u>Percent</u>	
Spot market purchases	43.4	35.8	25.7
Total non-spot market purchases	56.6	64.2	74.3
Fixed price tied to a futures market price	2.9	3.4	8.5
Fixed price tied to feed price	5.3	9.8	12.3
Window, risk sharing	3.1	4.6	4.6
Formula other than above	39.1	44.2	47.2
Other (packer owned, internal transfer)	6.1	2.3	1.7

Source: Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study," University of Missouri and National Pork Producers Council, March 7, 2000.

Ledger Contracts

Marketing contracts containing ledger accounts (ledger contracts) were first widely used in the 1990s. Ledger contracts establish a minimum floor price and a maximum ceiling price for a producer's hogs. These contracts effectively loan packers the difference between the market price and ceiling price when prices are above the ceiling price, and loan producers the difference between the market price and the floor price when prices are below the floor price. Packer loan balances are reduced when market prices are below the ceiling and producer loan balances are reduced when the market price is higher than the floor price. When hog prices are very low, as was the case in December 1998 and early 1999, large negative balances (owed by producers to packers) accrue. Producers with negative balances at the end of a contract term must either pay the ledger balance, or extend the contract in an attempt to reduce the ledger balance. Ledger contracts may allow some producers to keep operating longer during periods of low prices. Producers carrying ledger balances may require longer time periods to terminate a contract agreement, thereby limiting opportunity to raise hogs under contract for another packer.

Packer Control of Hog Quality

Packers develop distinct standards for hogs targeted at specific markets. Packers shipping pork to foreign countries, for instance, may require a specific color or pH level in the meat. Packers marketing meat products to health-conscious consumers may have additional standards. To meet these standards, packers place specific requirements in marketing contracts.⁹⁰ Packers identify producers to participate in long-term contracts based on the quality of hogs previously delivered by the producer. Specific genetics and

⁸⁹ Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study." University of Missouri and National Pork Producers Council, March 7, 2000.

⁹⁰ Kenyon, David E. and Wayne Purcell, *Price Discovery & Risk Management in an Industrialized Pork Sector*, Department of Agricultural and Applied Economics, Virginia Polytechnic Institute and State University, October, 1997.

feeding programs may be required. Producers may weigh the implementation costs of such a program with the benefits of improved feed efficiency or daily weight gain. Producers choosing to enter a packer marketing contract under one of these programs tailor their production methods, including procuring a specific genetic line of hogs, to best meet the required standards. Such programs may limit a producer's flexibility if a packer's future program specifies different requirements.⁹¹ The producer may need to begin entirely new production operations with new hogs and feeding methods, or find another packer interested in purchasing the type of hogs already produced by the producer.

Meat quality characteristics can include appearance, tenderness, juiciness, and nutritional value. Most carcass value pricing programs provide higher payments for lean, meaty hogs of desired weight, but the programs do not measure other quality characteristics. According to a survey of midwestern packers, 15 percent of all hogs produce pale soft exudative (PSE) pork. PSE pork is an unappealing pale soft watery meat produced by hogs with two copies of the halothane gene.⁹² Presence of the halothane or "stress" gene in hogs improves the yield and increases loin size, but can generate problems with color and toughness in the meat. An NPPC study of hog genetics in the 1990s revealed that 12 percent of all maternal line sows carried the halothane gene.⁹³ Current and developing carcass value pricing programs may not solve the PSE problem. Some packers believe the solution may be to enter the seedstock business, develop a genetic line of hogs free of the stress gene, and require producers to use that line.

Several packers have either purchased or made arrangements with genetic seedstock companies to guarantee a supply of quality hogs. Some integrated or coordinated firms produce only one or two genetic lines to improve the uniformity of their processed products. Increased use of specific genetic lines suggests that carcass merit pricing programs alone may not be perceived to be sufficient to improve quality and uniformity in hogs.

Producer Cooperative Marketing

Hog producers have increased their interest in cooperatives.⁹⁴ New-generation cooperatives differ fundamentally from traditional cooperatives in their wider sphere of activities. Traditional cooperatives typically restrict their activities to production or primary handling. New-generation cooperatives are often formed by growers who see their best odds for success hinging on their ability to keep more of the value-added dollars generated from their livestock. As a result, new-generation cooperatives tend to be involved in more activities along the marketing chain, particularly downstream.

