Assessment of the Cattle and Hog Industries
Calendar Year 2001

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

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Contents

List of Acronyms and Abbreviations

AMS	Agricultural Marketing Service, U.S. Department of Agriculture
ASTM	ASTM International (formerly American Society for Testing and Materials)
BSE	Bovine spongiform encephalopathy
CME	Chicago Mercantile Exchange
Cwt	Hundredweight (100 pounds)
DOC	U.S. Department of Commerce
ERS	Economic Research Service, U.S. Department of Agriculture
EU	European Union
FMD	Foot-and-mouth disease
GDP	Gross domestic product
GIPSA	Grain Inspection, Packers and Stockyards Administration, U.S. Department of Agriculture
HHI	Herfindahl-Hirshman Index
HRI	Hotels, restaurants, and institutions
IBS	Integrated beef system
LMIC	Livestock Marketing Information Center
MDM	Mechanically de-boned meat
MPR	Mandatory price reporting
NAICS	North American Industry Classification System
NASS	National Agricultural Statistics Service, U.S. Department of Agriculture
NCBA	National Cattlemen's Beef Association
NPB	National Pork Board

NPD	National Pig Development Company
NPPC	National Pork Producers Council
P&S Act	Packers and Stockyards Act
P&SP	Packers and Stockyards Programs, GIPSA, U.S. Department of Agriculture
PSE pork	pale, soft, exudative pork
USDA	United States Department of Agriculture
USPB	U.S. Premium Beef
WAOB	World Agricultural Outlook Board, U.S. Department of Agriculture

Executive Summary

This is the Grain Inspection, Packers and Stockyards Administration's (GIPSA) second 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 (P&S Act).

Overview of Livestock and Meat Production in the United States

Since 1935, per capita consumption of meat and seafood has doubled. Over that time span, after adjusting for inflation, the cost of beef and pork has remained about the same, while the cost of poultry has fallen to about one-third of its 1935 level. Beef and pork were the principal meats in the American diet through most of the 20th century. Annual per capita consumption of each meat[1] averaged about 40 pounds until around 1950.[2] Per capita beef consumption then began a rapid rise, reaching 89 pounds in 1976. Per capita beef consumption declined to 62 pounds in 1993, and then increased to 66 pounds in 2000. Annual per capita pork consumption rose after World War II and has averaged about 48 pounds since 1950. Annual per capita consumption of chicken averaged about 10 pounds between 1910 and 1940. It increased during World War II, and in 1950 began a steady rise from about 15 pounds to 55 pounds in 2000. Chicken replaced pork as the second-most-consumed meat during the mid-1990s and per capita consumption of chicken approached that of beef by the end of the century.

General Economic State of the Cattle and Hog Industries

The beef industry has been experiencing a liquidation of the cattle inventory since 1996, and the trend is expected to continue over the next couple of years.[3] Drought and high hay prices had an adverse effect on many U.S. cow-calf and stocker operations in 2001, although strong feeder calf prices resulted in profitability for most cow-calf operations in 2001.[4] U.S. cattle feeders did not fare as well as feeder calf producers in 2001, in spite of fed-cattle price increases in the early part of the year, as prices declined sharply in the second half of the year.[5] Drought conditions have been forcing cattle into feedlots, and herd expansion may be delayed for another year. Beef production in 2002 is expected to be nearly unchanged from 2001. USDA's World Agricultural Outlook Board (WAOB) projects that fed cattle prices will fall in the second and third quarters of 2002 before rising in the fourth quarter, and should average $3.00 - $6.00 below the 2001 average.[6]

[1] The per capita consumption measures presented in this paragraph are based on a boneless, trimmed equivalent definition.
[2] Consumption measures in this paragraph are from Economic Research Service, *Per Capita Consumption Data System*, January 2002. (See, also, Table 1.)
[3] Economic Research Service, *Livestock, Dairy and Poultry Situation*, LDP-M-95, ERS-USDA, May 15, 2002.
[4] Livestock Marketing Information Center, *Analysis and Comments*, Letter #40, October 12, 2001.
[5] Economic Research Service, *Livestock, Dairy and Poultry Situation*, LDP-M-93, ERS-USDA, March 13, 2002.
[6] World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-386, WAOB-USDA, May 10, 2002.

Despite operating profitability in recent years, hog producers appear to be hesitant to expand operations. Commercial pork production in 2002 is forecast to be slightly above that in 2001, with the decline in hog numbers offset by heavier slaughter weights.[7]

Changing Business Practices

Cattle

Cow-calf producers produce calves that they either feed until the animals approach mature frame size and are ready to be placed in feedlots, or that they sell to stockers who raise them until they are ready to be placed into feedlots. Traditionally, feeder calves are sold to feedlot operators or to investors who place the animals in custom feedlots for fattening until the animals are ready for slaughter, at which time they are sold to a meatpacker. The meatpacker slaughters the animals, fabricates the carcasses into primal and sub-primal cuts, and sells the meat to wholesalers, retailers, foodservice firms, and others.

Cattle feeding operations have gotten larger in recent years. In 2001, the 10 largest feedlot firms had a total one-time feeding capacity of 3.1 million head, 53 percent larger than in 1988. The 20 largest feedlot firms increased their one-time feeding capacity by 39 percent between 1988 and 2001.

Cattle feeding has become more concentrated. The annual capacity of the 10 largest cattle feedlot firms equaled 24 percent of total steer and heifer slaughter in 2001, versus 16 percent in 1988. Annual capacity of the 20 largest firms equaled 35 percent of total steer and heifer slaughter in 2001 versus 25 percent in 1988.

Slaughter plants also have gotten larger in the last 20 years. Several plants can slaughter more than 5,000 head per day and can process 400 or more carcasses per hour. Between 1980 and 1999, the number of steer and heifer plants slaughtering 500,000 or more cattle annually increased from 8 to 21, with 14 of those plants slaughtering more than 1 million head each in 1999. In 1980, plants slaughtering 500,000 or more steers and heifers annually accounted for 24 percent of commercial slaughter; by 1999, they accounted for 82 percent.

Concentration in beef packing has increased over the years. The four largest firms' share of total commercial steer and heifer slaughter rose from 35 percent in 1980 to 72 percent in 1990 and 81 percent in 1993, but has remained relatively stable since then.

Traditionally, cattle were traded through spot market transactions at each stage in the production process. "Spot market" refers to transactions in which the animals are ready or available for delivery at the time the agreement is entered. Spot market transactions for fed cattle may be made on a liveweight, carcassweight, or carcass-merit basis. When purchases are made on a liveweight or carcassweight basis, packer buyers assess the

[7] Gustafson, Ron, "The Outlook for Livestock and Poultry," presentation at Agricultural Outlook Forum 2002, ERS-USDA, February 22, 2002.

quality characteristics of the live animals. When purchases are made on a carcass-merit basis, the final price for the animals is based on the actual quality characteristics of the carcasses. Cattle may be traded on the basis of the average quality of all animals in a lot, or prices among the animals may vary based on differences in carcass quality characteristics. Traditionally, fed cattle have been traded through liveweight or carcassweight spot market transactions in which a single price is paid for all animals in a lot.

Larger numbers of fed cattle are now being sold through non-spot market methods than was the case in the 1980s, and more cattle are being priced on the basis of the quality characteristics of the individual animals, rather than pricing all animals in a lot at a single price. Many transactions establish prices by using a formula that utilizes a reference price, such as an average price paid by a plant for animals obtained through the spot market, or a publicly reported price. Non-spot market methods generally provide greater information exchange between the trading parties than the information exchange that occurs through traditional liveweight or carcassweight spot market transactions.

Cattle producers, feedlots, packers and retailers have taken a variety of other steps to increase coordination between the ranch and retail levels. Some coordination is as simple as packers providing information to sellers about the carcass quality of individual animals. Other coordination involves forward sales agreements that establish ongoing relationships that increase the information flow and coordination of decisions between the parties involved. Some producers, feedlot firms, and packers have entered into joint ventures in which the parties jointly own cattle that are being fed and share costs and revenues.

Producers' use of cooperatives to market fed cattle also has increased in the last 10 years. Important characteristics of many newer cattle marketing cooperatives are that members are required to purchase shares that determine the number of cattle a member can sell through the cooperative, and that the cooperatives are closed to non-members. Most of these cooperatives have an agreement with a packer providing that the cattle be sold to the packer with the price based on the quality of the carcasses.

Developments in marketing, processing, and packaging technologies have enabled packers to produce case-ready, branded, and convenience products. One such development has been the creation of integrated beef systems (IBS), which control production decisions from ranch to retail. These are the most advanced vertical arrangements in the beef industry today. Many of the integrated beef systems are new entities, while others are spin-offs of existing firms. For example, one IBS owns a packing and processing plant and has an agreement to provide a specific grade of beef to a major retail grocer. In order to ensure a consistent supply of the product, the IBS has agreements with feedlots and ranches to produce cattle that meet certain grade specifications.

Hogs

Changing swine genetics and management practices have improved many aspects of production efficiency. Litter size, litters per sow, and carcass weights have all increased with genetic improvements. Hog production has moved toward fewer, larger, and more vertically coordinated operations. The number of operations with less than 100 hogs on hand has decreased from 96,730 (3.5 percent of the U.S. hog inventory) in 1995 to 46,012 (1.0 percent of the hog inventory) in 2001. Inventories held by operations with 5,000 or more hogs rose from 27.5 percent of the Nation's hog inventory in 1995 to 52.5 percent in 2001, while the total number of hog production operations declined by 87,320, a drop of 52 percent. Hog production has been shifting to farms that specialize in farrowing (breeding sows and producing piglets), nursery, or finishing operations, enabling producers to focus on improving production methods in a single type of enterprise.

Concentration has increased in the pork packing industry. The share of U.S. hog slaughter accounted for by the four largest hog packers rose from 34 percent in 1980 to 46 percent in 1995 and 55 percent in 1996, and has remained about the same since then.

To meet consumer preferences more effectively, and to measure carcass or meat value associated with quality improvements, packers are adopting several electronic devices to evaluate carcass or meat traits. Hog slaughtering and procurement practices have changed as a result. Instead of pricing hogs on a liveweight basis, as they have traditionally done, packers are pricing more hogs based on the carcass characteristics of the individual animals. The electronic quality-measurement technologies have resulted in the integration of evaluation devices into slaughter lines, requiring additional steps in slaughter procedures.

The majority of hogs are no longer traded on the spot market. Packers obtain a large portion of slaughter hogs from packer feeding operations, production contracts with producers, and marketing contracts. Packers produced about 27 percent of all slaughter hogs in 2001 and obtained about 56 percent of slaughter hogs through marketing contracts.[8]

As in the beef industry, pork packers 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 Act (P&S Act). This report identifies issues of concern in the areas of concentration and structural change, including changes in livestock pricing and procurement and changes in the form of

[8] Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board, March 2001. http://agebb.missouri.edu/mkt/vertstud.htm (March 12, 2001).

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 P&S Act does not prohibit concentration, vertical integration or coordination, or other changes in the structure and organization of the cattle and hog industries, *per se*. While the four leading steer and heifer slaughtering firms account for over 80 percent of steer and heifer slaughter, and the four leading hog slaughtering firms account for 56 percent of total hog slaughter, at the time of this writing there is no evidence that these packers are using market power to engage in practices prohibited by the P&S Act. Absent evidence of a violation of the P&S Act, GIPSA does not have authority to stop concentration or other structural change. However, if firms use their increased market power to engage in behavior prohibited by the P&S Act, GIPSA will investigate and take appropriate action.

Concerns About Changes in Livestock Pricing and Procurement

Packers Acting in Concert To Restrict Competition–Industry members have expressed concerns about possible concerted action by meat packers to restrict competition. The market conditions that give rise to these concerns do not necessarily suggest that firms are acting in concert 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. Section 202 of the P&S Act makes it unlawful for packers to engage in any unfair, unjustly discriminatory or deceptive act or practice and, among other things, prohibits any action with the purpose or effect of manipulating prices or restraining commerce. Section 202 also makes it unlawful to "conspire, combine, agree, or arrange, with any other person (1) to apportion territory for carrying on business, or (2) to apportion purchases or sales of any article, or (3) to manipulate or control prices," or to "conspire, combine, agree or arrange with any other person to do, or aid or abet the doing of, any act made unlawful" by other subdivisions of Section 202.[9] Past analyses by GIPSA's Packers and Stockyards Programs (P&SP) of packers' livestock procurement patterns have not uncovered any evidence suggesting that packers engaged in such activities in violation of the P&S Act.

Short Trading Window–Producers allege that there is a short period of time, or "window," during which trading of fed cattle occurs. Some cattle producers and market observers contend that most spot market cattle transactions occur during a relatively short period each week, often described as a 15- or 30-minute window. The bidding process for fed cattle normally begins early on Monday mornings when packer buyers visit feedlots to view cattle available for purchase. The price discovery process continues during the week as buyers and sellers assess market conditions, followed by rapid consummation of many transactions once market participants believe the market price has been discovered. P&SP's investigations have found that, while more sales take place

[9] 7 U.S.C. 192.

on certain days of the week, some sales do take place on every business day of the week. Consummation of many transactions during a short time interval may be the result of normal competitive behavior in an environment in which market participants can communicate very quickly, and does not necessarily indicate collusive activities or other behavior in violation of the P&S Act.

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. P&SP investigates complaints about shared agents at livestock markets.

Pricing Methods–Cattle and hog buyers use a variety of methods to establish base prices in formulas used in marketing agreements and other contracts. Several of these pricing methods 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. P&SP regularly monitors this issue in its investigations of livestock procurement by packers.

Thin Spot Markets–Increased use of various types of forward sales agreements has reduced the number of livestock sold through spot markets, especially in the hog sector. Producers are concerned that the potential exists for packers to manipulate prices in the spot market, resulting in lower prices for hogs traded on the spot market or under contracts in which the contract price is based on a publicly reported price. GIPSA monitors packer behavior in order to identify instances in which thin markets may facilitate price manipulation, collusion, or other anti-competitive behavior by packers in violation of the P&S Act.

Mandatory Price Reporting (MPR)–Congress enacted the Livestock Mandatory Reporting Act of 1999 and, in 2001, USDA's Agricultural Marketing Service (AMS) implemented a Livestock Mandatory Price Reporting System. Under the program, large packers and importers are required to report to AMS specified information about all transactions involving purchases of livestock and imported boxed lamb cuts, domestic and export sales of boxed beef cuts, sales of domestic and imported boxed lamb cuts, and sales of domestic lamb carcasses. GIPSA monitors adjustments packers have made and continue to make in their pricing formulas in response to AMS' price reporting changes to help assure that producers are properly notified of the changes and to guard against other possible violations of the P&S Act.

Concerns About Vertical and Horizontal Coordination

Captive supplies –Use of captive supplies has been a concern for several years. The term "captive supplies" refers to livestock that are owned by, or committed to, a packer more than 2 weeks before the animals are slaughtered. Concerns about the possible effects of captive supplies are complicated by questions about the accuracy of available captive supply data. In response to these concerns, the Conference Report on USDA's

fiscal year 2001 appropriation directed the Secretary of Agriculture to conduct a comprehensive study on the issue of captive supplies. GIPSA released its report in January 2002 and announced that it will publish its definition of captive supply in the *Federal Register*, revise the Packer Annual Report form to clarify reporting definitions, audit future Packer Annual Report filings, and report captive supply information in more detail.

GIPSA identified the following points in its captive supply report:[10]

- Differences in captive supply statistics available from various organizations result from different definitions of what constitutes captive supply and variations in the geographical coverage of the data collection. P&SP defines captive supply as livestock owned or fed by a packer more than 14 days prior to slaughter, livestock that is procured by a packer through a contract or marketing agreement that has been in place for more than 14 days, or livestock that is otherwise committed to a packer more than 14 days prior to slaughter. P&SP's captive supply statistics are the only captive supply statistics based on a packer's forward commitment to purchase livestock before the animals are ready for slaughter.

- P&SP's analysis of the top four beef packers' 1999 procurement transactions data showed that the captive supply data the packers reported to P&SP in their Packer Annual Report filings included cattle procured from non-reporting subsidiaries, affiliates, owners, officers and employees to the extent those cattle were procured through a captive supply arrangement.

- P&SP's review of the top four beef packers' 1999 procurement transactions records found that captive cattle supplies accounted for 32.3 percent of the firms' total slaughter rather than the 25.2 percent originally reported by the packers in their annual report submissions to P&SP. Marketing agreement and forward contract cattle accounted for 23.9 percent of the top four packers' slaughter, and packer fed cattle accounted for 8.4 percent. The data discrepancies were attributed to misunderstandings about captive supply definitions.

Market Access and Price Inequalities–Changes in the organization of livestock production and procurement have raised a number of concerns about producers' access to markets. Some producers are concerned that few packing plants are available in their area, and that they may have difficulty obtaining a production or marketing contract. Some are concerned that some packers may not offer contracts to new producers because the packers already have enough animals under contract and scheduled for delivery. Others voice concerns that they are unable to obtain contract terms or prices that they believe are available to others. It is not a violation of the P&S Act for a packer to offer different contracts or different prices to different sellers, so long as the difference in contract or price does not give an unreasonable preference and is not unjustly discriminatory.

[10] Grain Inspection, Packers and Stockyards Administration, *Captive Supply of Cattle and GIPSA's Reporting of Captive Supply*, GIPSA-USDA, January 11, 2002.

Fair Treatment in Contracts–Increased use of production and marketing contracts to procure slaughter livestock raises producer concerns about potential unfair treatment of livestock producers. For example, some production and marketing contracts may stipulate that the producer must keep the contract terms confidential. In deciding how to address producer concerns about contract terms, the P&S Act must balance the interests of producers against the need for regulation of packers so that contract terms are fair.

Concerns About Packing Plant Operations and Marketing

Carcass Evaluation–Sophisticated devices have been developed to measure animal carcass quality characteristics. Industry-wide standards have not been developed for these devices. P&SP is working with industry members and standardization officials to develop industry-wide standards. P&SP believes the development of these standards will reduce the vulnerability of producers to unfair and unjustly discriminatory practices associated with carcass evaluation.

E-Commerce–A small number of Internet sites market hogs and feeder cattle today. Some industry observers project that the number of livestock sold electronically will increase in the future.[11] Many start-up entrepreneurs may not be aware of all of the legal requirements that must be met in order to operate subject to the P&S Act. All meatpackers and livestock firms that use e-commerce are subject to the P&S Act to the same extent as businesses that operate in a more traditional manner. P&SP monitors the Internet to ensure that Internet firms disclose all bidding rules and customs, and that parties are aware of and comply with the requirements of the P&S Act.

Concerns About Fair Trade and Financial Protection

String Sales–Some custom feedlots may attempt to require that a packer purchase less desirable livestock as a condition to purchasing more desirable livestock, or feedlots or packers may impose an "all or nothing" agreement in which the packer buys all (or a specified quantity of) livestock as a single purchase. Under either of these circumstances, known as "string sales," a single price is paid for livestock from multiple owners, regardless of variation in the quality of the livestock offered for sale by the individual owners. 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. This concern is potentially amenable to self-regulation. P&SP has not received complaints from producers that feedyards have refused to follow producers' instructions to sell their cattle on the merits of the producers' cattle.