⁹¹ National Pork Producers Council. *Guide to Contracting*, 2000.

⁹² Gibson, John, P., "Stressed Pigs Get Better Fitting Genes," Center for Genetic Improvement of Livestock Animal and Poultry Science, University of Guelph, June 1996.

⁹³ Kenyon, David E. and Wayne Purcell, "Price Discovery & Risk Management in an Industrialized Pork Sector," Department of Agricultural and Applied Economics, Virginia Polytechnic Institute and State University, October, 1997

⁹⁴ Information on cooperatives in this section is based on Matson, James and Brad C. Gehrke, "Last Train Leaving?" RBS-USDA, September/October 2000, pp. 6-9; Duffey, Patrick, "Generating Rural Progress," RBS-USDA, July/August 2000, pp. 16-21.

New-generation pork cooperatives seek to identify existing and new markets for swine, pork, and pork products, and to enter relationships with packers, processors, food service operations, retailers, and exporters to enhance the value of their members' production. Many new-generation cooperatives develop systems and partnerships to maintain control of their product as far down the marketing chain as possible, including development of an independent producer brand or meeting requests for specialized products and packaging. They appear to do best when they exploit a niche value-added market.

New-generation cooperatives are more likely than traditional cooperatives to engage in partnerships, alliances, contract production, brokerage programs and other arrangements. They are also more apt to use new technologies like the Internet to create information linkages between producers and consumers, and to seek innovative financing techniques to expand their capital base.

New-generation cooperatives tend to be more difficult to join, but often easier to leave than traditional cooperatives. The substantial up-front investment producers need to make in new-generation cooperative stock is linked to delivery rights and responsibilities. Several pork organizations have proposed launching cooperative ventures. None of these pork cooperatives, however, have opened a slaughtering facility.

Pork Marketing

Packer Product Development

A focus on pork product development by packers has led to a trend away from commodity pork toward value-added branded pork products. Many traditional products, such as bacon and sausage, are now available in a pre-cooked or microwaveable form. Whole muscle products, especially loins, are available seasoned or marinated and ready-to-cook. Ready-to-cook meals combining pork with other products, such as sausage and biscuits or omelets and sausage, are readily available at grocery stores.

E-commerce

The pork industry, from small niche market firms and start-ups selling products directly to consumers to large packers selling to large grocery chains, has begun exploring the potential of e-commerce. The biggest e-commerce development is the planned Commerce Ventures joint venture of Cargill, Inc., Farmland Industries, Inc., Gold Kist, Inc., IBP, inc., and Tyson Foods, Inc. This joint venture was discussed above in the cattle section.

Operations or Activities Raising Concerns Under the Packers and Stockyards Act

This section reports on aspects of the cattle and hog industries that appear to raise concerns under the authorities and jurisdiction of the P&S Act.

Concentration and Structural Change

The four leading steer and heifer slaughtering firms account for over 80 percent of steer and heifer slaughter. Concentration of the four leading hog slaughtering firms, now 56 percent of total hog slaughter, is rising. Because of producers' concerns about adverse economic impacts resulting from relatively high levels of concentration, some industry participants and observers want USDA to block mergers and break up large meatpacking firms. Others argue that, while structural changes in the livestock and meatpacking industries increase the potential for anti-competitive behavior, the changes are largely the result of normal economic forces that are occurring throughout the economy. Even those who believe that structural change is inevitable generally believe that broader enforcement of the P&S Act is warranted.

USDA frequently receives requests to prohibit controversial mergers and acquisitions involving leading firms in the regulated industries. The authority to challenge mergers prior to their consummation, however, rests with the Department of Justice and the Federal Trade Commission through the pre-merger notification requirements of the Hart-Scott-Rodino Antitrust Improvements Act. High concentration, in and of itself, is not prohibited under the P&S Act. P&SP focuses its investigative and regulatory resources on monitoring industry behavior and identifying anti-competitive practices that may cause economic harm and that violate the P&S Act.

Changes in Livestock Pricing and Procurement

The concerns expressed by many people about industry concentration and structure generally stem from concerns about the potential for large packers to abuse market power. These people argue that the current organization of the meatpacking industry enables meatpackers to lower prices paid for cattle and hogs and otherwise engage in anti-competitive behavior. Many, including two USDA advisory committees, argue that USDA should “just enforce the P&S Act,” and take steps to strengthen its ability to enforce the competitiveness provisions of the Act.⁹⁵ Some look to USDA to address a wide range of concerns they associate with large packers, especially livestock procurement issues.

⁹⁵ USDA Advisory Committee on Agricultural Concentration. *Concentration in Agriculture, A Report of the USDA Advisory Committee on Concentration*, AMS-USDA, June 1996; National Commission on Small Farms. *A Time to Act*, Miscellaneous Publication 1545, USDA, January 1998.

On many occasions, the public has expressed its belief that USDA may restrict meatpackers' behavior, without specific evidence of competitive harm. P&SP must prove any allegation of a prohibited anti-competitive practice in a litigated case by proving through a preponderance of the evidence that some measurable harm has occurred or is likely to occur. Most issues regarding competition and potentially anti-competitive practices are complex and interrelated. They often do not yield to easy answers. Extensive data collection and sophisticated economic analyses are required to fully understand the reasons for and implications of the practices.

Packers Acting in Concert to Restrict Competition—Members of the industry, especially producers, express concerns about possible concerted action by meatpackers. In some cases, concerns are expressed about wide-ranging impacts cutting across broad industry segments, such as allegations of packer behavior leading to low hog prices during December 1998-January 1999. In other cases, concerns address specific circumstances involving narrow industry segments, such as why few packers bid on cattle at a particular feedlot. These concerns do not necessarily suggest firms are engaging in unlawful practices and instead may be attributable to normal supply and demand forces, competitive bidding processes, or personal relationships that have developed over time between packers and livestock sellers. The P&S Act prohibits unlawful conspiracies, combinations, or agreements that result in certain anti-competitive activity.⁹⁶ Past analyses by P&SP of packers' livestock procurement patterns have not revealed such activity among packers.

Short Trading Window—A specific practice that raises concerns is the allegation that there is a short window during which trading of fed cattle occurs. Some cattle producers and market observers contend that virtually all spot-market cattle transactions occur during a relatively short period each week, often described as a 15- or 30-minute window. During its 1996 Texas Panhandle Fed Cattle investigation, P&SP found that the highest volumes of cattle were purchased on Wednesdays, but spot-market transactions occurred on every business day of the week. As discussed previously, the bidding process for fed cattle normally begins early on Monday mornings when packer buyers visit feedlots to view cattle for sale. The price discovery process continues during the week as buyers and sellers presumably assess market conditions, followed by rapid consummation of many transactions once market participants believe the market price has been discovered.

Shared Agents—It is a common practice for one buyer to represent more than one packer at an auction sale, especially in sales involving cull livestock. Auction market owners and livestock sellers have raised concerns that the use of common buyers, or shared agents, reduces the number of competing buyers. This practice has the potential for reducing competition. However, the issue is complicated by a general lack of buyers at many auctions. Sharing a buyer may result in packers purchasing livestock at auctions where the packers otherwise would not be active. P&SP continues to investigate complaints about shared agents at livestock markets.

⁹⁶ 7 U.S.C. 192

Pricing Methods—Cattle and hog buyers use a variety of methods to establish base prices in formulas used for marketing agreements and other contracts. The base price may be linked to prices reported by USDA Market News or other public agencies, or to internally generated prices such as the average price paid by the packer. Some agreements for cattle guarantee the seller a price equal to the “top price” reported paid in a region. In other instances, packers use publicly reported beef or pork cutout values to compute prices paid for livestock purchased under some pricing methods. Proponents of these types of pricing mechanisms assert that these pricing methods reduce transaction costs by reducing the need to monitor market conditions and prices. They believe these pricing methods provide sellers some assurance of receiving a price that is representative of the current market price.

These types of methods for establishing livestock prices also raise concerns, however. Sellers may lack adequate knowledge of all factors that may influence the base prices, and question whether packers are able to influence the base price. If the price a packer pays for livestock purchased under a contract or marketing agreement is influenced by prices the packer pays for livestock purchased in the spot market, the packer may have an incentive to avoid aggressive competition in the spot market. If the base price is linked to publicly reported prices, the packer may have an incentive not to report prices fully or accurately.