Drug Residues–Packers are required by FSIS regulations to test for drug residues in meat that is destined for human consumption. Some animals, particularly cull cattle, may have drug residue levels that cause their meat to be declared unfit for human consumption, substantially reducing the value of the animals. Packers are required by the P&S Act to pay for animals by the close of the next business day following purchase, but

[11] Joiner, Harry, "E-commerce: Moving at the Speed of Sludge," *Meat Marketing & Technology,* August 2001.

packers do not have the results of drug residue tests until after payment is due. Although packers are required by the P&S Act to pay for these animals by the close of the next business day following purchase, they may seek restitution or other relief from the sellers of animals with the drug residues.

Retaliation–Many producers have expressed concerns about possible retaliation by packers if producers challenge the terms offered to them by a packer or file a complaint against a packer with P&SP. 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. This situation poses a difficult dilemma for producers and for P&SP, because P&SP cannot bring a successful action against a packer on an allegation of retaliation without the cooperation of the target of the alleged retaliation.

Auction Market Stability–The financial stability of livestock auction markets has been a concern for many years. Financial failure of auction markets could result in some livestock sellers not receiving payment for their livestock. P&SP reviews auction markets' annual reports and conducts site investigations of auction markets to monitor financial stability.

Conclusions

Substantial changes are occurring in industry structure and the behavior of firms in the livestock and meatpacking industries. Technological developments, changes in consumer demand, and other competitive forces drive many of the changes. 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 packers, dealers, and market agencies to engage in activities that are prohibited under the P&S Act.

P&SP regulates industries comprised of thousands of firms that handle over $100 billion worth of products per year. P&SP has about 185 employees throughout the United States. In the late 1990s, USDA restructured Packers and Stockyards Programs to strengthen its capacity to investigate possible anti-competitive behavior in the livestock, meatpacking, and poultry industries and to 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 the General Counsel at the initial stage of case development and during investigation of complex cases, incorporating economists and legal specialists 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's investigations reflect the industry's concerns under the P&S Act. P&SP conducted 1,619 investigations during FY 2001. About 400 of these investigations resulted from complaints filed with P&SP, and the remaining investigations were

initiated by P&SP as a result of monitoring industry behavior, following up on problem areas, responding to questionable items on P&SP reports, or other activities revealing information about the industry.

Twenty-seven investigations were conducted in FY 2001 on allegations of potential anticompetitive practices, including attempted restriction of competition, failure to compete, buyers acting in concert in the purchase of livestock, apportionment of territory, price discrimination, price manipulation, and predatory pricing. Nine of these were completed with one finding of a conflict of interest and the other eight finding the Act had not been violated.

P&SP conducted 877 trade practice investigations in FY 2001. Some of these investigations involved concerns about poultry growing arrangements, poultry contract settlements, failure to adhere to the terms of poultry contracts, operating without bond or with inadequate bond, buying or selling livestock on the basis of false weights, misrepresenting the weight and price of livestock, or false weighing of livestock. Some other trade practice investigations involved the checkweighing of poultry and livestock at auction markets, dealer buying stations, or meatpacking and poultry processing plants in order to determine the accuracy of the scales and the propriety of weighing procedures by industry personnel. In FY 2001, P&SP conducted 304 checkweighing investigations and found incorrect weighing requiring corrective action in 5 percent of them. Complaints were issued against four entities, and several poultry integrators changed their weighing procedures.

P&SP conducted 715 financial investigations in FY 2001 to investigate complaints and monitor the financial integrity of the livestock, poultry, and meat markets. These investigations include alleged failure to pay for livestock, meat, or poultry; failure to pay when due for livestock, meat, or poultry; operating subject to the P&S Act while insolvent; failure of market agencies to properly maintain trust accounts; and enforcement of the packer trust provisions of the P&S Act.

Auction markets maintain custodial (trust) accounts for the benefit of livestock sellers. Markets are required to maintain specified levels of funds in the accounts, depending on the markets' business volume, to ensure the markets have sufficient funds to pay livestock sellers. Financial investigations in FY 2001 resulted in $6.3 million being restored to custodial accounts that lacked the required level of funds. Livestock sellers recovered over $844,000 under the packer trust provisions of the P&S Act. Livestock sellers were paid $276,000 from bonds maintained by dealers and market agencies. Additional claims of $556,094 are pending.

P&SP will address the concerns discussed in this report by continuing to monitor changes in industry structure and behavior, and by examining practices that raise concerns in the industry and are within P&SP's authority under the P&S Act. In addition to monitoring, P&SP's actions may include formal investigations, regulatory initiatives, and research and other analyses to assess the economic, competitive, trade practice, and financial implications of the structural and behavioral changes that are taking place in the industry.

Introduction

This report describes the cattle and hog industries in terms of their general economic state, their changing business practices, and their activities that may raise concerns under the Packers and Stockyards Act of 1921 (P&S Act). The report has been prepared 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 is to promote fair competition and fair trade practices in the livestock, meat, and poultry industries, and to 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 is responsible for the administration of the P&S Act, and has delegated that responsibility to the Administrator of the Grain Inspection, Packers and Stockyards Administration (GIPSA). Packers and Stockyards Programs (P&SP), part of GIPSA, monitors economic and trade practice developments in the livestock, meatpacking, and poultry industries, and it administers and enforces the P&S Act.

Livestock and Meat Production in the United States: An Overview

Meat production includes raising livestock and poultry for slaughter, carried out by livestock producers and poultry growers, and manufacturing meat and various byproducts, carried out by packers and poultry integrators. Meat products are consumed directly, or are used as ingredients in products made by other manufacturers. In addition, poultry integrators and some packers are involved in the wholesale trade and use of meat products in the production of other foods. Various nonfood manufacturers utilize meat byproducts not fit for human food consumption as materials in the production of other types of goods, such as pet food, adhesives, fertilizer, leather goods, vitamins, and pharmaceuticals. Thus, byproducts of meat production enter into the economy in various ways, from the leather in shoes, furniture, and wallets to the glue in plywood.

Livestock and dairy production together account for one of the largest uses of the Nation's land area (figure 1). Livestock grazing land in 1997, which also includes grazing by animals not raised for meat exclusively (e.g., dairy livestock and horses), accounted for 41 percent of all the land within the contiguous 48 States.[1] In contrast, land used for crops accounted for 31 percent, and urban uses accounted for 6 percent (figure 2). Most of the land used for grazing was grassland pasture and range, though substantial amounts of forestland and cropland were used for grazing.

Among the livestock and poultry industries, beef cattle production is associated with the largest number of farm and ranch operators and hired workers—over 700,000 in 1997 (figure 3).[2] In the same year, there were 224,000 employees engaged in poultry processing and 143,000 employees in livestock slaughtering.[3]

The percentage of total calorie intake represented by a food is a widely accepted method of comparing the quantities of food consumed from different food groups. People have a general tendency to consume roughly the same number of calories over the same period of time (based on their size, metabolism, age, "calorie consciousness," etc.), regardless of the types of food products they consume. Meat accounts for an average of 15 percent of total calories in the American diet (figure 4).

Meat production accounts for a significant portion of the economy. The manufacturing industries classified as "poultry products" and "animal slaughtering products, except poultry" produced shipments valued at $32 billion and $49 billion, respectively, in 1999. Manufacturing firms and other firms that are engaged in the business of marketing livestock, meat, or poultry in commerce are subject to the P&S Act. Firms subject to the P&S Act generated approximately $125 billion worth of wholesale livestock, meat, and poultry products in FY 2001.[4]

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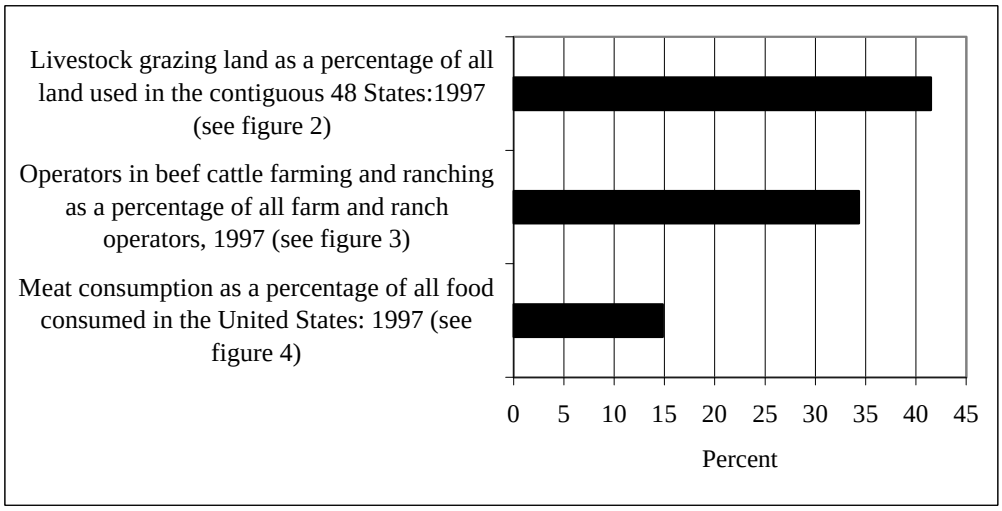
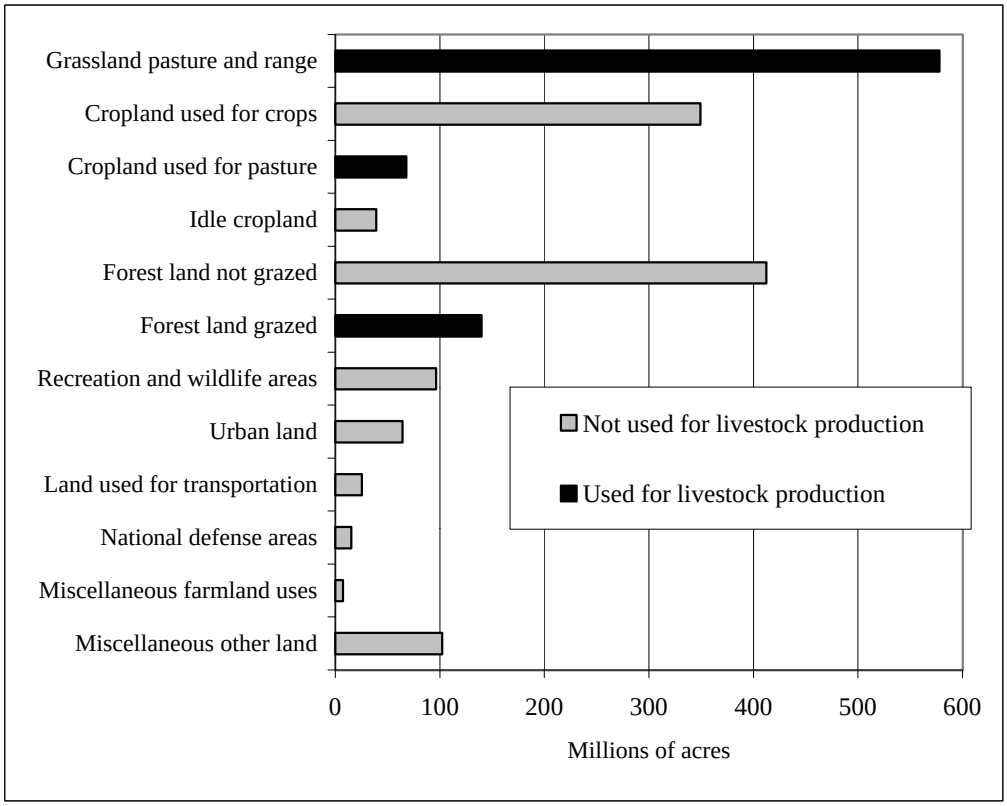
[1] Data for the year 1997 are the most current. Data on land use in all 50 States are not available.
[2] National Agricultural Statistics Service, *1997 Census of Agriculture*, March 1999.
[3] U.S. Department of Commerce, Bureau of the Census, *Bridge Between NAICS and SIC, 1997*, June 2000.
[4] Grain Inspection, Packers and Stockyards Administration, *2001 Annual Report of the Grain Inspection, Packers and Stockyards Administration*, GIPSA-USDA, December 2001.

Figure 1—Livestock and meat production and consumption shares in the United States



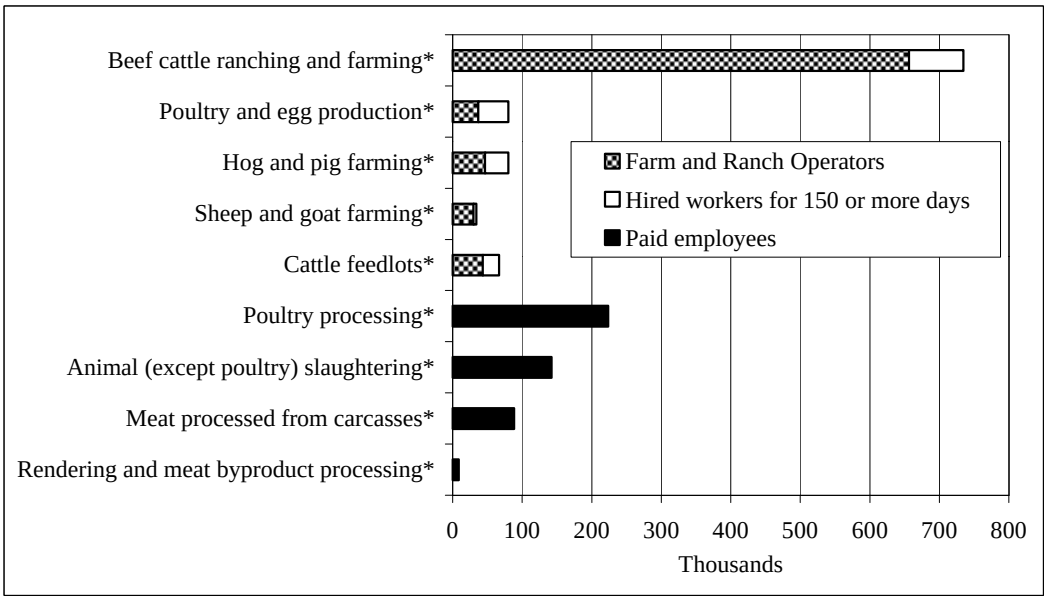
Sources: Land: Economic Research Service, USDA, *Agricultural Resources and Environmental Indicators, 2000* , Chapter 1.1, page 4. Farm Operators: National Agricultural Statistics Service, 1997 Census of Agriculture, March 1999. Food Consumption: Gerrior, S. and L. Bente. *Nutrient Content of the U.S. Food Supply, 1909-97* , Center for Nutrition Policy and Promotion, USDA, Home Economics Research, Report No. 54, 2001.

Figure 2.—Major uses of land in the contiguous United States, 1997



Source: Economic Research Service, USDA, *Agricultural Resources and Environmental Indicators, 2000* , Chapter 1.1, page 4.

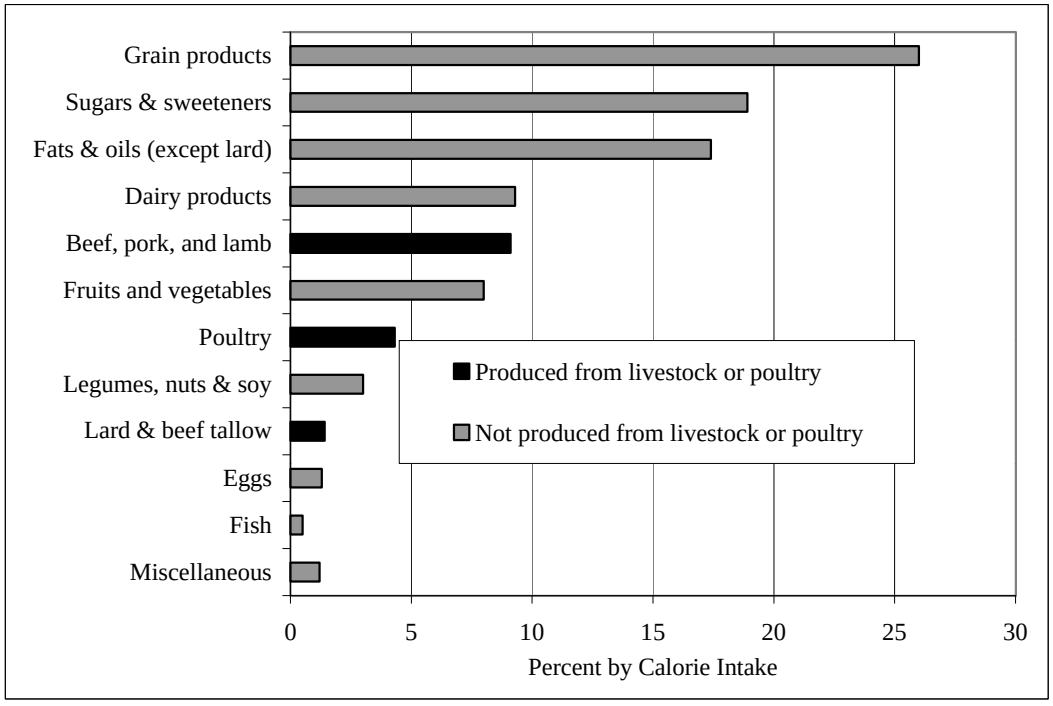
Figure 3.—Number of livestock and poultry farm operators and employees in meat processing, 1997



* Categories are not mutually exclusive. For example, a farm that raises both cattle and sheep is included in both beef cattle farming and sheep farming. Categories are defined according to the North American Industrial Classification System (NAICS), where the following NAICS codes apply: Beef cattle ranching and farming (112111), poultry processing (311615), animal (except poultry) slaughtering (311611), poultry and egg production (1123), hog and pig farming (1122), cattle feedlots (112112), meat processed from carcasses (311612), sheep and goat farming (1124), and rendering & meat byproduct processing (311613).

Sources: Data on farm operators and hired workers are from National Agricultural Statistics Service, USDA, *1997 Census of Agriculture* , March 1999. Data on paid employees are from Bureau of the Census, U.S. Department of Commerce, *Bridge Between NAICS and SIC, 1997* , June 2000.

Figure 4.—Food consumption in the United States, 1997



Source: Gerrior, S. and Bente, L. 2001, *Nutrient Content of the U.S. Food Supply, 1909-97* , Center for Nutrition Policy and Promotion, USDA. Home Economics Research, Report No. 54.

As shown in figure 5, several other industries are dependent on livestock products and byproducts. The largest of these is pharmaceutical preparations, whose total value of sales in 1999 exceeded $70 billion, although only a small fraction of this output is derived from livestock products.[5]

Total per capita U.S. consumption of meat and seafood doubled from 98 pounds in 1935 to 200 pounds in 2001 (table 1).[6] The increase reflects rising per capita incomes, changing consumer preferences, and changing relative prices of meat and other products. Technological changes in packaging and other preservation technologies and improved transportation, genetic and livestock production technologies have contributed to meat quality, while making meat more readily available at lower costs.

Studies have shown that American households increase their purchases of meat products in response to increases in income. For example, a recent study found that beef demand increases 0.90 percent for each 1-percent increase in total per capita income.[7] Expenditures for food accounted for 23.4 percent of a typical American family's budget in 1947, but only 10.2 percent in 2000.[8] This decline in the share of expenditures on food was due both to rising incomes and to declining prices of many food products.[9] Changes in consumer preferences over time have been reflected in an increased focus on health and safety issues, the development and marketing of new types of food products, and the growth of away-from-home eating.

Retail prices reflect the total cost of producing, processing, distributing, and marketing meat and poultry products from farmer to consumer. Technological changes, changes in product characteristics, and changes in the organization and structure of the various segments of the livestock and poultry industries have resulted in major changes in the relative costs of producing beef, pork, lamb, and poultry.