A recent analysis of fed cattle procurement conducted as part of a major investigation of fed-cattle procurement in the Texas Panhandle did not find any evidence that packers altered base prices by influencing the average prices paid by the plants in the spot market.⁹⁷ The analysts reported, however, that basing formula prices on plant averages creates an incentive for packers to manipulate the spot market or erroneously calculate the plant-average price. Others, including some academic economists, reach similar conclusions about the incentive for packers to manipulate internal prices under such pricing mechanisms. P&SP will continue to address this issue in its investigations of livestock procurement by major packers.

Thin Spot Markets—Increased use of various production and marketing contracts has reduced the number of livestock sold through spot markets. Although a concern in both cattle and hog markets, the effect is more pronounced in hogs than in cattle because a smaller proportion of hogs is traded on the spot market. A joint study by the University of Missouri and the National Pork Producers Council revealed that spot market purchases made up only a quarter of all hog purchases during January 2000, but prices of hogs purchased under contracts often are based on spot-market prices.⁹⁸ According to that study, nearly half the hog contract purchases in January 2000 used a formula based on a reported spot market hog price. Producers are concerned that the potential exists for packers to influence prices on the spot market, resulting in lower prices for the hogs sold under contract. The concern is increased if there are only one or two packers purchasing in a particular region.

⁹⁷ Schroeter, John R., and Azzeddine Azzam, "Econometric Analysis of Fed Cattle Procurement in the Texas Panhandle," Iowa State University and University of Nebraska-Lincoln, November 1999.

⁹⁸ Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study." University of Missouri and National Pork Producers Council, March 7, 2000.

When only a relatively small volume of trading activity occurs in a particular market, the market is said to be a “thin market.” If buying activity is concentrated and selling activity is not, buyers in thin markets may have potential to influence prices. That potential, however, may be restrained by adequate information on prices in other markets. Available research suggests that prices in widely dispersed U.S. markets have been closely linked.⁹⁹ Economic theory suggests that if markets become so thin that they become inefficient, market participants are likely to shift to a more reliable pricing basis. For example, buyers and sellers might use futures market prices or a grain or feed market price to establish contract prices for livestock. Nonetheless, the existence of thinly traded markets calls for heightened oversight of packer behavior in order to identify possible violations of the P&S Act.

Mandatory Price Reporting—In 1999, Congress enacted the Livestock Mandatory Reporting Act of 1999.¹⁰⁰ Currently, packers and producers voluntarily report prices. Under the new legislation, large meat packers will be required to report prices they pay for livestock (cattle, hogs, and sheep) and prices they receive from sales of boxed beef and lamb. Some are concerned that the new price reporting requirements are unnecessary and too costly. They claim the burden of reporting has the potential to force smaller packers to leave the business, sell out to larger firms, or pass the costs on to producers. Some opponents claim that the reports will contain large amounts of data that will be of no practical value to producers and others, while eliminating voluntary reports that have been of value. Some economists have suggested that mandatory price reporting could facilitate collusion among packers.¹⁰¹

Some producers and others with interests in cattle feeding strongly support mandatory reporting. They note that the increased use of contracting and other non-spot marketing arrangements has reduced the amount of information available, and contend that they cannot obtain adequate information for developing marketing plans that will provide them with the best possible prices for their livestock. However, some of those who support mandatory price reporting are concerned that the information that will be released under the new program will not contain sufficient detail, such as prices and volumes at State and other regional levels of aggregation.

The mandatory price reporting program will provide information on 80 percent to 95 percent of all cattle, boxed beef, slaughter hog, sheep, lamb meat and imported lamb meat transactions.¹⁰² The program is intended to help level the playing field for smaller volume farmers and ranchers, allowing them to better compete in an increasingly concentrated agricultural economy.¹⁰³ While the new legislation will impose costs on

⁹⁹ Economic Research Service, *Economic and Statistical Assessment of Hog Assembly, Shipping, and Prices in the Eastern Corn Belt—Final Report*, Report to Packers and Stockyards Programs, GIPSA-USDA, 1995.

¹⁰⁰ Livestock and Grain Market News Branch, *Livestock Mandatory Reporting*, 7 CFR part 59 [No. LS-99-18], RIN 0581-AB64, Federal Register, Vol. 65, No. 232, Friday, December 1, 2000, Rules and Regulations, pp. 75464-542.

¹⁰¹ See, for example, Sexton, Richard J. “Fed Cattle Procurement Investigation in the Texas Panhandle,” peer review of GIPSA’s Texas Panhandle Fed Cattle Investigation, March 1999.

¹⁰² Agricultural Marketing Service, “TALKING POINTS: USDA To Announce Mandatory Livestock Mandatory Reporting Regulations,” <http://www.ams.usda.gov/lsg/mpr/mprtp.htm> (21 Feb. 2001).

¹⁰³ “Glickman Announces Mandatory Livestock Price Reporting,” USDA Press Release 0409.00, November 28, 2000. <http://www.usda.gov/news/releases/2000/11/0409.htm> (21 Feb. 2001).

packers that are required to report, smaller packers accounting for 93 percent of all firms that slaughter beef and swine will not be required to report.¹⁰⁴ Data will be aggregated to prevent the release of confidential, firm-specific data.

Because of the critical role played by price reporting in the price discovery process, P&SP will monitor closely the impacts of the implementation of livestock mandatory reporting. For example, a number of livestock procurement contracts and agreements use reported prices to determine prices paid to livestock sellers. Implementation of mandatory reporting may eliminate some price series that are currently reported if release of both the old and new series would conflict with the requirement that information about individual firms not be disclosed. P&SP investigations of livestock procurement will examine how packers implement mandatory reporting, with particular attention toward adjustments in pricing formulas used for determining prices paid for livestock.

Changing Vertical and Horizontal Coordination

For many years, livestock sellers brought their animals to terminal stockyards and auction markets where a number of buyers bid on and purchased the livestock. For the past few decades, trade of slaughter livestock moved away from public markets toward various forms of direct trading between buyers and sellers. Nonetheless, trading for many years occurred primarily through spot markets, in which livestock were not offered to nor purchased by packers until the animals were ready for slaughter. In more recent years, alternative ways emerged to coordinate the production, marketing, and exchange of slaughter livestock. For example, increasing proportions of cattle and hogs are traded through various types of marketing agreements and forward contracts. The decline of the use of spot markets and increase in the use of forms of vertical coordination have raised many concerns about potential adverse effects on competitive behavior in the livestock and meatpacking industries.

Captive Supplies—Use of captive supplies has been a concern for several years. Captive supplies refer to livestock that a packer owns or has a contract to purchase before the animals are ready for slaughter. Controversy surrounding use and effects of captive supplies is especially prominent in the fed cattle industry, but parallel concerns exist in the hog industry as well. Opponents of the use of captive supplies are especially critical that cattle procured by packers using these methods are not offered for sale in an open, public manner. These people claim that captive supplies have the effect of depressing prices paid for fed cattle by reducing the number of cattle that a packer must procure on the spot market and reducing the packer's aggressiveness in bidding for the remaining supplies of fed cattle. Some livestock producers oppose the use of captive supplies because they do not want to enter into forward sales arrangements with packers and are concerned that their spot-market opportunities will diminish if captive-supply use increases. Some, especially smaller producers, express a concern that if competition

¹⁰⁴ Agricultural Marketing Service. "TALKING POINTS: USDA To Announce Mandatory Livestock Mandatory Reporting Regulations." <http://www.ams.usda.gov/lsg/mpr/mprtp.htm> (21 Feb. 2001).

necessitates their participation in forward contracting, they will be unable to obtain satisfactory terms in those forward sales agreements.

Other industry participants and observers contend that captive supplies do not appreciably affect spot market prices. These individuals point out that captive supplies do not alter the total supply of, nor demand for, livestock. Proponents of the use of captive supplies assert that the use of captive supplies merely shifts the distribution between spot markets and contract markets. Many livestock producers and university economists point out that captive supplies reduce transactions costs and improve price signals that reflect differences in animal quality.¹⁰⁵ They point out that captive supplies are forward sales arrangements that are critical to the long-term health of the beef and pork industries, as they are necessary to improve coordination of production with changing consumer preferences.