After adjusting for inflation, the cost of beef and pork was about the same in 2000 as it was in 1935. In contrast, poultry has become much less expensive. After adjusting for inflation, the cost of poultry in 2000 was about one-third what it had been in 1935.[10] Comparable data are not available for lamb.

Figure 7 shows sharp differences in historical trends in per capita consumption among beef, pork, poultry, lamb and seafood since 1935. Beef and pork were the principal meats in the American diet through most of the 20th century. Annual per capita consumption of each meat averaged about 40 pounds until around 1950 (table 1 and figure 7). Per capita

[5] U.S. Department of Commerce, *Annual Survey of Manufactures Value of Product Shipments: 1999*, March 2001. Data are not available on the proportions of output of other industries that are derived from livestock products.

[6] The per capita consumption measures presented in this paragraph are based on a boneless, trimmed equivalent definition.

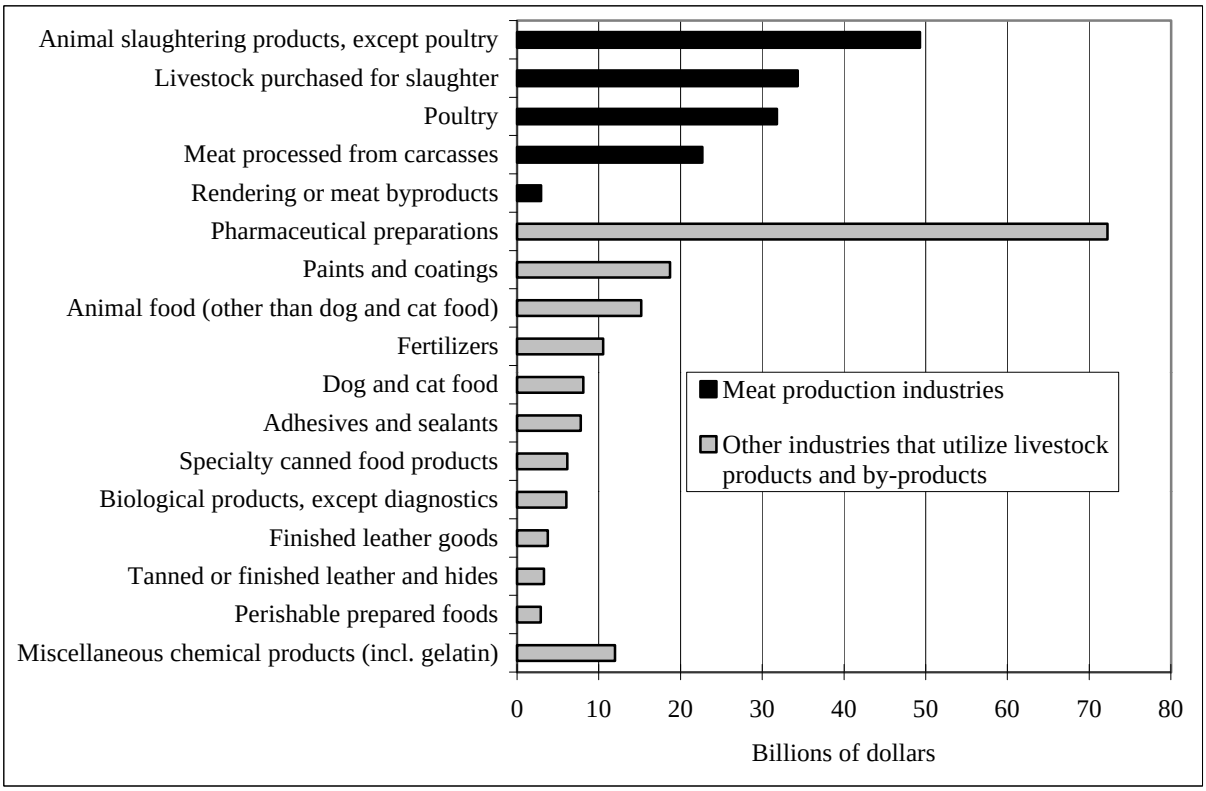
[7] Schroeder, Ted C., et al., "Beef Demand Determinants," Department of Agricultural Economics, Kansas State University, January 2000. http://www.agecon.ksu.edu/livestock/Extension%20Bulletins/BeefDemandDeterminants.pdf.

[8] Economic Research Service, "Food CPI, Prices, and Expenditures: Expenditures as a Share of Disposable Income," online data available at http://www.ers.usda.gov/briefing/CPIFoodAndExpenditures/data/table7.htm.

[9] Schroeder, Ted C., et al., "Beef Demand Determinants," Department of Agricultural Economics, Kansas State University, January 2000, p. 33. http://www.agecon.ksu.edu/livestock/Extension%20Bulletins/BeefDemandDeterminants.pdf.

[10] Based on price data, and consumer price index data, from U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part I*, 1975; and data provided by the Economic Research Service, USDA, January, 2002.

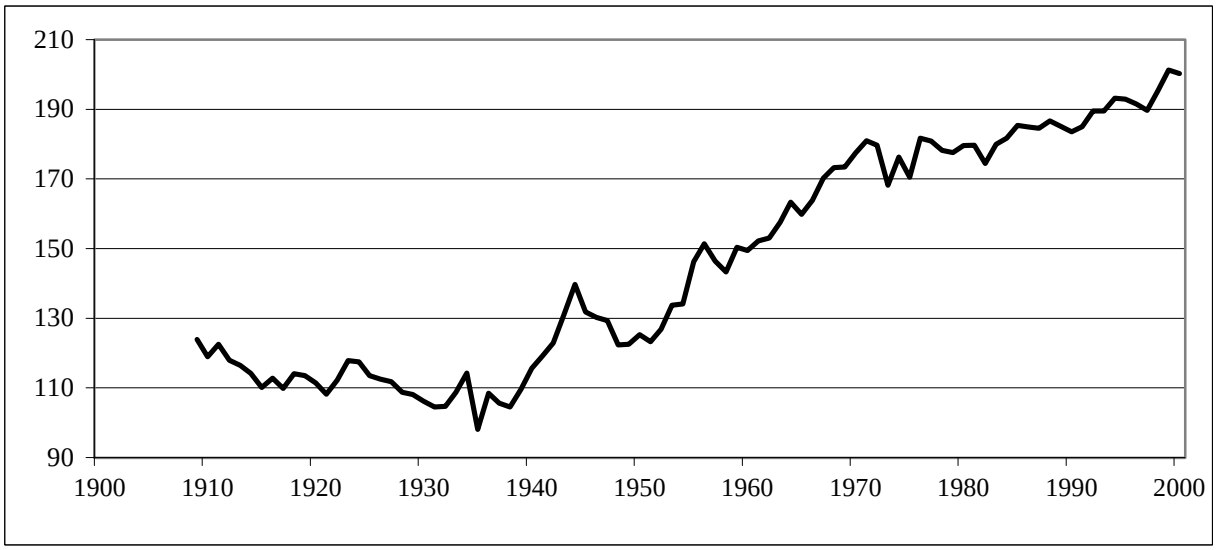
Figure 5.—Value of shipments of meat production and associated industries: 1999



Each industry corresponds to a specific NAICS category, except for livestock purchased for slaughter (defined by GIPSA) and finished leather goods (defined as the sum of NAICS categories for leather clothing, footwear, belts, gloves, handbags, and other leather goods). The values of shipments by category are not mutually exclusive because some of the industries listed provide materials to some of the other industries listed.

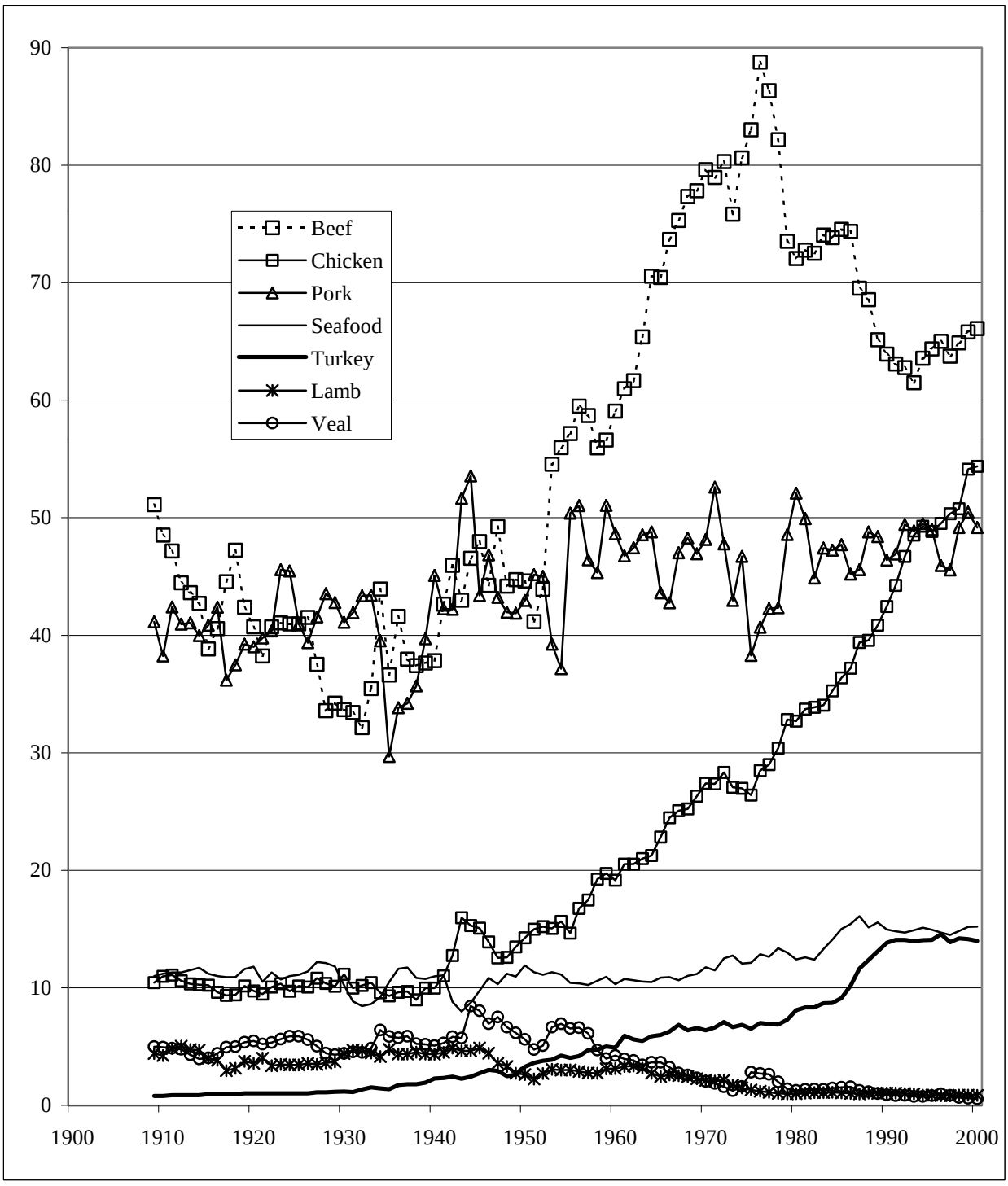
Sources: Data for "Livestock purchased for slaughter" are from Packers and Stockyards Programs, *Packers and Stockyards Statistical Report, 1999 Reporting Year, GIPS SR-02-1, GIPSA-USDA, January 2002* . All other data are from U.S. Department of Commerce, *Annual Survey of Manufactures Value of Product Shipments: 1999* , March 2001.

Figure 6.—Per capita consumption of meat and seafood in the United States, 1909-2000



Source: Economic Research Service, USDA, *Per Capita Food Consumption Data System* , January 2002.

Figure 7.—Per capita consumption of meat and seafood in the United States by commodity, 1909-2000



Source: Economic Research Service, USDA, *Per Capita Food Consumption Data System* , January 2002.

Table 1.—Per capita consumption of meat and seafood in the United States, by commodity: 1909-2000

Year	Beef	Veal	Pork	Lamb	Chicken	Turkey	Seafood	Total	Year	Beef	Veal	Pork	Lamb	Chicken	Turkey	Seafood	Total
	Pounds (boneless, trimmed equivalent)								Pounds (boneless, trimmed equivalent)								
1909	51.1	5.0	41.2	4.4	10.4	0.8	11.0	123.9	1955	57.2	6.5	50.4	3.0	14.7	4.0	10.4	146.2
1910	48.5	4.9	38.2	4.2	11.0	0.8	11.2	118.9	1956	59.5	6.6	51.0	2.9	16.8	4.2	10.4	151.3
1911	47.2	4.9	42.4	4.8	11.1	0.9	11.3	122.5	1957	58.7	6.1	46.4	2.7	17.5	4.7	10.2	146.4
1912	44.5	4.8	40.9	5.0	10.6	0.9	11.3	118.0	1958	55.9	4.7	45.3	2.7	19.2	4.7	10.6	143.3
1913	43.6	4.3	41.1	4.7	10.3	0.9	11.5	116.4	1959	56.6	4.0	51.0	3.1	19.7	5.0	10.9	150.4
1914	42.7	4.0	40.0	4.7	10.3	0.9	11.7	114.2	1960	59.1	4.2	48.6	3.1	19.1	4.9	10.3	149.4
1915	38.8	4.0	40.9	4.0	10.2	0.9	11.2	110.1	1961	61.0	4.0	46.8	3.3	20.5	5.9	10.7	152.2
1916	40.6	4.4	42.4	3.8	9.6	0.9	11.0	112.8	1962	61.7	3.8	47.4	3.4	20.5	5.6	10.6	153.1
1917	44.6	4.9	36.2	2.9	9.4	0.9	10.9	109.8	1963	65.4	3.4	48.5	3.2	21.0	5.5	10.5	157.5
1918	47.2	5.0	37.5	3.1	9.4	0.9	10.9	114.1	1964	70.6	3.7	48.8	2.7	21.3	5.9	10.5	163.4
1919	42.4	5.4	39.2	3.7	10.1	1.0	11.6	113.5	1965	70.4	3.7	43.6	2.4	22.8	6.0	10.9	159.8
1920	40.7	5.5	39.0	3.6	9.7	1.0	11.8	111.4	1966	73.7	3.2	42.8	2.6	24.5	6.3	10.9	163.9
1921	38.2	5.2	39.8	4.0	9.5	1.0	10.5	108.2	1967	75.3	2.8	47.0	2.5	25.1	6.8	10.6	170.2
1922	40.7	5.3	40.4	3.4	10.1	1.0	11.3	112.2	1968	77.3	2.6	48.3	2.4	25.2	6.4	11.0	173.2
1923	41.1	5.6	45.6	3.5	10.4	1.0	10.7	117.8	1969	77.8	2.3	46.9	2.3	26.3	6.6	11.2	173.4
1924	41.0	5.9	45.5	3.4	9.7	1.0	11.0	117.5	1970	79.6	2.0	48.1	2.1	27.4	6.4	11.7	177.5
1925	41.0	5.9	41.0	3.4	10.1	1.0	11.1	113.6	1971	79.0	1.9	52.6	2.1	27.4	6.6	11.5	181.0
1926	41.5	5.6	39.4	3.6	10.1	1.0	11.4	112.5	1972	80.3	1.6	47.8	2.2	28.3	7.1	12.5	179.7
1927	37.5	5.0	41.6	3.5	10.8	1.1	12.2	111.7	1973	75.8	1.2	43.0	1.7	27.1	6.6	12.7	168.2
1928	33.6	4.4	43.5	3.6	10.4	1.1	12.1	108.7	1974	80.6	1.6	46.7	1.5	27.0	6.8	12.1	176.3
1929	34.2	4.3	42.8	3.7	10.1	1.1	11.8	108.1	1975	83.0	2.8	38.3	1.3	26.4	6.5	12.1	170.5
1930	33.7	4.4	41.1	4.4	11.1	1.2	10.2	106.1	1976	88.8	2.7	40.7	1.2	28.5	7.0	12.9	181.7
1931	33.4	4.5	41.9	4.7	10.0	1.1	8.8	104.5	1977	86.3	2.6	42.3	1.1	29.0	6.9	12.6	180.9
1932	32.1	4.5	43.4	4.6	10.2	1.4	8.4	104.7	1978	82.2	2.0	42.3	1.0	30.4	6.9	13.4	178.2
1933	35.5	4.9	43.4	4.4	10.4	1.5	8.6	108.8	1979	73.5	1.4	48.6	1.0	32.8	7.3	13.0	177.6
1934	43.9	6.4	39.5	4.2	9.6	1.4	9.2	114.2	1980	72.1	1.3	52.1	1.0	32.7	8.1	12.4	179.6
1935	36.6	5.8	29.7	4.8	9.3	1.4	10.5	98.1	1981	72.8	1.3	49.9	1.0	33.7	8.3	12.6	179.7
1936	41.6	5.7	33.8	4.4	9.6	1.7	11.6	108.5	1982	72.5	1.4	44.9	1.1	33.9	8.3	12.4	174.4
1937	38.0	5.9	34.2	4.4	9.7	1.8	11.7	105.7	1983	74.1	1.4	47.4	1.1	34.0	8.7	13.3	180.0
1938	37.4	5.2	35.7	4.5	9.0	1.8	10.8	104.5	1984	73.8	1.5	47.2	1.1	35.3	8.7	14.1	181.7
1939	37.6	5.2	39.7	4.4	10.0	1.9	10.8	109.6	1985	74.6	1.5	47.7	1.1	36.4	9.1	15.0	185.4
1940	37.8	5.1	45.1	4.3	10.0	2.3	11.0	115.6	1986	74.4	1.6	45.2	1.0	37.2	10.2	15.4	184.9
1941	42.6	5.3	42.3	4.5	11.0	2.3	11.1	119.1	1987	69.5	1.3	45.6	1.0	39.4	11.6	16.1	184.5
1942	45.9	5.8	42.2	4.9	12.7	2.4	8.8	122.9	1988	68.6	1.1	48.8	1.0	39.6	12.4	15.1	186.6
1943	43.0	5.7	51.7	4.6	16.0	2.3	8.0	131.2	1989	65.1	1.0	48.4	1.0	40.9	13.1	15.6	185.1
1944	46.6	8.4	53.6	4.6	15.3	2.4	8.7	139.7	1990	63.9	0.9	46.4	1.0	42.4	13.8	15.0	183.5
1945	48.0	8.1	43.4	4.9	15.1	2.7	9.8	131.8	1991	63.1	0.8	46.9	1.0	44.2	14.1	14.8	185.0
1946	44.2	6.9	46.8	4.4	13.9	3.0	10.8	130.2	1992	62.8	0.8	49.4	1.0	46.7	14.1	14.7	189.5
1947	49.2	7.5	43.2	3.6	12.5	2.9	10.3	129.3	1993	61.5	0.8	48.9	1.0	48.5	14.0	14.9	189.5
1948	44.2	6.7	42.0	3.3	12.6	2.5	11.2	122.4	1994	63.6	0.8	49.5	0.9	49.3	14.1	15.1	193.2
1949	44.7	6.2	41.9	2.7	13.5	2.6	10.9	122.5	1995	64.4	0.8	49.0	0.9	48.8	14.1	14.9	192.9
1950	44.6	5.6	43.0	2.6	14.3	3.3	11.9	125.2	1996	65.0	1.0	45.9	0.8	49.5	14.6	14.7	191.6
1951	41.2	4.7	45.2	2.2	15.0	3.6	11.3	123.2	1997	63.8	0.9	45.5	0.8	50.3	13.9	14.5	189.7
1952	43.9	5.1	45.0	2.7	15.2	3.8	11.1	126.8	1998	64.9	0.7	49.2	0.9	50.8	14.2	14.8	195.4
1953	54.5	6.6	39.2	3.1	15.1	3.9	11.3	133.7	1999	65.8	0.6	50.5	0.9	54.1	14.2	15.2	201.2
1954	56.0	6.9	37.2	3.0	15.6	4.2	11.1	134.1	2000	66.1	0.6	49.2	0.8	54.4	14.0	15.2	200.2

Source: Economic Research Service, USDA, *Per Capita Food Consumption Data System,* January 2002.

beef consumption then began a rapid rise, reaching 89 pounds in 1976. It subsequently declined to 62 pounds by 1993, and then increased to 66 pounds in 2000.