Concerns about the possible effects of captive supplies are complicated by doubts about the accuracy of available captive-supply data. For example, the number of packer-fed cattle reported to P&SP by the top 15 beef packers declined from 4.7 percent of their total slaughter in 1988 to 3.7 percent in 1998.¹⁰⁶ Some believe the actual percentage is much higher. In response, the Conference Report on USDA's fiscal year 2001 Agricultural Appropriation directs the Secretary of Agriculture to conduct a comprehensive study on the issue of captive supplies by September 30, 2001, with the following instructions:

In particular, the Secretary is instructed to examine and report on whether or not the cattle that are procured pursuant to a captive supply arrangement by a packer's non-reporting subsidiary, affiliate and owners, officers and employees are being included in the percentages reported as captive supply. The report shall also include the reasons why GIPSA's annual "Packers and Stockyard Statistical Report" frequently reports a captive supply percentage much lower than the percentages reported by other entities.¹⁰⁷

Underreporting of packer-fed cattle and cattle obtained through other types of captive supply arrangements may make it more difficult for feeders and industry analysts to assess accurately market conditions, including packers' need to purchase cattle in the spot market.

Economic analyses of the effects of captive supplies have shown a small inverse relationship between use of captive supplies and spot-market prices, but past economic analyses have not shown that use of captive supplies causes lower spot-market prices. P&SP will continue to monitor and seek evidence regarding this complex issue.

¹⁰⁵ Purcell, Wayne, *White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry*, Research Institute on Livestock Pricing, Research Bulletin 5-99, May 1999.

¹⁰⁶ Packers and Stockyards Programs, *Packers and Stockyards Statistical Report, 1998 Reporting Year*, GIPSA SR-00-1, GIPSA-USDA, July 2000.

¹⁰⁷ Conference Report 106-948, 106th Congress, 2d Session, to accompany H.R. 4461, October 6, 2000.

Market Access and Price Differences—The changing nature of the organization of livestock production and procurement raises a number of concerns relating to market access. Some producers are concerned that few packing plants are available in their area. Some producers express concern that they are unable to obtain a production or marketing contract. Some packers may not offer contracts to new producers because they have enough animals already under contract and scheduled for delivery.

Others voice concern that some packers may not offer the same contract terms to smaller volume producers as they do to larger volume producers. Smaller volume producers may lack the ability to negotiate with packers on a level equal to the larger volume producers. For example, larger volume producers may have better opportunities to negotiate contract terms involving higher non-quality premiums or cost assistance for expansion plans. If so, smaller volume producers may not receive an equal payment for animals of similar quality to those of larger volume producers.

Others suggest that normal economic forces reward more efficient firms and thus motivate consolidation of packing operations and the disappearance of smaller firms. Economic efficiency arguments indicate that numbers of animals in a lot, distance to packing plants, and other factors are legitimate reasons for price differences among producers. Similar arguments are made to explain differences in availability of production and marketing contracts.

Rulings in a recent case brought by USDA against IBP, inc. affirm that valid business reasons may justify price differences offered to livestock sellers. It is not sufficient for P&SP to prove that a particular marketing arrangement results in higher prices for one group of producers than for others. P&SP must also prove that the higher prices were unjustly discriminatory.

Fair Treatment in Contracts—Increased use of contracting to procure livestock raises concerns about potential unfair treatment of livestock sellers. For example, some production and marketing contracts may stipulate that the producer must agree to keep the contract terms confidential. As a result, there is concern that producers may sign production and marketing contracts without fully understanding all terms or without first consulting with an attorney or financial professional for advice. A number of organizations have attempted to address this concern. Some organizations and government agencies post contracts on the World Wide Web, some provide assistance to producers to help them interpret contract terms, and some have encouraged increased use of plain language in contracts and disclosure of contract terms. Addressing these concerns as unfair business practices under the P&S Act must be tempered by the interest of producers in freedom of contract.

Many producers believe USDA has authority over all production contracts. However, USDA's authority under the P&S Act is restricted to entities subject to the Act. The P&S Act only covers production contracts between a livestock producer and a packer or other entity subject to the Act. The Act does not cover production contracts between livestock producers or contracts between a producer and a feed company. P&SP cannot address

producers' concerns about contracts between entities not subject to the Act. A recent effort on the part of 16 State Attorneys General to draft model legislation aimed at providing certain standards for agricultural contracts could result in standardization of State laws regarding such contracts, or it could yield 16 slightly different laws.¹⁰⁸

Technological Change in Packing Plant Operations and Marketing

As is the case throughout the economy, the development and adoption of new technologies is altering the ways that livestock and meatpacking firms operate and conduct their businesses. A number of recent developments raise concerns under the P&S Act.

Carcass Evaluation—Sophisticated electronic measurement devices are being developed to measure animal carcass quality characteristics. Each packer develops its own procedures for paying on a carcass grade, carcass weight, carcass grade and weight basis, or other quality basis. Packers develop price schedules that meet their particular business and marketing needs. For example, some hog packers pay on the basis of carcass lean percentage, some pay on the basis of the percentage of the carcass produced into primal cuts, and others pay on the pounds of primal meat.

Each packer determines what device or approach to use to estimate lean percentage. The hog packing industry uses a combination of several different measuring devices and statistical equations for estimating lean percentage. Members of the hog industry have expressed concern that varying estimating procedures in combination with varying pricing formulas make price comparisons among packers difficult. Industry-wide standards have not been developed for electronic carcass-quality measurement devices. P&SP is working with industry members and standardization officials to develop industry-wide standards.

Recordkeeping—Over time, procurement of livestock has evolved from simple purchase on a liveweight or dressed-weight basis to a myriad of contracts and formula-priced purchases. Terms and conditions for pricing formulas and contracts often contain complex, detailed calculations to determine base prices and final payments to livestock sellers. Each packer develops its own recordkeeping system to compile the information necessary to compute plant average prices, determine base prices, premiums, discounts and other variables used in various pricing formulas, along with other details relevant to procurement transactions.

Packers argue that their recordkeeping systems are adequately designed to reflect their own specific requirements, and conform to existing generally accepted accounting procedures and other formal business rules. Packers argue that they should not be required to develop special systems or keep records not required for their own business purposes.

¹⁰⁸ Iowa Department of Justice, Attorney General news release, September 13, 2000.

P&SP has found in the course of its monitoring and investigative activities that there is not uniformity in records that packers maintain, and some packers appear not to have all records that would fully disclose procurement transactions. Recordkeeping systems may not be adequate in some cases for packers to accurately reconstruct payments to producers. P&SP and other oversight agencies may not be able, with existing recordkeeping systems, to determine whether producers are paid accurately. Without accurate recordkeeping, P&SP's ability to enforce the P&S Act quickly and efficiently is compromised. P&SP intends to address these concerns in the near future.

E-Commerce—Internet marketing (e-commerce) is a relatively new innovation in the livestock and meatpacking sector. As described previously, a relatively small number of Internet sites market feeder cattle today, but the number of feeder cattle sold electronically is expected to increase in the future. Packers, including joint ventures involving multiple packers, have begun developing electronic marketing capabilities for meat sales.

Livestock producers and others have raised concerns about these operations. The relative newness of many of these Internet firms and the lack of information about them makes it difficult to assess their viability. Many start-up entrepreneurs may not be aware of all of the legal requirements that must be met in order to conduct business, and employees may be making business decisions and handling money without realizing their responsibility for financial accountability. Others express concerns that there is a potential for deceptive practices in Internet transactions, such as inflating the price of livestock or creating false appearance of the level of bidding activity. Electronic marketing operations based on joint ventures could potentially facilitate collusive behavior among the parties to the venture.

Advocates of electronic marketing argue that electronic marketing has the potential to increase competition. They point out that it can increase the number of competitors that are active in the market, and increase the amount of information available to participants.

Internet marketing has potential for significant changes in the way livestock and meat are marketed. P&SP intends to monitor developments and operations closely to help assure that all parties are aware of, and conform with, the requirements for financial responsibility and fair trade practices under the P&S Act.

Fair Trade and Financial Protection Issues

There are several activities that raise concerns that fall under the trade practice and financial protection provisions of the P&S Act.

String Sales—When negotiating spot market transactions, some custom feedlots may attempt to require that a packer purchase less desirable livestock as a condition to purchasing the desired quality of livestock. Alternatively, some feedlots or packers may attempt to impose an “all or nothing” agreement in which the packers will buy all (or a specified quantity) of livestock as a single purchase, often at one price. In these so-called

“string sales,” a single price may be paid for livestock owned by multiple owners, regardless of any variation in the quality of the livestock being offered for sale by the individual owners. This pricing method may provide some reduction in transaction costs by reducing the number of separate negotiations. Feedlot operators reportedly like to use the pricing method because it avoids the need to explain widely different prices to individual owners of the cattle sold, and may help them find a buyer for cattle that otherwise would be difficult to sell.