Annual per capita pork consumption fluctuated widely from year to year but averaged about 40 pounds between 1910 and 1945. It rose after World War II and has averaged about 48 pounds since 1950. Year-to-year fluctuations in pork consumption have continued but the fluctuations have become smaller since the early 1980s.

Annual per capita chicken consumption averaged about 10 pounds between 1910 and 1940. It increased during World War II and, in 1950, began a steady rise from about 15 to 55 pounds in 2000. Chicken replaced pork as the second-most-consumed meat during the mid-1990s and approached per capita consumption of beef by the end of the century.

Annual per capita turkey consumption averaged 1-2 pounds between 1910 and the early 1930s, and slowly rose to about 9 pounds in the mid 1980s. It increased to about 14 pounds by 1992 and has remained at that level since then.

Annual per capita lamb consumption averaged about 4 pounds between 1910 and the end of World War II in 1945. Per capita consumption declined to about 3 pounds by 1950, and continued to decline slowly to about 1 pound in 1980 and 0.8 pounds in 2000.

Annual per capita seafood consumption averaged about 11 pounds between 1910 and 1970. Consumption increased to about 15 pounds per year in 1988, and since then has remained at roughly the same level.

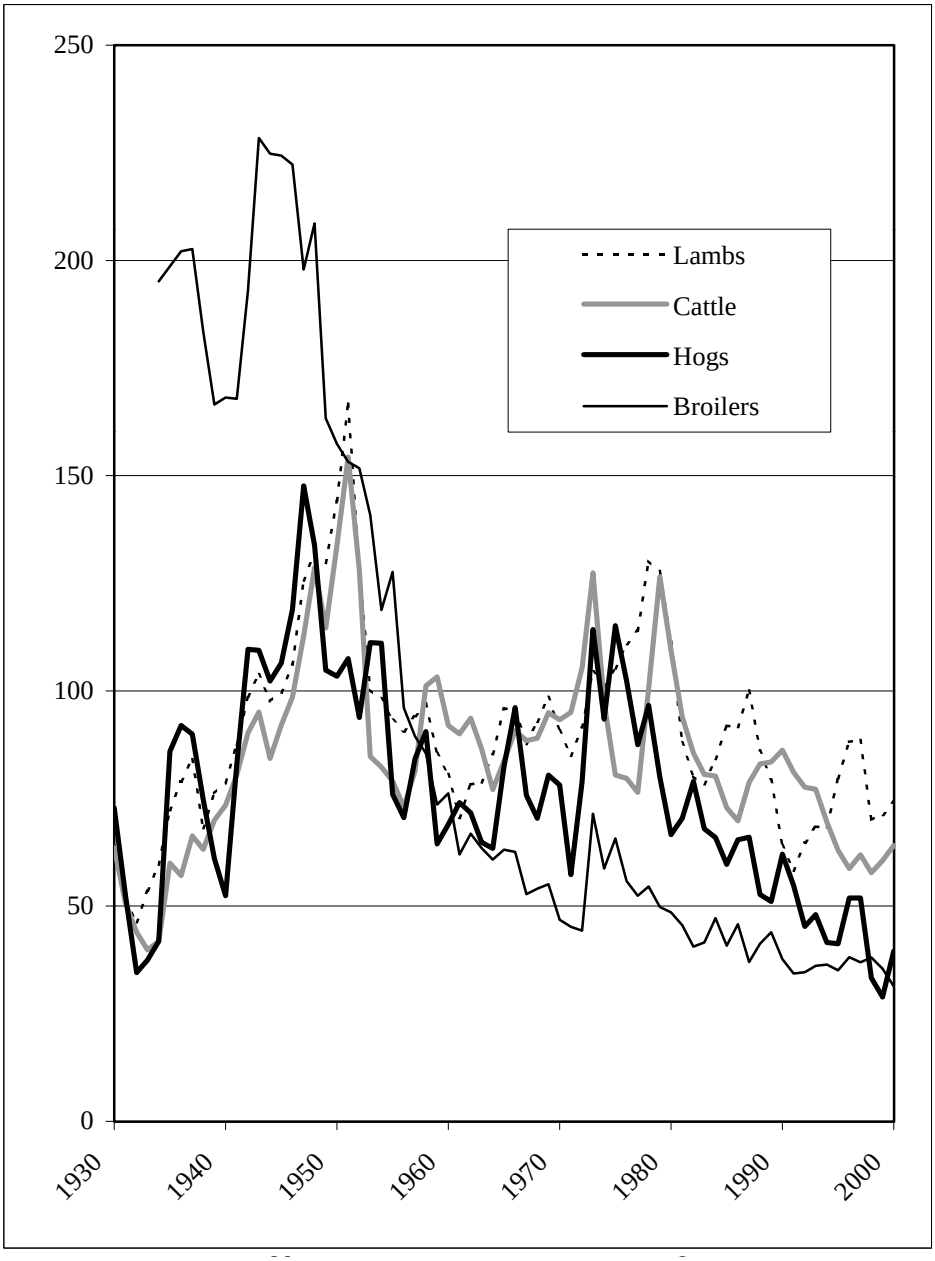
Per capita consumption of meat and seafood products in 2000 consisted of 66.1 pounds of beef, 54.4 pounds of chicken, 49.2 pounds of pork, 15.2 pounds of seafood, 14.0 pounds of turkey, 0.8 pounds of lamb, and 0.6 pounds of veal.

In the United States economic development has been accompanied by the substitution of meat for cereals. Rising per capita incomes played an important role in increased meat consumption in the United States during the 20th century. Future gains in per capita income in the United States are not expected to increase per capita meat consumption at the rates observed during the past century. However, rising average per capita income is expected to increase demand for meats with value-added characteristics such as pre-cooked products, entrees in microwavable packaging, and marinated meat cuts for grilling. Future changes in costs of production, which are reflected in the relative prices of meat and livestock (figure 8), could alter the relative proportions of beef, pork, poultry, lamb, and seafood consumed.

Given the role of income in the demand for meat, U.S. exports of meat products are affected by global economic development. Figure 9 shows U.S. international trade in red meat, poultry, and seafood from 1989 to 2000. Both exports and imports of red meat grew over this period. U. S. exports have exceeded imports since 1995. Exports represent a very small fraction of U.S. meat production, but are an important outlet for sales of meat cuts and products that are less demanded by U.S. consumers.

Figure 8.—Long-run trends in the prices of broilers, lamb, cattle, and hogs purchased for slaughter, 1930-2000

Constant 1996 dollars per 100 lbs. liveweight (or liveweight equivalent)

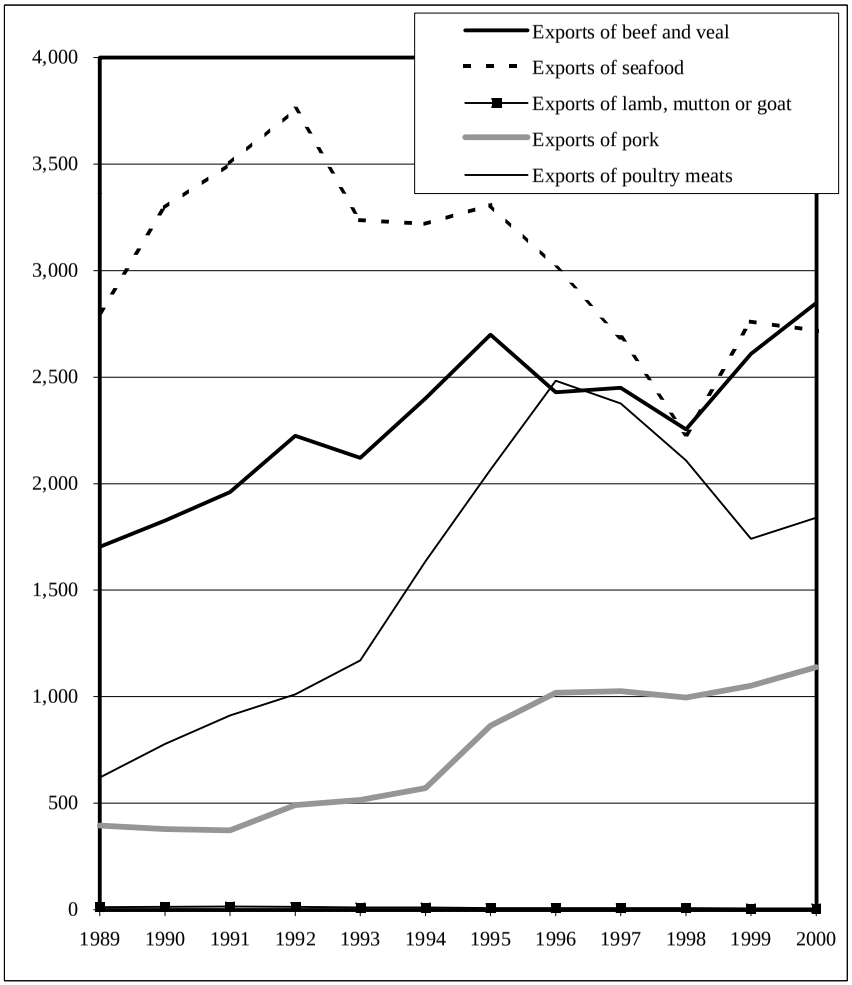


USDA, January 22, 2002; Broiler prices are from National Agricultural Statistics Service, USDA, *Poultry: Production and Value, Annual Summary* , 2002. Prices are deflated by Gross Domestic Product chain type price index, from the Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business* , August 2001.

Figure 9.—International trade in red meat and competing commodities

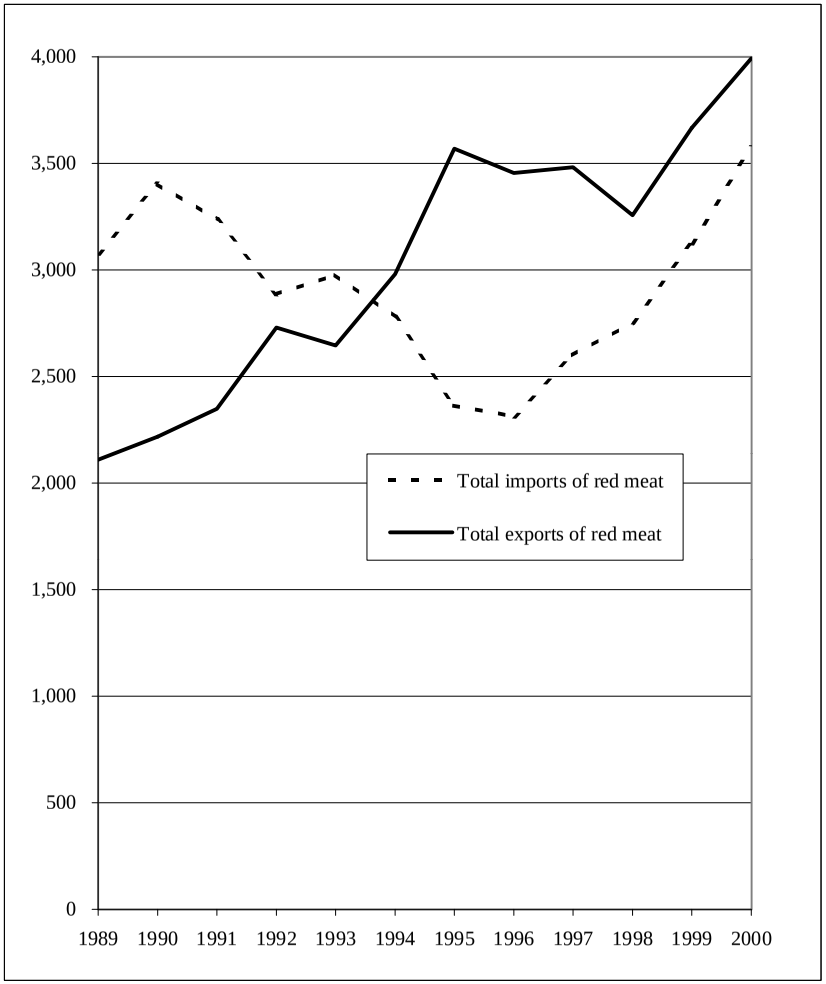
U.S. exports of red meat, poultry, and seafood, 1989-2000

Millions of 1996 dollars



U.S. exports and imports of red meat, 1989-2000

Millions of 1996 dollars



Sources: Exports and imports in current dollars are from: Economic Research Service, USDA, *Foreign Agricultural Trade of the United States (fatus) database* , January 2002. Constant dollars were based on the Gross Domestic Product chain type price index, in Bureau of Economic Analysis, U.S. Department of Commerce, *Survey of Current Business* , August 2001, p. 133.

General Economic State of the Cattle Industry

Drought conditions have been forcing cattle into feedlots, and herd expansion may be delayed for another year. Beef production in 2002 is expected to be nearly unchanged from 2001. Although cattle feeders have reportedly experienced large losses in early 2002, prices are expected to increase through the year. However, projected price increases for the year are below earlier expectations.

Supply Factors

Cattle production and prices historically have followed a cyclical pattern, known as the "cattle cycle," that is affected by the reproductive cycle of cattle (nearly 3 years from conception to maturity of an animal). A typical cattle cycle is 10–12 years long, consisting of approximately 6 years of growth in the number of cattle as the size of breeding herds increases (expansion), followed by 1–2 years of relatively constant inventories (consolidation), then typically 3–4 years of declining cattle inventories as breeding herds are reduced in response to relatively low cattle prices (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 larger proportion of heifers and cows to slaughter.[1]

The beef industry has been experiencing a liquidation of the cattle inventory since 1996, and the trend is expected to continue over the next couple of years.[2] A severe winter in 2000-2001 and widespread drought led producers to reduce the number of cows in breeding herds in 2001, and place heifers in feedlots rather than retain them for breeding. Weather conditions early in the year adversely affected cattle weight gains and resulted in reduced beef production and increases in fed cattle and beef prices.[3] Production increased in the second half of the year and prices declined sharply, but production for the year as a whole was about 3 percent less than in 2000, and prices averaged about 4 percent higher. Forage conditions and feed grain crop development in early 2002 will largely determine whether beef cow producers begin to retain heifers and enter the expansion phase of the cattle cycle.[4] USDA's Economic Research Service (ERS) reports that drought conditions may delay herd expansion for at least another year.[5]

In early 2001, a major outbreak of foot-and-mouth disease (FMD), a highly contagious and economically devastating disease of cattle, hogs, and other livestock, infected livestock herds in Great Britain and, to a lesser extent, France, Holland, Germany, and Italy. FMD can spread widely and rapidly with grave economic consequences. There was concern that the disease might spread to the United States. Measures to prevent the spread of the disease to the United States by prohibiting the importation of livestock and

[1] Mathews, Kenneth H. et al., *U.S. Beef Industry: Cattle Cycles, Price Spreads, and Packer Concentration*, Technical Bulletin No. 1874, ERS-USDA, April 1999.
[2] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-95, ERS-USDA, May 15, 2002.
[3] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-92, ERS-USDA, February 13, 2002.
[4] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-92, ERS-USDA, February 13, 2002.
[5] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-94, ERS-USDA, April 15, 2002.

certain livestock products from high-risk countries were successful throughout 2001, as FMD did not spread to the United States.[6] FMD has not affected cattle supplies in the United States.

Demand Factors

There is some uncertainty about the trend in the demand for beef. Evidence indicates both positive and negative changes in demand. Some analysts suggest that decreased cattle prices late in 2001 reflected a decline in the demand for beef. They also point out that the terrorist attacks of September 11, 2001, contributed to a reduction in demand.[7] The Livestock Marketing Information Center (LMIC)[8] notes that available data suggest that retail demand for beef for at-home consumption has held up well, although demand for beef in the away-from-home market (hotels, restaurants, and institutions—HRI) appears to have weakened during 2001.[9] ERS reported that a relatively weak U.S. economy dampened domestic demand for beef in 2001, especially higher quality cuts, and predicts this effect will continue into 2002.[10]

Trade

According to WAOB, U.S. beef exports were 2.3 billion pounds in 2001, a decline of about 8 percent from their level of 2.5 billion pounds in 2000. WAOB projects that exports will remain about the same in 2002 as in 2001.[11]

Exports declined generally due to high U.S. prices, slowing economies worldwide, and concerns about bovine spongiform encephalopathy (BSE) in Asia. Korea and Japan are two of the largest importers of U.S. beef. U.S. exports to Korea during February through August 2001 were the lowest since the Asian financial crisis in 1997 due to a buildup of stocks in 2000 as a result of a slowing Korean economy and concerns about BSE. Exports to Korea increased sharply in late 2001, and exports to Korea are expected to be higher in 2002 than in 2001.[12]

Exports to Japan, the largest importer of U.S. beef, declined 10 percent in 2001 on a carcass weight basis compared to 2000.[13] Concerns about BSE and a weak economy are expected to lower U.S. beef exports to Japan over the next year. U.S. beef price increases in response to tightening U.S. beef supplies also will have a negative effect on exports to

[6] Testimony of Secretary of Agriculture Ann M. Veneman before the Senate Committee on Agriculture, Nutrition, and Forestry, September 26, 2001; also Animal and Plant Health Inspection Service, USDA, "USDA Safeguarding Measures Against Foot-and-Mouth Disease," News Release, July 2001.

[7] Sparks Companies Inc., *Cattle and Beef Update*, CB01-17, October 19, 2001; Kay, Steve, "Cash Cattle Prices Fall to $60," *Cattle Buyers Weekly*, November 19, 2001.

[8] The LMIC is a cooperative effort between State university extension specialists, USDA economists, industry organizations, and Center staff. Five USDA agencies, including the Grain Inspection, Packers and Stockyards Administration, participate in the LMIC.

[9] Livestock Marketing Information Center, "Cattle Situation and Outlook," Letter #50, December 21, 2001.

[10] Clauson, Annette L., "The Outlook for Food Prices in 2002," presentation at Agricultural Outlook Forum 2002, ERS-USDA, February 21, 2002.

[11] World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-386, WAOB-USDA, May 10, 2002.

[12] Gustafson, Ron, "The Outlook for Livestock and Poultry," presentation at Agricultural Outlook Forum 2000, ERS-USDA, February 22, 2002.

[13] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-92, ERS-USDA, February 13, 2002.

Japan. Concerns about BSE also are expected to result in a shift of Japanese consumers' preferences, increasing demand for pork relative to beef.[14]

Beef imports increased 4 percent in 2001, to a record 3.2 billion pounds, primarily due to demand for processing beef exceeding domestic supply as cow slaughter declined. Further decreases in cow slaughter in 2002 will likely encourage additional increases in imports. WAOB predicts imports will increase 2 percent in 2002.[15] Strong U.S. feeder cattle demand and drought conditions in Canada and Mexico resulted in an 11- percent increase in cattle imports in 2001. Live cattle imports are expected to increase slightly in 2002.[16]

Outlook for Cattle Producers

Drought and high hay prices had an adverse impact on many U.S. cow-calf and stocker operations in 2001, although strong feeder calf prices resulted in profitability for most cow-calf operations.[17] Cattle feeders did not fare as well as feeder cattle producers in 2001, in spite of fed cattle price increases in the early part of the year. Prices declined sharply in the second half of 2001.[18] The price for choice steers averaged $65 per cwt (per 100 pounds) in the fourth quarter of 2001, versus $79 per cwt in the first quarter of 2001.[19] Cattle feeders were estimated to have posted losses of approximately $40 per head in July and over $85 per head in September.[20]

Drought has continued to force cattle into feedlots so far in 2002, resulting in projected increases in production in the second and third quarters of the year relative to the same period in 2001.[21] Cattle feeders reported large losses in early 2002 as price declined in response to larger than expected supplies of all types of meat.[22] A Russian ban on imports of poultry from the United States contributed to the large supplies of meat and resulting low prices.[23]

The Russian ban on poultry imports was scheduled to be lifted in mid-April, but as of this writing shipments have not yet approached earlier levels[24]. WAOB projects that fed cattle prices will fall in the second and third quarters of 2002 before rising to $70 to $76 in the fourth quarter, and will average $67 to $70 per cwt for the entire year versus the 2001 average of $73 per cwt.[25] Feeder cattle prices overall will average between $84 and

[14] Gustafson, Ron, "The Outlook for Livestock and Poultry," presentation at Agricultural Outlook Forum 2000, ERS-USDA, February 22, 2002.
[15] World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-386, WAOB-USDA, May 10, 2002.
[16] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-93, ERS-USDA, March 13, 2002.
[17] Livestock Marketing Information Center, *Analysis and Comments*, Letter #40, October 12, 2001.
[18] ERS uses the price of Choice steers in Nebraska as an index or representative measure of fed cattle prices, and Oklahoma City prices for feeder cattle.
[19] Economic Research Service, *Livestock, Dairy and Poultry Situation*, LDP-M-93, ERS-USDA, March 13, 2002.
[20] Livestock Marketing Information Center, *Analysis and Comments*, Letter #40, October 12, 2001.
[21] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-94, ERS-USDA, April 15, 2002.
[22] Kay, Steve, "Market Hopes For Spring Demand Burst," *Cattle Buyers Weekly*, April 15, 2002.
[23] Statement by USDA Chief Economist Keith Collins, as reported in "USDA Economist Expects US Livestock Prices to Recover," Reuters, April 15, 2002.
[24] Economic Research Service, *Livestock, Dairy and Poultry Outlook*, LDP-M-95, ERS-USDA, May 15, 2002.
[25] World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, WASDE-386, WAOB-USDA, May 10, 2002.

$87 per cwt in 2002 compared to the 2001 average of $88. WAOB projects that fourth-quarter beef production will decline relative to 2001, and total beef production for the entire year will be about the same as in 2001.

Outlook for Beef Packers

The outlook for beef packers in 2002 is uncertain, due in part to uncertainties about export potential, including the unknown duration and effects on supply of competing meats associated with the recent Russian ban on poultry products. Sparks Companies, Inc., a private market research and analysis firm, reports that packers have realized sizeable margins recently.[26] However, projected increases in production in the second and third quarters of 2002 may put pressure on beef packer margins, given expected abundant supplies of competing meats. Sparks Companies projects that the wholesale boxed beef values will decline in coming months, before returning to current levels in the last quarter of the year.[27]

[26] Sparks Companies, Inc., "Cattle and Beef Comments," *Morning Comments*, April 24, 2002.
[27] Sparks Companies, Inc., "Cash Market Price History," *Livestock Desk Reference*, April 23, 2002.

Changing Business Practices in the Cattle Industry

Structure of Cattle Feeding and Beef Packing

Beef produced in the United States comes from two main sources—fed cattle and cull cattle. Fed cattle are steers and heifers that are fattened to slaughter weight in feedlots (fed beef) and used to produce whole-muscle cuts like steaks and roasts. Cull cattle are primarily mature beef cows, dairy cows, and bulls. Beef produced from cull cattle is primarily ground and sold as chopped meat; sold as lower-cost cuts to the hotel, restaurant, and institutional (HRI) trade; or used in processed meats like franks. Beef produced from fed cattle, called fed beef, usually is cut into primals or subprimals, vacuum packed, and shipped in boxes (boxed beef) to grocery retailers, the HRI trade, and others, either directly by packers and processors, or through wholesalers. Retailers generally cut the boxed beef into retail cuts. Some fed beef is shipped from packers in case-ready form, i.e., already cut and packaged into retail cuts at the packing plant for direct placement on the retail shelf.

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

Feedlots (also called “feedyards”) fatten (or "finish") cattle owned by others as a service to those owners (“custom feeding”), or they buy feeder cattle that they finish and sell to packers for slaughter. Feedlots that custom-feed cattle are referred to as “custom feedlots.” Custom-fed cattle generally are owned by ranchers who produced them from calves, by investors who purchase feeder cattle to fatten, or by packers. Custom feedlots charge the owners of the cattle for the feeding services the feedlot provides, and many custom feedlots also offer financing, risk management, and marketing services to their customers. Most custom feedlots own at least some of the cattle they feed.

Concentration and Integration

Prior to 1970 cattle feeding tended to occur in small-scale farmer-feeder operations with capacity of 1,000 head or less. Large specialized feedlots became prevalent during the 1960s and 1970s, and have continued to increase in size and in their share of total production. Between 1985 and 2001, the percentage of cattle marketed from feedlots with over 32,000-head capacity increased from 29 percent to about 42 percent (table 2).

In 2001, the 10 largest feedlot firms had a total one-time feeding capacity of 3.1 million head, 53 percent larger than in 1988.[1] The 20 largest feedlot firms increased their feeding capacity by 39 percent between 1988 and 2001.[2]

Cattle feeding has become more concentrated in recent years. In 2001, the 10 largest feedlot firms had estimated annual feeding capacity equal to 24 percent of total steer and heifer slaughter, versus 16 percent in 1988. The 20 largest feedlot firms had annual capacity equal to 35 percent of total steer and heifer slaughter in 2001, versus 25 percent in 1988.[3]

Table 2.—U.S. fed cattle output by size of feedlot, selected years, 1985–2001

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
	Percent of total marketings						
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
2001	13.0	3.2	5.0	7.2	10.7	18.8	41.9

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 (2-02) NASS-USDA, February 15, 2002.

Slaughter plant size has also increased. Several plants can slaughter more than 5,000 head per day and can process 400 or more carcasses per hour. Between 1980 and 1999, the number of steer and heifer plants slaughtering 500,000 or more head annually increased from 8 to 20, with 14 of those plants slaughtering more than 1 million head each in 1999.[4] The share of total steer and heifer slaughter by plants slaughtering 500,000 or more steers and heifers rose from 24 percent in 1980 to 79 percent in 1999.

Concentration in beef packing has stabilized. Concentration in the top four firms in steer and heifer slaughter rose from 36 percent in 1980 to 72 percent in 1990 and 81 percent in 1993, but has remained relatively stable since then (table 3). The Herfindahl-Hirshman Index (HHI), a standard measure of industry or market concentration, is defined mathematically as the sum of each firm's squared percentage share of the total industry or market. The Department of Justice (DOJ) and the Federal Trade Commission (FTC) consider markets with HHI values below 1000 to be unconcentrated, and markets with HHI values over 1800 to be highly concentrated.[5] HHI for the steer and heifer slaughter

[1] 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; Kay, Steve, "Top Feedlots Keep Expanding," *Cattle Buyers Weekly*, October 29, 2001.

[2] Annual capacity estimated as 85 percent of maximum one-time capacity multiplied by 2.5 (the number of times the lot can be filled with cattle and the cattle fed to slaughter weight during 1 year).

[3] Kay, Steve, "Top Feedlots Keep Expanding," *Cattle Buyers Weekly*, October 29, 2001.

[4] Packers and Stockyards Programs, *Packers and Stockyards Statistical Report 1999 Reporting Year*, GIPSA SR-02-1, GIPSA-USDA, January 2002.

[5] The Horizontal Merger Guidelines issued by the Department of Justice and the Federal Trade Commission state, "The Agency regards markets [with HHI values over 1800] to be highly concentrated. Mergers producing an increase in the HHI of less than 50 points, even in highly concentrated markets post-merger, are unlikely to have adverse competitive consequences and ordinarily require no further analysis. Mergers producing an increase in the HHI of more than 50 points in highly concentrated markets post-merger

industry increased from 561 in 1980 to 2036 in 1995 and then decreased to 1942 in 1999 (table 3). Thus, the steer and heifer slaughter industry is highly concentrated but the level of concentration has been relatively stable in recent years.

Table 3.— Steer and heifer slaughter concentration, selected years 1980–2000[1]

	1980	1985	1990	1995	1998	1999	2000
Four-firm concentration (percent)[2]	35.7	50.2	71.6	80.8	80.4	81.4	81.5
HHI	561	999	1661	2036	1936	1942	NA

NA denotes not available
HHI denotes Herfindahl-Hirshman Index
[1]Data for 1980, 1985, and 1990 are based on firms' fiscal years as reported to P&SP. Data for 1995–2000 are based on calendar year for federally inspected slaughter.
[2]Percentage of total commercial slaughter accounted for by the four largest firms.
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.

Some of the largest beef packing firms were involved in mergers and acquisitions in 2001 and early 2002. Tyson Foods, Inc. (Tyson) acquired IBP, inc. Although this acquisition expanded Tyson's share of overall meat and poultry processing, it did not result in an increase in concentration of slaughter in any individual type of animal, since Tyson was not previously engaged in slaughtering the type of animals slaughtered by IBP.

In August 2001, Excel Foods (Excel) acquired Emmpak Foods, Inc., of Milwaukee, Wisconsin (Emmpak). In February 2002, Excel acquired Taylor Packing Co. Inc., (Taylor) of Wyalusing, Pennsylvania. Excel primarily slaughters steers and heifers, and both Emmpak and Taylor primarily slaughter cows and bulls, so the impact of these acquisitions on steer and heifer concentration is small. The acquisitions will have a larger impact on cow and bull slaughter concentration and overall cattle slaughter concentration, but market share information is not publicly available to indicate the magnitude of the changes.

During 2001, Smithfield Foods acquired Packerland Holdings, Inc. and Moyer Packing Company. Smithfield claimed that Moyer Packing Company had a daily processing capacity of 2,375 head, and Packerland had a daily processing capacity of 6,150 head, for a combined 7-percent share of total beef slaughter capacity.[6] Based on information released publicly by Smithfield, the combination of previously separate Moyer and Packerland into a single entity resulted in only a 20-point increase in the HHI index for steer and heifer slaughter.

potentially raise significant competitive concerns, depending on the factors set forth in Sections 2-5 of the Guidelines. Where the post-merger HHI exceeds 1800, it will be presumed that mergers producing an increase in the HHI of more than 100 points are likely to create or enhance market power or facilitate its exercise." Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, http://www.usdoj.gov/atr/public/guidelines/horiz_book/15.html, April 2, 1992 (as amended April 8, 1997).
[6] Smithfield Foods News Releases, http://www.smithfield.com/news/news_010622.html, June 22, 2001; and http://www.smithfield.com/news/news_011024.html, October 25, 2001.

Vertical and Horizontal Coordination

In some cases, feeder calf producers retain ownership of calves until they have been fattened for slaughter. However, the overall industry is characterized by separation of the stages of production, with cattle changing ownership several times during their lifetime.[7] Calves produced by cow-calf producers are sold to stockers who feed them on grass prior to selling them to feedlots where they are fattened for slaughter. Fattened, or "fed" cattle are then sold to packers.

Many believe arm's-length cattle trading between separate stages of production has failed to adequately coordinate production and marketing decisions with consumers' preferences. The result of an uncoordinated production and marketing system has been reduced demand for beef.[8] Some economists predict that if the price signals fail to effectively coordinate production with consumer preferences, then a non-price system of coordination can be expected to evolve, or the industry will shrink and lose market share to competing animal proteins. "Some of both have occurred: the beef system has lost over 30 percent of the market share it held in the 1970s and, especially recently, processors have moved aggressively to non-price systems of coordination, especially contracts and formula pricing arrangements."[9]

In operations that are vertically integrated, one firm owns successive stages of production and marketing. In operations that use other forms of vertical coordination, participants maintain their independence but establish relationships for sharing information to set prices efficiently and improve the flow of products and information among the vertical production and marketing stages. As Ward explains,

> vertical coordination encompasses many broad and varied methods of coordinating or synchronizing farm-level supplies with retail-level demand. Vertical coordination via market prices alone is at one extreme of a continuum of vertical coordination methods, while vertical integration is at the other extreme. Between the two extremes are numerous vertical cooperation arrangements, including various types of contracts, joint ventures, cooperatives, partnerships, and alliances.[10]

There is increased interest in the cattle and beef industries in vertical coordination, where successive production and marketing stages are linked through shared information and, frequently, shared risks and profits, rather than joint ownership. Vertical coordination partners work together to control and improve product development at all stages, from genetics to the retail meat case. Cooperatives and vertical alliances are two examples of vertical coordination used in the cattle industry.

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[7] Beef checkoff revenues divided by total annual cattle slaughter suggest cattle change ownership an average 2.5 times during their lifetime.

[8] Lusk, Jayson et al., "Will Consumers Pay for Guaranteed Tender Steak?" Research Bulletin 3-99, Research Institute on Livestock Pricing, Blacksburg, VA, February 1999.

[9] Purcell, Wayne, "White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry," Research Institute on Livestock Pricing, Bulletin 5-99, Virginia Tech, May 1999.

[10] Ward, C.E., "Beef Industry Alliances and Vertical Arrangements," OSU Extension Facts WF-563, Oklahoma State University, Stillwater, OK, December 2001.

Cattle producers, feedlots, packers, and retailers have taken several steps to increase vertical and horizontal coordination.[11] Some coordination is as simple as packers providing information to sellers about the carcass quality of individual animals. Other forms of coordination include the use of forward sales agreements that establish ongoing relationships to increase information flow and coordination of decisions between the parties. Some producers, feedlot firms, and packers have entered into joint ventures in which the parties jointly own cattle on feed and share costs and revenues. Producers' use of cooperatives to market fed cattle also has increased in recent years.

Cooperatives are a traditional form of alliance, wherein producers act together either to purchase inputs or to sell outputs collectively. A cooperative may enhance producers' leverage in a market in which small producers have a disadvantage. Recently, there has been increased interest in cooperatives that go beyond simple collective purchasing and marketing, and instead actively operate in upstream or downstream stages of production. These cooperatives are often referred to as "new generation" cooperatives. An example of such a cooperative is U.S. Premium Beef, which owns a 30-percent interest in Farmland National Beef packing company. Farmland National Beef is jointly owned by Farmland Industries, another cooperative.

New generation cooperatives are closed to non-members, and among their members they allocate shares, or "delivery rights," that determine the number of cattle a member can sell through the cooperative. The members can buy and sell delivery rights among themselves, whose value can rise or fall depending, in part, on the cooperative's performance.[12]

Most of these cooperatives have an agreement with a packer providing that the cattle be sold to the packer with the price based on the quality of the carcasses. The agreements usually contain terms that allow sellers to obtain carcass information that helps the feeder make future production decisions.

The cattle and beef industry has also shown interest in vertical alliances between producers and feedlots; between packers and retailers; and among producers, feeders, packers, and retailers. Vertical alliances facilitate coordination between the production and marketing stages. A trade magazine identified 31 alliances in the cattle and beef industry in 2000. Seven of them began operations prior to 1990, 11 began operations between 1991 and 1996, and 13 began operations between 1996 and 2000.[13] Other sources have identified additional vertical alliances, and noted that there has been an evolution in how the alliances are structured.[14]

[11] Vertical coordination involves linkages between two or more successive stages of production, such as between cow-calf producers and feedlot operators. Horizontal coordination involves linkages between two or more firms at the same stage of production, such as a group of cow-calf producers forming a cooperative to jointly market their calves.

[12] Torgerson, Randall E., "New Cooperative Marketing Initiatives: Roles Lenders Can Play," talk presented to the panel on New Marketing Structures for Producers, Farm Credit Council Annual Meeting, January 15, 2001, San Diego, CA.

[13] "Alliances 2000: The Yellow Pages," *Beef*, August 2000.

[14] Ward, C.E., "Beef Industry Alliances and Vertical Arrangements," OSU Extension Facts WF-563. Oklahoma State University, Stillwater, OK, December 2001.

A survey by Oklahoma State University of alliance organizations identified several characteristics of alliances and vertical arrangements.[15] These characteristics are not common to all alliances, but they indicate the types of characteristics many alliance partners look for in a vertical arrangement. They include:

- Organizational characteristics – stated objectives, stages of cooperation, and commitments;
- Input requirements – breed specification, source verification, and management practices;
- Marketing programs – branded beef programs and pricing method; and
- Information exchange – carcass data.

A recent development in vertical coordination in the beef production industry has been the creation of integrated beef systems (IBS), which control the beef product from ranch to retail. These are the most advanced vertical arrangements in the beef industry today. Many IBSs are new entities, while others are spin-offs of existing firms. One IBS owns a packing and processing plant and has an agreement to provide a specific grade of beef to a major retail grocer. In order to ensure a consistent supply of the product, the IBS has agreements with feedlots and ranches to produce cattle that meet certain grade specifications.

Spot Market Procurement Methods

The spot market for fed cattle refers to sales of cattle that are ready for slaughter at the time the agreement is entered into. Pricing of cattle in the spot market may be on a liveweight basis, dressed carcass weight basis, grade and yield basis, or formula 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. Years ago, most spot market trading occurred at terminal markets and auctions. More recently, trading shifted to feedlots, where packers purchase fed cattle directly from cattle owners or from feedlot managers who represent owners, or through marketing agencies.

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 available for purchase, known as the "show list."[16] The buyers view the cattle on the show list to estimate their value, and the feedlot manager informs the buyers of the asking prices for the cattle. The buyers may or may not make offers. A packer's head buyer, who is usually located at the packer's corporate headquarters, generally sets the maximum price that can be offered by the buyers representing that packer.

The process by which buyers and sellers arrive at bid and ask prices is part of the process referred to as price discovery. Buyers and sellers monitor publicly reported spot market

[15] Ward, C.E., and T.L. Estrada, "Vertical Coordination and Beef Industry Alliances," *Visions*, 72(1999):2, pp. 16–21.

[16] The sales process tends to be somewhat simpler for smaller farmer-feeder operations than the description in this section. For example, farmer feeders would likely sell cattle less frequently and might not have a show list of more than one pen of cattle available for sale in any given week.

prices, the Chicago Mercantile Exchange (CME) Live Cattle Futures quotes, wholesale meat prices, and other factors to help determine how much they will bid or accept. In recent years, buyers have generally increased bids in $0.50 or $1.00 per cwt increments while bidding. 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 to make recommendations about whether to accept a bid. When a deal is struck, the seller and buyer then agree on a date and time for the cattle to be shipped.

The date and time of delivery, and who pays for delivery, are important elements of a transaction. For example, a packer may be willing to offer a price premium to a feedlot that is willing to deliver a specific number of cattle at a specific time every morning so the packer has a guaranteed inventory of cattle to start its first slaughter shift of the day.

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 one. The term "trading window" is used in the cattle industry to refer to the time interval during which the bulk of cattle are sold each week. Many have perceived a reduction in the length of the trading window, though the extent of any such reduction remains uncertain.