Critics of string sales point out that, when packers and custom feedlots negotiate string sales, individual livestock owners may not be aware of the conditions of the purchase or sale. The critics claim that individual owners may not receive fair compensation for the value of their own fed cattle. An owner of high-value cattle, for example, may receive a lower price when lower value cattle are tied to the transaction and the final price is based on the overall average value of all the lots of cattle in the transaction.

The P&S Act prohibits packers and market agencies from engaging in or using any unfair practice when marketing, buying, or selling livestock on a commission basis. Market agencies have a responsibility to obtain the best price possible for each seller of custom-fed animals.¹⁰⁹ P&SP is considering whether string sales that result in average pricing in custom feedlots would constitute a violation of the P&S Act.

Drug Residues—A result of recent reforms in meat inspection is that packers are required to perform additional drug residue testing on meat destined for human consumption. Some animals, particularly cull dairy cows, may have drug residue levels that cause their meat to be declared unfit for human consumption, which substantially reduces the value of the animals. Packers purchase a large number of cull cows at livestock auction markets. Packers are required by the P&S Act to pay for these animals by the close of the next business day. Packers want to delay payment for cull dairy cows until drug residue testing can be completed (often after payment is due), while livestock auction markets and farmers do not favor such a delay. As a result, industry members sometime are caught between two Federal regulatory requirements.

Retaliation—Many producers have expressed concern about possible retaliation by packers if they challenge terms offered by the packers or file a complaint with P&SP against packers. It is an unfair trade practice under the P&S Act for packers to retaliate against such producers, but producers are reluctant to rely on the time-consuming, uncertain legal process to protect their rights against retaliation under the P&S Act. This situation poses a difficult dilemma for producers. Although P&SP takes a strong stand against retaliation, and vigorously pursues credible allegations of retaliatory behavior in the livestock industry, producers are concerned that they could be out of business before receiving relief.

¹⁰⁹ 9 CFR 201.56

Conclusions

Substantial changes are occurring in the structure and behavior of firms in the livestock and meatpacking industries. Many of the changes are driven by technological developments, changes in consumer demand, and other competitive forces. Many of the changes are healthy for the industries involved, for consumers, and for the Nation as a whole. However, the changes also bring the potential for anti-competitive behavior or unfair trade practices that are unlawful under the P&S Act.

USDA restructured its Packers and Stockyards Programs in the late 1990s and has sought additional funding to strengthen its capacity to investigate possible anti-competitive behavior in the livestock, meatpacking and poultry industries and improve its efficiency and effectiveness in enforcing the provisions of the P&S Act. P&SP has changed its staffing mix to add more employees with economic and legal expertise. P&SP is continuing its restructuring initiative by developing new investigative procedures, working more closely with the Office of General Counsel at the initial stage of case development, incorporating economists (most of whom have doctorate degrees) and legal specialists (all of whom currently have law degrees) in the investigative process, training new employees, and making other adjustments to strengthen its capacity to monitor and investigate the structural and behavioral changes in the livestock, meatpacking and poultry industries.

P&SP has about 185 employees throughout the United States. P&SP opened 1,898 new investigations in FY 2000, and closed 1,701. Of the investigations that were closed, 892 involved alleged trade practice violations, 783 were alleged financial violations, and 26 were investigations of alleged anti-competitive behavior. Competition investigations are normally the largest and most complex investigations conducted by the Agency. During FY 2000, 17 decisions and orders were issued against 25 entities for violating the P&S Act. The decisions included 13 administrative decisions against 21 entities, and 4 decisions and orders obtained through the Department of Justice. The orders included more than \$117,000 in civil penalties and 24 cease-and-desist provisions involving unfair trade practices or anti-competitive activities.

P&SP will address the concerns discussed in this report by monitoring changes in industry structure and behavior, and examining practices that appear to be unlawful under the P&S Act. In addition to monitoring, P&SP's actions may include formal investigations, regulatory initiatives, or research and other analyses to assess the economic, competitive, and/or trade practice implications of the structural and behavioral changes.

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