Non-Spot Marketing Methods

Non-spot market transactions for fed-cattle refer to all transactions in which fed cattle are committed to a packer before the cattle are ready for slaughter. Three common non-spot marketing methods are marketing agreements, forward contracts, and packer-fed cattle. Collectively, cattle purchased through these methods are referred to as captive supplies. GIPSA defines captive supply as "livestock that is owned or fed by a packer more than 14 days prior to slaughter; livestock that is procured by a packer through a contract or marketing agreement that has been in place for more than 14 days prior to slaughter; and livestock that is otherwise committed to a packer more than 14 days prior to slaughter."[17]

There are a number of reasons why feedlots and packers use non-spot marketing methods.[18] Packers may gain a more predictable supply of cattle, be better able to utilize their plant capacities, reduce procurement transaction costs, and reduce price risks. Likewise, feedlots may be able to better utilize feedlot capacities, have an assured market for their cattle, reduce marketing costs, and reduce the risks associated with variation in spot market prices.

[17] Grain Inspection, Packers and Stockyards Administration, *Captive Supply of Cattle and GIPSA's Reporting of Captive Supply*, GIPSA-USDA, January 11, 2002.

[18] 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.

Marketing Agreements

Marketing agreements, which may be written or verbal, establish an ongoing relationship for selling fed cattle, rather than negotiating single-lot transactions.[19] They may include minimum and maximum numbers of head to be delivered over a specified period 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 to have substantial influence over the week of delivery, while the packer usually determines the day of delivery within the week.[20] In a typical marketing agreement transaction, the feedlot manager will notify the firm that the feedlot is ready to deliver a specified number of head for slaughter the following week. Employees at the plant will schedule the cattle for slaughter in the following week. The feedlot will be notified of the date and often the time of day that the cattle will be picked up at the feedlot. The seller usually pays the freight costs for these cattle.

After the packer slaughters the cattle, the carcasses are weighed and chilled for at least 24 hours before being sent to a grading stand. A USDA grader assigns quality and yield grades to the carcasses that the packer wants graded, and the grades are recorded in the packer's records. Payment is calculated based on a formula that generally derives its base price from either a plant average price or USDA-reported market prices. The base price is adjusted with premiums and discounts derived from USDA prices, plant average cattle prices, or boxed beef prices. Packers often provide information on the quality characteristics of the cattle slaughtered to the feedlot; this information is used to assess the quality of the feeder animal or the feeding program used to fatten the animal while at the feedlot.

Forward Contracts

A packer and a seller who enter into a forward contract agree upon future delivery of a specific lot or quantity of fed cattle. Price may be fixed when the contract is entered, but usually the parties agree to use a pricing formula based on other information, such as market prices on the Chicago Mercantile Exchange Futures Board (futures contract prices), or other publicly reported prices, to determine the base price in the contract. When the base price is based on futures contract prices, the parties agree on a differential from futures market prices for a specified futures contract month. That differential is called the "basis," and these contracts are commonly referred to as "basis contracts."

In a typical basis contract, sellers and packers agree on a delivery month, the specific cattle to be delivered, cattle quality standards, and the basis. The seller may lock in the

[19] The term "lot" is commonly used to represent a group of cattle purchased as a unit in a transaction.

[20] Schroeter, John R. and Azzeddine Azzam, "Econometric Analysis of Fed Cattle Procurement in the Texas Panhandle," Report to Grain Inspection, Packers and Stockyards Administration, Department of Economics, Iowa State University, and Department of Agricultural Economics, University of Nebraska-Lincoln, November 1999; GIPSA investigative files.

price by selecting the date when the futures price will be determined, if selected before the delivery month. For example, a seller may place cattle on feed in January to be ready for delivery in June. The seller and the packer agree on a delivery month (e.g., June), a futures contract month (e.g., May), quality standards (e.g., 55 percent Choice), and a basis (e.g., $1.50/cwt). As the delivery month approaches, the seller notifies the packer of the day he or she desires to lock in the price. The adjusted base price is determined by applying the basis to the futures market price for that date. The packer and feeder then agree on a delivery date and time. Carcass quality characteristics are determined the same way under forward contracts as they are under marketing agreements (described above). Premiums and discounts are applied to the adjusted base price for differences in animal quality or other specified non-quality factors.

Packer Feeding

Packers slaughter some cattle that they own and feed themselves, either in their own feedlots or in custom feedlots. In some instances, packers may enter into joint ventures, sharing ownership of cattle with feeders. A joint venture is a profit-sharing agreement in which the feeder and packer share the costs and revenues. When packer-fed cattle are ready for slaughter, the feedlot manager generally notifies the plant that the cattle have reached the desired weight and degree of finish, and the plant schedules the delivery day. Cattle owned under a joint venture agreement are paid for under the terms specified in the agreement, typically using a value-based pricing method.

Fed Cattle Pricing Methods

Pricing methods are used to determine the price paid for a specific lot of cattle. Types 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 (called "lot-average pricing") or the price for each animal may be determined individually (called "carcass-merit" or "value-based" pricing).

Lot-Average Pricing

Lot-average pricing is the traditional pricing method used in cattle sales. 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 a single agreed-upon price per hundred pounds of live weight for all cattle in a lot. The amount paid for a lot of cattle is the total live weight divided by 100 and multiplied by the price per cwt. In in-the-beef pricing, the buyer pays an agreed-upon price for each hundred pounds of dressed weight for all cattle in a lot. Dressed weight is the weight of a carcass after evisceration. The amount paid for a lot of cattle is the total dressed weight divided by 100 and multiplied by the price per cwt. Lot-average pricing is the most common method of pricing for spot market transactions.

Carcass-Merit or Value-Based Pricing

Many packers and sellers favor carcass-merit or value-based pricing because it allows buyers and sellers to establish prices for cattle that more accurately reflect differences in carcass quality. In value-based pricing, cattle prices depend on agreed-upon carcass quality factors such as USDA quality grade and yield grade, genetic factors, or other specified factors. Value-based pricing mechanisms often have a base price plus premiums and discounts for individual carcass quality characteristics. The final price cannot be determined until the cattle are slaughtered and the carcass quality factors are measured.

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 based on carcass quality characteristics. The base price is typically specified for a carcass with a quality grade of USDA Choice and a Yield Grade of 3.[21] Carcasses with quality attributes above this benchmark receive the base price plus a premium. Carcasses that grade below the benchmark receive the base price minus a discount. Yield Grades 4 and 5, for example, might receive a $10 per cwt discount. Grade and yield pricing is often used in spot market transactions.

Grid Pricing–Grid pricing may be used in either spot market or non-spot market transactions, and it is very similar to grade and yield pricing. Grid pricing is frequently referred to as formula pricing.[22] 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 the Agricultural Marketing Service's (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 used as well. Plant average prices are calculated by the packer.

Boxed-Beef Pricing–Major beef 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. Boxed-beef pricing involves the use of inventory carcass valuations or boxed beef cutout values[23] as reported by USDA to determine premiums and discounts to be applied to a base price, which may be determined using several different methods such as plant averages, USDA-reported prices or top-of-the-week prices.

[21] USDA has a uniform system of grades for slaughtered cattle. Quality grade represents palatability, and is 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, and Yield Grade 5 representing the lowest degree of cutability. Agricultural Marketing Service, USDA, "United States Standards for Grades and Slaughter Cattle," July 1996.

[22] 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 the calculation of the final price, including the application of all premiums and discounts.

[23] Cutout values are composite values of beef carcasses derived from the value of individual cuts.

Changes in Beef Marketing

Changing technology and consumer preferences have been major driving forces behind recent developments in meat marketing.[24] Much of the fabrication of beef carcasses that was formerly done by skilled butchers in the retail store is now done in the processing plant by semi-skilled employees on a "disassembly" line. Processing plants transform cuts of meat into ready-to-cook or precooked entrees or full meals. And these new meat products are being sold in new ways, including through electronic marketplaces.

Product Development

Until recently, packers largely limited their beef businesses to slaughter and to 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. Case-ready meats are typically sold in one of two ways: vacuum-packaged, in which the plastic packaging fits tightly around the meat, or in modified-atmosphere, or "gas-flushed" packaging, in which various combinations of gases are flushed into the package.[25] 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.[26]

As packers produce more case-ready products, they also are increasing the use of brand names. Packers produce products under their own brand names, under other firms' brands, and under a number of industry-wide certification programs. By the end of 2001, the USDA Meat Grading and Certification Service listed 44 different certified and process verified beef programs, an increase from only 10 programs in 1996 and 13 programs in 1997.[27] The number of carcasses certified by USDA graders to meet certified beef programs has grown from 850,000 in 1993 to approximately 4.1 million in 2001. This number understates the total number of carcasses marketed under branded programs because some programs do not require USDA certification.[28] The oldest and most widely recognized beef certification program is the Certified Angus Beef® Program (CAB®). In 1999, 495 million pounds of beef were marketed as CAB® products to

[24] Putnam, J., and Shirley Gerrior, "Trends in the U.S. Food Supply, 1970-97," in *America's Eating Habits: Changes and Consequences*, Elizabeth Frazao (ed.), ERS-USDA, Agriculture Information Bulletin No. 750. 484 pp, May 1999.

[25] AMI. "AMI Fact Sheet: Case Ready Meats," http://www.amif.org/FactSheetCaseReadyMeat.pdf, June 2001.

[26] "IBP to Open Case-Ready Meats Plant in Texas," Meat Industry Insights News Article No. 000753, July 2000, http://www.spcnetwork.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.

[27] Agricultural Marketing Service, "USDA Certified Beef Programs: Individual Specifications and Contact Information," AMS-USDA, 2001. http://www.ams.usda.gov/lsg/certprog/speccomp.pdf (1 Feb, 2002).

[28] "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.

retail, foodservice, and other outlets. In 2000, marketings under this program rose to 555 million pounds.[29]

Branded product lines include both fresh meats and 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 processed branded 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.[30]

E-commerce

Meat packers have shown increased interest in e-commerce. In the fall of 2000, a survey by the American Meat Institute (AMI) of its 300 member businesses found that 66 percent of the companies surveyed planned to move to some kind of e-commerce strategy by 2002. The survey also found that 83 percent of the companies were interested in e-commerce, and roughly 50 percent of them had already been contacted by suppliers regarding their potential to participate in Internet-based business initiatives.[31]

Adoption of Internet-based marketing by the meat industry has been slow. Theoretically, an electronic food exchange could provide buyers and sellers with detailed information on products and prices offered on the market. For example, buyers would be able to seek out alternative cuts and sources for the types of meat that they wish to purchase. However, the necessary supply-chain software is so expensive to develop, implement, and maintain that the task of Web-enabling the industry is falling to those with the greatest financial resources.[32]

In March 2000, AMI announced an exclusive partnership with FoodUSA.com, an Internet meat exchange, to provide trading opportunities for the global meat and poultry industry.[33] FoodUSA.com went on line April 12, 2000, and achieved some early success—$10 million in sales in its first 46 days[34] and $30 million in sales by October 2000[35]. However, activity slowed and FoodUSA.com ceased operating in January 2001.[36]

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[29] Certified Angus Beef Program, "2000 Statistics and 2001 Projections," 2001. http://www.certifiedangusbeef.com/cabprogram/html/stats2000.html (February 8, 2002).

[30] Thornsberry, Max, D.V.M., "Producer Perspective on Direct Marketing," Presentation at the R-Calf Annual Convention, February 2, 2001.

[31] Information distributed at AMI Foodservice Marketing & Technology Conference, Las Vegas, NV, October 12–14, 2000.

[32] Joiner, Harry, "E-commerce: Moving at the Speed of Sludge," *Meat Marketing and Technology*, August 2001.

[33] American Meat Institute, "Leading National Trade Association Announces E-Commerce Partnership with .Com," http://www.meatami.com/Template.cfm?Section=Current&NavMenuID=274&template=PressReleaseDisplay.cfm&PressReleaseID=29, March 21, 2000.

[34] "On-line Meat Exchange Closes $10 Million in Sales," Meat Industry Insights News Article No. 000647, June 16, 2000. http://www.spcnetwork.com/mii/2000/000647.htm.

[35] 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.

[36] Feuerstein, Adam, "B-to-b food marketplace shuts down," January 3, 2001. http://www.upside.com/texis/mvm/story?id=3a536f51a

In early 2000, Tyson Foods, Inc.; IBP, inc. (now part of Tyson Foods); Gold Kist, Inc.; Cargill, Inc.; and Farmland Industries, Inc. announced the formation of Commerce Ventures, described as a Web-based exchange open to the entire meat industry.[37] This consortium of meat and poultry industry firms used a startup fund of $17 million to develop Provision X, a Web-based network exchange for buyers and sellers of beef, pork, and poultry products.[38]

Provision X was formed with the objective of consolidating the buying and selling process down to a "simple browser-based dashboard."[39] Provision X began trading in March 2001 and offered access to a network where buyers and sellers could negotiate price interactively.[40] The network replaced the phone calls, faxes, and other methods of communication that meat and poultry companies used in the past to negotiate price.

In September 2001, Provision X formed an alliance with iTradeNetwork (iTN), another electronic exchange. According to a Provision X press release, "iTN provides online solutions for 34 percent of the U.S. retail grocery and food service industries, including seven of the top fifteen food retailers in the nation."[41] The alliance was intended to allow online interaction between meat processors and some of the largest retail grocery and foodservice companies in the United States.

In February 2002, iTN signed an agreement to acquire Provision X. An iTN press release indicated the original meat company participants in Provision X would continue as suppliers, but details regarding the nature of their participation were not available.[42]

E-commerce is also being used for livestock marketing. Numerous sites are listed on the Internet for livestock marketing. Cattle feeders use the Internet to purchase feeder cattle directly from producers, and also use auctions on the Internet and satellite video auctions. Video auctions have been in operation longer than Internet marketing for feeder cattle.

Approximately one dozen Web sites have regularly scheduled auction sales. In many instances, established auction market locations conduct an advertised special sale on the Internet. Some Internet marketers list cattle for sale, but are not actively engaged in selling cattle on the Web. There are thousands of Web sites that list cattle or beef products for sale. The vast majority of these sites do not actually sell cattle. They are "classified ad" sites or marketers of agricultural food and gifts.

Some individuals and firms purchase feeder cattle to place in feedlots solely as an investment. They are not otherwise involved in the cattle business and many do not have the time or experience to purchase their own livestock. Some custom feedlots purchase feeder cattle for such investors as a service. Some of these custom feedlots maintain their

[37] "IBP, Cargill, Smithfield, Tyson, Gold Kist, Farmland plan e-commerce system for meat and poultry," Cargill, Inc. Press Release, April 11, 2000. http://www.cargill.com/today/releases/00_4_11tyson.htm.
[38] Holzer, Del, "The Provision X Files," The National Provisioner, 2001 State of the Industry Report, August 2001.
[39] Provision X homepage at http://www.provisionx.com/facts.html.
[40] "State of the Industry Report," *The National Provisioner*, September 26, 2001. http://www.provisionx.com/news.html.
[41] Provision X homepage at http://www.provisionx.com/releases.html.
[42] "iTradeNetwork to Acquire Provision X and Extend Its Global E-Business Solutions," Press Release. http://www.itradenetwork.com/pressreleases02-08-02.cfm (March 8, 2002).

own Web sites where producers may offer feeder cattle for sale. The feedlot's buyers review the information these sellers post on the Web site and may make an offer to purchase the livestock, either for custom feeders or for themselves.

General Economic State of the Hog Industry

Hog production in 2002 is expected to be about 1 percent above last year, though hog prices are expected to drop considerably from $46 per hundredweight to about $36.[1] As in 2001, any unforeseen event affecting slaughter capacity could have significant effects on the industry through lower hog prices.

Supply Factors

Hog production, like cattle production, is subject to cyclical factors. The length of hog cycles is influenced by the biological reproductive cycle, shifts in consumer demand for pork, prices of feed grains and competitive meats, and other economic factors. In a typical hog cycle, inventories and prices fluctuate, with inventories being built up during times of low hog prices, and reduced during times of high prices. The length of these cycles can be measured in terms of the length of time between peaks (or troughs) in inventories or between peaks (or troughs) in prices. During the latter half of the 20th century, hog cycles averaged 4 years and ranged in length between 2 years and 6 years.[2]

According to the National Agricultural Statistics Service (NASS), hog inventories were relatively unchanged between 1999 and 2001, at about 59 million head as of December 1 of each year.[3] Cyclical fluctuations in hog inventories appear to have been dampened in the last few years.

The outbreak of foot-and-mouth disease (FMD) in several countries of the European Community (EU) caused a severe disruption in the worldwide pork market. Hog producers in the United States were faced with preventing an outbreak of FMD domestically. One of many proactive measures taken by groups involved in the U.S. livestock industry was to cancel the 2001 Pork Expo. Measures to prohibit the spread of the disease to the United States by prohibiting the importation of livestock and certain livestock products from high-risk countries were successful, as FMD did not spread to the United States.[4]

Demand Factors

The United States is a major world producer, consumer, exporter, and importer of pork and pork products. Pork accounts for about one-fourth of domestic meat consumption, with imports accounting for about 5 percent of that consumption. Exports accounted for about 8 percent of domestic production in 2001. Domestic pork consumption in 2002 is expected to be about 2 percent higher that it was in 2001.[5] Pork demand will be subject

[1] World Agriculture Outlook Board, *World Agriculture Supply and Demand Estimates*, WASDE-385, Office of the Chief Economist, USDA, May 10, 2002.
[2] Stearns, Larry D. and Timothy A. Petry, North Dakota State University Extension Service, "Hog Market Cycles," January 1996, http://www.ext.nodak.edu/extpubs/ansci/swine/ec1101w.htm.
[3] National Agricultural Statistics Service, *Quarterly Hogs and Pigs*, NASS-USDA, December 28, 2001 and March 28, 2002.
[4] Testimony of Secretary of Agriculture Ann M. Veneman before the Senate Committee on Agriculture, Nutrition, and Forestry, September 26, 2001; Animal and Plant Health Inspection Service, USDA, "USDA Safeguarding Measures Against Foot-and-Mouth Disease," News Release, July 2001.
[5] World Agricultural Outlook Board, *World Agriculture Supply and Demand Estimates*, WASDE-385, Office of the Chief Economist, USDA, May 10, 2002.

to the same pressures due to weak economic conditions as beef demand. However, decreased beef production, especially if accompanied by signs of strengthening of the economy, would tend to boost demand for pork.[6]

Trade Prospects

Most demand uncertainty for pork lies in exports. In 2001, two animal diseases affected export demand for pork—BSE and FMD. Exports increased because the outbreak of FMD in other countries caused a decrease in foreign competition in pork. Exports also increased because consumers in countries that had experienced BSE switched to pork.[7] The U.S. exported 1.6 billion pounds of pork in 2001, an increase of 21 percent over 2000. For 2002, U.S. pork exports are forecast at 1.5 billion pounds, down 5 percent from 2001.[8] U.S. pork exports are facing increasing competition in the major markets of Japan, Mexico, and Russia. For example, Brazil is making strides into the Russian pork market, while the EU is regaining some of the markets that were temporarily closed to EU pork products due to FMD.[9] Major pork-exporting countries where the outbreak of FMD occurred in 2001 largely eliminated the disease, and have resumed exportation of pork products. Other nations, such as Taiwan and South Korea, are still facing limitations in their ability to export pork.

The United States imported about 1 billion pounds of pork in 2001, and is projected to import about the same amount in 2002, with an increasing share of the total coming from Canada. The United States imported 5.3 million live hogs from Canada in 2001, 60 percent of which were feeder pigs destined primarily for the Corn Belt. ERS projects that the United States will import about 5.8 million hogs in 2002, with feeder pigs comprising over 60 percent.[10]

Outlook for Hog Producers

Despite operating profitably over the past several quarters, hog producers still seem hesitant to expand their operations. Based on the market hog inventory, pig crops, and farrowing intentions reported by USDA in March, ERS predicts that commercial hog slaughter is expected to be slightly higher in 2002 than in 2001.[11] Commercial pork production in 2002 is forecast to be about 2 percent above that in 2001. The average dressed weight in 2002 is expected to rise about 1 pound due to the upward trend in weights and low feed prices.[12]

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[6] Gustafson, Ron, "The Outlook for Livestock and Poultry," presentation at Agricultural Outlook Forum 2002, ERS-USDA, February 22, 2002.

[7] Mintert, James, Kentucky State University Livestock Market Update, January 16, 2002. http://www.agecon.ksu.edu/livestock/Livestock%20Update%20Newsletters/K-State%20Ag%20Update.html.

[8] World Agricultural Outlook Board, *World Agriculture Supply and Demand Estimates*, WASDE-385, Office of the Chief Economist, USDA, April 10, 2002.

[9] USDA Foreign Agricultural Service, *Livestock and Poultry: World Markets and Trade*, DL&P 2-01, October 2001.

[10] Economic Research Service, *Livestock, Dairy, and Poultry Outlook*, LDP-M-93, ERS-USDA, March 13, 2002.

[11] Economic Research Service, *Livestock, Dairy, and Poultry Outlook*, LDP-M-94, ERS-USDA, April 23, 2002.

[12] Gustafson, Ron, "The Outlook for Livestock and Poultry," presentation at Agricultural Outlook Forum 2002, ERS-USDA, February 22, 2002.

Outlook for Pork Packers

As noted above with regard to beef packers, the outlook for pork packers in 2002 is mixed due to uncertainties about domestic demand, export potential, and the effects of the Russian ban on poultry products. The private research and analysis firm Sparks Companies, Inc. reports that pork packers are realizing large slaughter margins currently. Sparks projects that wholesale meat values will decline in coming months, although proportionately less than projected declines in live hog prices.[13] While the relatively larger decline in hog prices than in meat prices should contribute to pork packer profitability in 2002, projected lower hog prices will have a negative impact on returns of packers that are also engaged in hog production.

[13] Sparks Companies, Inc., "Hog and Pork Comments," *Morning Comments*, April 24, 2002; Sparks Companies, Inc., "Cash Hog and Pork Prices," *Livestock Desk Reference,* April 23, 2002.

Changing Business Practices in the Hog Industry

Structure of Hog Production and Pork Packing

Pork produced in the United States comes from either young hogs—barrows (males) and gilts (females)—raised for their meat, or mature hogs—sows and boars—culled from the breeding herd. Meat from barrows and gilts is used for both fresh whole-muscle cuts and for further processing into bacon, sausages, or other prepared foods. The meat from sows and boars is used almost exclusively in further processing.

A sow can produce an average of a little more than two litters per year, each consisting of an average of nearly nine pigs. Following a 114-day gestation period, an average of 176 days is required to grow a pig to slaughter weight. Typically, 210 to 240 days are required to grow a gilt, or young female hog, to breeding age. The weaning age of pigs is an essential element in determining the productive potential for sows. Sows can be bred for a new litter shortly after the pigs from the previous one are weaned. On average, pigs can be weaned at about 21 days of age.[1]

Until the 1970s and 1980s, hogs typically were produced on farrow-to-finish farms—farms with a breeding herd where the pigs are raised from farrowing (birth) to market weights. While farrow-to-finish operations are still the most prevalent, hog production has been shifting to specialized farms using three separate types of facilities. The first is used for breeding, gestation, and farrowing. After weaning, the pigs are moved to a second site, called a nursery facility, where they receive a special diet and care. Once they reach 8–10 weeks of age and 40–60 pounds, the pigs are transported to the third site, the finishing facility, where they are fed to their market weight of around 260 pounds. Each of these facilities is geographically separated from the others to reduce the risk of disease outbreaks. Separation of the facilities also allows producers to improve their use of labor and facilities by specializing in a single type of enterprise.[2]

Each of the sites used for the three stages of production may be under common ownership, or they may be owned by separate firms. Some producers own and raise pigs from farrowing to market weights. Others specialize in only a portion of the pig production process, such as the farrowing stage or the finishing stage. If sites for the succeeding stages are under common ownership, the pigs are transferred from one site to another without a change in ownership of the animals. If different firms own sites for succeeding stages, the pigs may either be sold to the downstream producer, who raises and markets them, or they may be placed there under a production contract. Under a production contract, the producer owning the finishing facility agrees to raise pigs under specified conditions and is paid for services rendered. The owner of the pigs (the contractor) may be a packer or an affiliate or subsidiary of a packer; a producer that

[1] Economic Research Service, Briefing Room, "Hogs: Background," January 2000. http://www.ers.usda.gov/briefing/hogs/background.htm (January 23, 2002).

[2] Martinez, S. W., *Vertical Coordination in the Pork and Broiler Industries: Implications for Pork and Chicken Products*, Agricultural Economic Report No. 777, ERS-USDA, April 1999.

specializes in another phase of production, such as a farrowing or nursery operation; or an agricultural corporation not involved in hog slaughter, such as a feed company.

Barrows and gilts are produced in either confinement or, to a lesser degree, pasture (free range) in one of six types of production operations: (1) farrowing 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 up to 50 pounds to finishing farms; (3) nursery farms that buy weaned pigs and sell feeder pigs weighing up to 50 pounds to finishing farms; (4) wean-to-finish farms that feed pigs weighing up to 15 pounds to their market weight of around 255 pounds; (5) finishing farms that feed pigs weighing up to 50 pounds to market weight; and (6) farrow-to-finish farms that include all stages of production from breeding through finishing to market weight.

Over 96 percent of the hogs slaughtered in the United States are barrows and gilts. Cull breeding stock account for the remaining slaughter.[3] Barrows and gilts typically are marketed directly to packing plants, or to one of several regional buying stations established by a packer that are located near 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 whole-muscle cuts, such as fresh or processed primals, subprimals, or case-ready pork; and as processed products, such as hams, bacon, and hot dogs. Case-ready refers to retail cuts that are packaged at packing plants and shipped ready for the meat case. Both the whole-muscle cuts and, especially, the processed products frequently are sold under brand names. A processor may sell products under its own brand names, or may package products under a retailer's brand or the brand of a third party.

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. However, the geographic distribution of hog production is changing. Hog production has expanded into the South and nontraditional areas of the West.[4] Although hog production, like other animal production, is increasingly subject to environmental laws, research has not established a link between environmental laws and location of hog production.[5] Hog operations tend to move to locations where economic efficiencies can be exploited.[6]

Increasing Litter Size, Litters Per Sow, Carcass Weights

Changing swine genetics and farm management practices have improved many aspects of production efficiency. Litter size, litters per sow, and carcass weights have all increased

[3] Livestock Marketing Information Center, Lakewood, Colorado, "Analysis and Comments," Number 4, January 26, 2001.
[4] Economic Research Service, "Environmental Regulation & Location of Hog Production," *Agricultural Outlook*, ERS-USDA, September 2000.
[5] Metcalfe, M, "Location Of Production And Endogenous Water Quality Regulation: A Look At The U.S. 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.
[6] Economic Research Service, "Environmental Regulation & Location of Hog Production," *Agricultural Outlook*, ERS-USDA, September 2000.

with genetic improvements. From 1996 through 2001, the average number of pigs per litter rose from 8.50 to 8.80 (table 4).

Table 4.—Average number of pigs per litter, 1995–2001

1995	1996	1997	1998	1999	2000	2001
8.32	8.50	8.66	8.71	8.79	8.83	8.80

Source: National Agricultural Statistics Service, *Hogs & Pigs*, NASS-USDA, December issues, 1995–2001.

Larger operations have consistently produced larger litters. In 2001, the largest volume producers, on average, produced 1.2 more pigs per litter than the smallest volume producers (table 5).

Table 5.—Average number of pigs per litter by size of operation, 1996–2001

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	NA
1996	7.35	7.90	8.13	8.43	8.78	NA
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
2001	7.48	7.95	8.18	8.60	8.78	8.93

NA denotes not available.
[1] 2,000 or more head in 1995 and 1996.
Source: National Agricultural Statistics Service, *Hogs & Pigs*, NASS-USDA, December issues, 1996–2001.

The average number of litters per sow per year has increased from 1.64 in 1996 to 1.77 in 2001 (table 6).

Table 6.—Annual litters per sow, 1995–2000

1995	1996	1997	1998	1999	2000
1.68	1.64	1.75	1.73	1.74	1.77

Source: National Pork Board, *Pork Facts 2001/2002.*

Improved genetics have also led to heavier carcasses. The average carcass weight of barrows and gilts slaughtered at federally inspected plants increased by 10 pounds, or 5.5 percent, between 1995 and 2000 (table 7).

Table 7.—Average carcass weight of federally inspected barrows and gilts, 1995–2000

1995	1996	1997	1998	1999	2000
		Pounds			
181	181	185	185	187	191

Source: National Agricultural Statistics Service, "Livestock Slaughter: Average Dressed Weight, Federal Inspection by Classification and Month, United States," *Livestock Slaughter Annual Summary*, NASS-USDA, selected years.

Herd Size

Hog production has moved toward fewer and larger vertically integrated operations. The number of operations with fewer than 100 hogs on hand has decreased from 96,730 (3.5 percent of the U.S. hog inventory) in 1995 to 46,012 (1.0 percent of the hog inventory) in 2001 (table 8). Inventory held by operations with 5,000 or more hogs rose from 27.5 percent of the Nation's hog inventory in 1995 to 52.8 percent in 2001. Over the same period, the total number of hog production operations declined by 87,320, a drop of 52 percent.

Table 8.—Number of operations and percentage of hog inventory by size of operation,[1] 1995–2001

Head	1995	1996	1997	1998	1999	2000	2001
1–99	96,730 (3.5)	81,930 (3.0)	69,460 (2.0)	61,670 (2.0)	52,880 (1.5)	48,210 (1.0)	46,012 (1.0)
100–499	44,140 (18.0)	35,585 (15.0)	28,095 (11.0)	27,135 (9.5)	22,810 (8.0)	17,755 (6.0)	15,415 (5.0)
500–999	15,160 (17.0)	12,960 (15.0)	11,670 (12.0)	11,350 (11.0)	9,255 (9.0)	7,630 (8.0)	7,226 (7.5)
1,000–1,999	7,240 (17.0)	6,830 (16.0)	6,755 (14.5)	6,825 (14.0)	6,500 (13.0)	5,850 (13.0)	5,494 (12.0)
2,000–4,999	3,615 (17.0)	3,490 (17.0)	4,355 (20.5)	4,765 (21.5)	5,110 (22.0)	4,825 (21.5)	4,779 (22.0)
5,000 or more	1,385 (27.5)	1,585 (34.0)	1,825 (40.0)	1,905 (42.0)	2,055 (46.5)	2,090 (50.5)	2,204 (52.5)
Total	168,450	142,380	122,160	113,650	98,610	86,360	81,130

[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*, NASS-USDA, December issues, 1996–2001.

Contract Production

In the 1970's and 1980's producers commonly operated farrow-to-finish operations. Specialized farrowing (breeding sows and producing piglets), nursery, or finishing operations have become more common, with many producers raising hogs in specialized

operations under production contracts available from one of several contractors.[7] A survey of 8,400 farmers in February and March of 2001 showed that producers using production contracts for at least some of their production accounted for 39 percent of all farrowed pigs, down 1 percent from 1997, and 55 percent of all finished (market-ready) hogs, up 11 percentage points from 1997.[8] Pigs raised for others under contract accounted for 22 percent of all farrowings, up 5 percentage points from 1997, and 34 percent of all finished hogs, up 4 percentage points from 1997 (table 9).

Table 9.—Use of production contracts as a share of U.S. hog production, 1997 and 2000

Size class (1000 head)	All hogs[1]				Hogs under contract[2]			
	Farrowed by contractors		Finished by contractors[3]		Farrowed		Finished	
	1997	2000	1997	2000	1997	2000	1997	2000
	Percent							
1–49	10	5	14	9	1	2	8	3
50–499	8	8	9	13	4	7	7	10
500 or more	22	26	22	33	11	13	16	21
Total	40	39	44	55	17	22	30	34

[1] The percentage of U.S. production from operations of producers who use production contracts.
[2] The percentage of contracted hogs that are farrowed or finished in contract facilities (i.e., by someone other than the hogs' owner).
[3] Includes all hogs owned by contractors, whether finished under production contracts for contractors or finished in facilities owned and operated by contractors.
Source: Lawrence, J. and G. Grimes, "Production and Marketing Characteristics of U.S. Pork Producers, 2000," Staff Paper 343, Iowa State University, Department of Economics, August 2001.

Structure of Hog Packing

Concentration has increased in the pork packing industry. The share of U.S. hog slaughter accounted for by the four largest hog packers rose from 34 percent in 1980 to 46 percent in 1995 and 55 percent in 1996, and has remained about the same since then (table 10). The increase in concentration also is reflected in the Herfindahl-Hirshman Index (HHI). The HHI equals the sum of each firm's squared percentage market share. HHI values for pork packing rose from 436 in 1980 to 1020 in 1999. The Department of Justice and Federal Trade Commission view markets as moderately concentrated if HHI values are between 1000 and 1800 and highly concentrated if HHI values exceed 1800.[9] The 1999 HHI of 1020 indicates that the pork industry is moderately concentrated.

[7] Martinez, S. W., *Vertical Coordination in the Pork and Broiler Industries: Implications for Pork and Chicken Products*, Agricultural Economic Report No. 777, ERS-USDA, April 1999.
[8] Lawrence, J. and G. Grimes, "Production and Marketing Characteristics of U.S. Pork Producers, 2000," Staff Paper 343, Iowa State University, Department of Economics, August 2001.
[9] The Horizontal Merger Guidelines issued by the Department of Justice and the Federal Trade Commission state, "mergers producing an increase in the HHI of less than 100 points in moderately concentrated markets post-merger are unlikely to have adverse competitive consequences and ordinarily require no further analysis. Mergers producing an increase in the HHI of more than 100 points in moderately concentrated markets post-merger potentially raise significant competitive concerns depending on the factors set forth in Sections 2-5 of the Guidelines." Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*.http://www.usdoj.gov/atr/public/guidelines/horiz_book/15.html, April 2, 1992 (as amended April 8, 1997).

Table 10.—Hog slaughter concentration, selected years,1980–2000[1]

	1980	1985	1990	1995	1996	1997	1998	1999	2000
Four-firm concentration (percent)[2]	34	32	40	46	55	54	56	56	56
HHI	436	456	593	769	961	976	1036	1020	NA

NA denotes not available.

[1] Data for 1980, 1985, and 1990 are based on firms' fiscal years as reported to P&SP. Data for 1995–2000 are based on calendar year for federally inspected slaughter.

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

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.

Hog slaughter capacity declined from over 408,000 hogs per day in February 1997 to approximately 380,000 hogs per day in fall 2001 (table 11).

Table 11.—Hog slaughter capacity, U.S. hog slaughter plants

	February 1997	February 1998	February 1999	Fall 2000	Fall 2001
Estimated Daily Slaughter Capacity	408,520	415,520	381,920	377,620	381,120

Source: National Pork Board, *Pork Facts 2001/2002*.

Slaughter and Evaluation Practices

To meet consumer preferences more effectively, and to measure carcass or meat value associated with quality improvements, packers are using several electronic devices to measure desired carcass or meat traits.[10] As consumer preferences for desired meat traits have been identified, tools have been developed to measure the presence of those traits in hog carcasses. Hog slaughtering and procurement practices have changed as a result. Instead of pricing hogs on a liveweight basis, as they have traditionally done, packers increasingly use various measures of carcass characteristics to determine the price for each individual hog. Packers pay producers for delivering hogs with preferred quality traits through a system of premiums and discounts. The technology has resulted in integration of evaluation devices into slaughter lines, requiring additional steps in slaughter procedures.

When packers purchase hogs through carcass merit pricing programs, the application of grading devices affects payment. For example, electronic grading devices may measure and record carcass quality traits, such as backfat and loineye depths. These measurements are used to estimate the percentage of lean meat in a carcass. The lean percentage is then used to determine the payment amount for each individual carcass. Payments to producers are intended to reflect the quality of each carcass.

[10] Meisinger, David, "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.

Packers use various devices 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.

Several packers currently use optical probing devices to measure loineye 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.[11] An equation converts the measurement into percent-lean estimates, which are used to calculate payments to producers.[12]

Another carcass-evaluation device uses ultrasonic sound waves to measure loineye and backfat depth and muscle mass. Unlike the optical probe, the device is non-invasive. An ultrasonic image is generated that measures every 5 millimeters of the carcass's length, and every 25 millimeters of its width.[13] An equation converts the measurement into percentage-lean estimates needed to calculate payments to producers.[14]

A third type of carcass-evaluation device uses pulse echo ultrasound to measure muscle and backfat depths. This type of device creates a three-dimensional ultrasonic image to estimate fat and muscle mass.[15] Producers are paid on a percent-lean basis or according to the estimated primal meat cuts available from each carcass.

A fourth type of carcass evaluation device uses an electromagnetic field, similar to that used in Magnetic Resonance Imaging (MRI) in medicine, to estimate carcass composition. As a carcass passes through the device, it absorbs electromagnetic energy that allows the device to differentiate 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.[16] The estimated weight of primal cuts is used to determine payments to producers.

Procurement Methods

Hog packers use a number of procurement methods to obtain hogs for slaughter. In the spot market, producers interacting with packers determine price. Spot market transactions may occur in several venues. A hog producer may sell hogs at an auction, call several packers to search for the highest bid for delivery at the packing plant, or contact a buying station to negotiate a price for a specific lot of hogs.

Prices quoted for hogs delivered to a buying station are lower than prices quoted for hogs the producer delivers to the plant because of transportation costs from the station to the plant. Once a price has been agreed upon, the producer delivers the hogs to the buying

[11] Berg, Eric P., editor, *Composition and Quality Assessment Procedures*, National Pork Producers Council and American Meat Science Association, Des Moines, IA, 2000.
[12] SFK Technology, *Instruction Manual - Fat-O-Meater S71*, Herley, Denmark, 2001.
[13] SFK Technology, "AutoFom Automatic Carcass Grading," http://www.sfktech.com/products/measuring.autofom%20extra.html (March 6, 2002).
[14] SFK Technology, *Instruction Manual – UltraFom System*, Herley, Denmark, 2001.
[15] SFK Technology, *Instruction Manual – AutoFom System*, Herley, Denmark, 2001.
[16] MQI TOBEC Inc., *MQ1/TOBEC Lean Content Analysis Systems*, Springfield, IL, 1999.

station. The hogs are weighed and tattooed at the station and then shipped to the plant. For liveweight purchases, the producer receives a check at the time of delivery; for carcass merit purchases the producer has to wait until after slaughter, when the carcasses have been graded at the plant. The number of buying stations is declining and the functions of buying stations is changing from a price-determining location for hogs to a hog collection point for contract producers who prefer not to deliver to the plant.

The majority of hogs are no longer traded on the spot market. Grimes reports in a 2001 study of hog marketing contracts that packers' use of spot markets dropped from 62 percent in 1994 to 17 percent in January 2001.[17] Instead, the majority of slaughter hogs are traded through non-spot market methods including packer feeding operations, production contracts with producers, and marketing contracts. These methods will be described below.

Packer ownership of hogs has increased in recent years. A 2000 survey of the largest pork packers, which included 10 of the 13 largest packers, found that packers produced 6.4 percent of their hogs in 1994, and 9.9 percent in 1997.[18] Among 11 pork packers surveyed in 2001, the number of hogs produced by packers increased from 24 percent in 2000 to 27 percent in 2001.[19]

The most common procurement methods used by hog packers are marketing contracts and production contracts. Use of production and marketing contracts has increased in recent years. Producers tend to rate higher prices as a primary advantage of contracts.[20] Risk sharing is a highly ranked motivation among both producers and packers for entering into a contract (table 12). Contracts allow each party to share risks associated with price, supply, quality, 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 generally can expect to pay off loans for capital inputs within 10 years of continuous hog production.[21]

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

[17] Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board. http://agebb.missouri.edu/mkt/vertstud.htm (March 12, 2001).
[18] Grimes, Glenn and Steve Meyer, "2000 Hog Marketing Contract Study," University of Missouri and National Pork Producers Council, March 7, 2000.
[19] Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board. http://agebb.missouri.edu/mkt/vertstud.htm (March 12, 2001).
[20] Lawrence, John D. and Glenn Grimes, "Production and Marketing Characteristics of U.S. Pork Producers, 2000," Staff Paper No. 343, Department of Economics, Iowa State University, August 2001.
[21] National Pork Producers Council, *Guide to Contracting,* 2000.

Table 12.—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 into hog farming		Supply assurance
	Income diversification		

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

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 used to determine price. Marketing contracts enable packers to control both the carcass quality characteristics and the number of hogs delivered for slaughter during a given time period. Unlike production contracts, marketing contracts specify the terms for the sale of producer-owned hogs to a packer.

As the number of hogs raised under production contracts or sold under marketing contracts has increased, the contracts themselves have undergone significant changes. Contract language has become more complex. The contracts contain more requirements relating to genetics and feed use, and contract prices are more likely to be based on markets other than swine such as feed grain markets. Various pricing methods, including ledger contracts (discussed below) have been put into use in contracts.

Pricing Methods

A 2001 survey of 11 large pork packers revealed that spot market purchases accounted for 25.7 percent of those packers' total slaughter in January 2000, and 17.3 percent in January 2001.[22]

Large farms produce most U.S. hogs, and deliver directly to the packer. The prices for hogs from large farms generally are determined on a formula, or carcass-merit, basis.[23] According to reports packers filed with GIPSA, the share of hogs procured on a carcass-merit basis increased from 42.9 percent of all procurement in 1995 to 74.6 percent in 1999.[24] In many cases, the formulas have base prices that are referenced to a publicly reported spot market price. In other cases, the base price is referenced to a futures market price or publicly reported prices for major feed ingredients such as corn. The base price also may be referenced to a price that is not publicly reported, such as a plant average price.

[22] Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board, March 12, 2001.
[23] McDonald, James M., et al., *Consolidation in U. S. Meatpacking*, Agricultural Economic Report No. 785, ERS-USDA, February 2000.
[24] Packers and Stockyards Programs, *Packers and Stockyards Statistical Report 1999 Reporting Year*, GIPSA SR-02-1, GIPSA-USDA, January 2002.

Some contracts, like window or ledger contracts, use pricing methods that provide for sharing risks of price variation between the packer and producer. Window contracts specify ceiling (maximum) and floor (minimum) prices. Ledger contracts establish ceiling and floor prices and have the effect of loaning packers the difference between the market price and ceiling price when the prices are above the ceiling price, and have the effect of loaning producers the difference between the market price and the floor price when prices are below the floor price. Regardless of the method for determining the base price, premiums or discounts usually are applied based on specified quality characteristics of the carcass or on other criteria.

In a 2001 survey, packers reported using formula pricing referenced to publicly reported spot market prices for 54.0 percent of their hog purchases, up from 47.2 percent in 2000 and 39.1 percent in 1997 (table 13).[25] Packers purchased 5.7 percent of their hogs in 2001 using a fixed price referenced to a futures market price, down from 8.5 percent in 2000. Purchases using a fixed price referenced to a feed ingredient price increased to 16.2 percent in 2001, up from 12.3 percent in 2000. Purchases under programs using ledger pricing increased from 9.8 percent in January 2000 to 11.8 percent in January 2001.

Table 13.—Percentage of U.S. hogs procured through various pricing methods

Pricing method	Jan. 1997	Jan. 1999	Jan. 2000	Jan. 2001
		Percent		
Spot market purchases	43.4	35.8	25.7	17.3
Total non-spot market purchases	56.6	64.2	74.3	82.7
Fixed price tied to a futures market price	2.9	3.4	8.5	5.7
Fixed price tied to feed price	5.3			
No ledger maintained		2.9	3.3	6.4
Ledger maintained		6.9	9.0	9.8
Window, risk sharing	3.1			
No ledger maintained		3.6	3.8	4.6
Ledger maintained		1.0	0.8	2.0
Formula other than above	39.1	44.2	47.2	54.0
Other (packer owned, internal transfer)[1]	6.1	2.3	1.7	0.2

Source: Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board, March 12, 2001.

[1] Many packers that produce hogs price them using a marketing contract with the production unit of their firm. These transfers are included in the pricing categories in the table according to how a price is set when transferring the hogs from the production unit.

In 1999, Congress enacted the Livestock Mandatory Reporting Act of 1999 (MPR), which requires the reporting of market information by packers who annually slaughter an average of 125,000 cattle or 100,000 swine, or slaughter or process an average of 75,000 lambs. Importers who annually import an average of 5,000 metric tons of lamb meat

[25] Grimes, Glenn, "Hog Marketing Contract Study January 2001," University of Missouri and National Pork Board. March 12, 2001.

products are also required to report.[26] USDA's Agricultural Marketing Service implemented the mandatory price reporting program on April 2, 2001.[27]

Since the mandatory reports duplicated information contained in the voluntary reports, most of the voluntary reports were discontinued on April 11, 2001. Packers and contract producers developed contingency plans for days that prices normally used as base prices in the contracts were not reported because of technical or confidentiality reasons. For example, some contracts included clauses that specified alternative hog market prices to be used. Some producers and packers changed their contracts to use alternative pricing methods such as basing price on cost of production or cost of corn or soybeans. Other changes included using alternative reference prices such as pork meat prices reported in the National Carlot Pork Report or the USDA Blue Sheet.

Packer Control of Hog Quality

Packers develop standards for hogs targeted to specific meat 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 calorie-conscious consumers may have another set of standards. To meet these standards, packers place specific requirements in marketing contracts.[28] Packers identify producers to participate in long-term contracts based on the quality of hogs previously delivered. Packers may specify genetic lines and feeding programs. Producers may weigh the costs of implementing such programs with the benefits of improved feed efficiencies or daily weight gain. Producers who choose to enter a marketing contract with a packer under one of these programs must 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 program specifies production methods that the producer is not using.[29] Producers may find themselves having to choose between beginning entirely new production operations with new hogs and feeding methods to secure a contract, or seeking other packers interested in purchasing the type of hogs they already produce.

Meat quality characteristics can include appearance, tenderness, juiciness, and nutritional value. Most carcass-merit pricing programs provide higher payments for lean, meaty hogs of a desired weight, but the programs usually 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.[30] The presence of the halothane, or "stress," gene in hogs improves yield and increases loin size, but can generate problems with meat color and toughness. PSE pork often must be priced below non-PSE pork at retail.

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[26] 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.

[27] USDA, "Mandatory Livestock Price Reporting Begins Today," USDA News Release No. 0058.01, April 2001.

[28] 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.

[29] National Pork Producers Council, *Guide to Contracting*, 2000.

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

An NPPC study of hog genetics in the 1990s revealed that 12 percent of all maternal line sows carried the halothane gene.[31] Current and developing carcass value pricing programs may not solve the PSE problem. The study indicated that 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 vertically integrated or coordinated packing firms[32] produce only one or two genetic lines to improve the uniformity of their processed products. Because packers are increasing their use of specific genetic lines, there is reason to believe that they may not be getting the quality of hogs that they want using only carcass merit pricing programs. To get a more uniform meat product, packers require producers to use a specific genetic line. Uniform meat product is frequently defined by lean percentage (the major determinant in most carcass merit pricing programs), constant size of meat cuts, and other quality characteristics including color and pH level.

Swine genetic technology has had a major impact on the hog industry in the past decade.[33] Some large volume producers joined swine genetics programs of independent seedstock firms or acquired new genetic lines through production or marketing contracts with packers or other firms. For example, the National Pig Development (NPD) Company of East Yorkshire, England, developed a line of hogs that are referred to as NPD genetics. Smithfield Foods, Inc. (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.[34] In 1995, Smithfield introduced a new pork product line utilizing its line of NPD hogs. 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.[35] Farmland Industries, Inc. instituted a "Uniform Pork" program that requires its contract hog producers to use the services of DeKalb Choice Genetics.[36]

The development of research into swine genetics also has attracted new entry into the industry by firms that do not currently produce or slaughter hogs. For example, 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.[37]

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[31] 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.

[32] A vertically integrated packing firm is one that owns hogs while they are being raised for slaughter, for example, through the use of production contracts. A vertically coordinated firm is one that does not own hogs while they are being raised for slaughter, but coordinates with suppliers for procurement through the use of marketing agreements.

[33] Martinez, S. W., *Vertical Coordination in the Pork and Broiler Industries: Implications for Pork and Chicken Products*, Agricultural Economic Report No. 777, ERS-USDA, April 1999.

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

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

[36] 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.

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

Pork Marketing

Producer Cooperative Marketing

Hog producers have increased their interest in cooperatives, particularly in new-generation cooperatives.[38] The Capper-Volstead Act provides cooperatives limited exemption from antitrust laws so that producers may collectively market their products.[39] A Capper-Volstead marketing cooperative is an association in which: (1) the stockholders or members are producers who produce the commodity handled by the cooperative and whose product makes up more than 50 percent of the value of commodity handled by the cooperative; (2) earnings of the cooperative are paid out to the members in proportion to how much they use the cooperative; and (3) the formal governance of the business by the stockholders is structured "democratically" in the sense that voting power is not proportional to equity investment.[40]

New-generation cooperatives typically have a closed membership structure and are more difficult to join but are often easier to leave than traditional cooperatives. Producers usually are required to make substantial up-front investments which are linked to rights and responsibilities to deliver specified numbers of livestock for slaughter to the packing plants used by the cooperatives.[41] Several pork organizations have proposed launching cooperative ventures. In 2001, one new-generation cooperative purchased a slaughter facility in Iowa.[42] Two other new-generation cooperatives, in Nebraska and Illinois, announced plans in 2001 to open slaughter facilities.[43]

New-generation cooperatives tend to be involved in several activities along the marketing chain, particularly downstream. 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 the development of an independent producer brand or by producing specialized products and packaging for others.[44]

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

[39] Volkin, David, "Understanding Capper-Volstead," Cooperative Information Report 35, Rural Business and Cooperative Development Service, USDA, June 1985 (reprinted April 1995).

[40] The limitation on "voting one's equity" may be in the form of one-member/one-vote rule, or voting may be proportional to patronage or stock ownership, but subject to some limitations such as restricting any one member from having more than 5 percent of the total votes.

[41] Each membership share may, for example, give the member the right to market one head of livestock per year through the co-op. The share may also require the member to deliver one head per year, whether from the member's own production or from another source.

[42] Marbery, Steve, "Hog Industry Insider: Co-op Buys Plant," *Feedstuffs*, July 9, 2001.

[43] Marbery, Steve, "Hog Industry Insider: Nebraska Equity Drive," *Feedstuffs*, February 2, 2001; Marbery, Steve, "Co-op Chooses Site for Illinois Hog Plant," *Feedstuffs*, October 29, 2001.

[44] Staatz, J. M. "The Structural Characteristics of Farmer Cooperatives and Their Behavioral Consequences," in *Cooperative Theory: New Approaches*, Jeffrey S. Royer (ed.), Cooperative Management Division, Agricultural Cooperative Service, USDA, July 1987.

Pork Checkoff Program

The purpose of the Pork Checkoff Program is to strengthen the position of pork in the marketplace and to maintain, develop, and expand markets for pork and pork products.[45] The program is funded by a mandatory assessment of 0.45 percent on the market value of domestic and imported hogs and pigs and an equivalent amount on imported pork and pork products. During 1998 and 1999, an advisory referendum was conducted to determine industry support for continuation of the Pork Checkoff Program. The outcome of the referendum indicated that pork producers did not support continuation of the Checkoff. Based on results of the advisory referendum, the program was to be terminated, but an injunction was sought and granted to continue the program. As part of a settlement agreement following litigation, the termination of the Checkoff was suspended with the requirement of several significant changes in the relationship between the National Pork Board (NPB) and its general contractor, the NPPC.[46]

The restructuring separates the NPB and the NPPC. It requires the NPB to: Employ its own staff, including the CEO and CFO; manage separate contracts for promotion, research, and consumer information projects; maintain separate office operations from NPPC; and maintain separate communications from NPPC. The NPB will have 2 years to demonstrate to producers and importers the value of the Checkoff program to the industry. In 2003, USDA will conduct a survey to determine whether 15 percent of hog producers and importers are in favor of conducting a referendum to decide whether to continue the program. If the required number of producers and importers request a referendum, AMS would hold the referendum within 1 year.[47]

Product Development

A focus on pork product development by packers has led to a trend away from commodity pork and toward further-processed, value-added pork products. Value-added products can include partially prepared, case-ready, or branded pork. Packers add value to pork by providing products that consumers can prepare quickly and easily. For example, many traditional products, such as bacon and sausage, are now available in a pre-cooked or microwaveable form. Whole muscle products, such as loins, are available seasoned or marinated and ready-to-cook.

Packers use brand names to build consumer loyalty. Packers may use one or more brand names when marketing convenience products, or when marketing product lines to the HRI trade. Brand names are used in marketing case-ready fresh pork products. Case-ready pork provides benefits to retail outlets by reducing skilled labor requirements and by providing a uniform product. Case-ready pork is cut and trimmed to consumer size cuts, and packaged by the packer rather than the retail establishment.

[45] Agricultural Marketing Service, Pork Promotion, Research and Consumer Information Order. http://www.ams.usda.gov/lsg/mpb/pork/porkchk.htm (February 6, 2002).

[46] Clayton, K. "USDA's Decision to Continue the Pork Checkoff Program Under Settlement That Requires Program Restructuring," February 2001. http://www.ams.usda.gov/lsg/mpb/statement.htm (February 28, 2001).

[47] Agricultural Marketing Service, Press Release No. 0037.01, February 2001. http://www.usda.gov/news/releases/2001/02/0037.htm, (February 28, 2001).

E-commerce

The past year has brought many changes in e-commerce for pork companies. There have been many bankruptcies throughout the e-commerce industry, but there is still a market for e-commerce in the pork industry. E-commerce companies are focusing on improving personal relationships with existing customers and using the Internet for streamlining the supply chain (fulfilling orders on-line).[48] Instead of reinventing how companies do business, e-commerce companies are trying to help their customers do business easier and at less cost. (See the discussion of E-commerce in the section on Changing Business Practices in the Cattle Industry for examples of e-commerce companies and alliances that have been involved in both beef and pork marketing.)

E-commerce in swine trading does not appear to be as popular as once predicted. Few companies are selling swine on the Internet, and the ones that do generally just give price lists and contact information for potential buyers. However, at least one firm (Farm.com) offers a swine marketplace where buyers and sellers deal in feeder pigs, cull sows, cull boars, and the sale of feed and grain.

[48] Nunes, Keith, "The Crash of the Titans," *Meat & Poultry,* September 2001.

Operations or Activities in the Cattle and Hog Industries That Raise Concerns Under the Packers and Stockyards Act

This section identifies aspects of the cattle and hog industries that appear to raise concerns under the P&S Act. The issues are grouped into the following areas: Concentration and structural change, changes in livestock pricing and procurement, changes in vertical and horizontal coordination, technological change in packing plant operations and marketing, and fair trade and financial protection.

Concentration and Structural Change

GIPSA frequently receives requests to prohibit controversial mergers and acquisitions involving leading firms in the cattle and hog industries. 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 of 1976.

The P&S Act does not prohibit concentration, vertical integration or coordination, or other changes in the structure and organization of the cattle and hog industries, per se. While the four leading steer and heifer slaughtering firms account for over 80 percent of steer and heifer slaughter, and the four leading hog slaughtering firms account for 56 percent of total hog slaughter, at the time of this writing there is no evidence that these packers are using market power to engage in practices prohibited by the P&S Act. However, if firms use their increased market power to engage in behavior prohibited by the P&S Act, GIPSA will investigate and take appropriate action.

Changes in Livestock Pricing and Procurement

The concerns expressed by certain industry members, especially producers, about industry concentration and structure generally stem from concerns about the potential for large packers to gain market power that would enable them to engage in unfair and anti-competitive behavior. Two USDA advisory committees have recommended that USDA take steps to strengthen its ability to enforce the competitiveness provisions of the P&S Act.[1] Some industry participants look to USDA to investigate and address a wide range of concerns they associate with large packers, especially livestock procurement issues.

GIPSA must be able to prove that a specific practice will lead to the types of anti-competitive or other practices that are prohibited by the P&S Act before it can file a disciplinary complaint or to promulgate a regulation prohibiting such activity. Most issues involving competition and potentially anti-competitive practices are complex and interrelated. Extensive data collection and sophisticated economic analyses are often

[1] 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.

required to fully understand the reasons for and implications of the practices, as well as the potential benefits and harms to attribute to such practices.

Packers Acting in Concert to Restrict Competition–Some members of the industry, especially producers, have expressed concerns about possible concerted action by meat packers to reduce competition. In some cases, concerns are expressed about wide-ranging developments that cut across broad industry segments, such as allegations of packer behavior leading to low hog prices during December 1998 and 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 circumstances do not necessarily suggest that firms are acting in concert to restrict competition 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.

Section 202 of the P&S Act makes it unlawful for packers to engage in any unfair, unjustly discriminatory or deceptive act or practice and, among other things, prohibits any action with the purpose or effect of manipulating prices or restraining commerce. Section 202 also makes it unlawful to "conspire, combine, agree, or arrange, with any other person (1) to apportion territory for carrying on business, or (2) to apportion purchases or sales of any article, or (3) to manipulate or control prices," or to "conspire, combine, agree or arrange with any other person to do, or aid or abet the doing of, any act made unlawful" by other subdivisions of Section 202.[2] Past analyses by GIPSA's Packers and Stockyards Programs (P&SP) of packers' livestock procurement patterns have not uncovered any evidence suggesting that packers engaged in such activities in violation of the P&S Act.

Short Trading Window–Producers allege that there is a short window during which trading of fed cattle occurs. Some cattle producers and market observers contend that most spot market cattle transactions occur during a relatively short period each week, often described as a 15- or 30-minute window. The bidding process for fed cattle normally begins early on Monday mornings when packer buyers visit feedlots to view cattle for sale and the price discovery process continues during the week as buyers and sellers assess market conditions, followed by rapid consummation of many transactions once market participants believe the market price has been discovered. P&SP's investigations have found that, while more sales take place on some days than on others, sales take place on every business day of the week. Consummation of many transactions during a short time interval may be the result of normal competitive behavior in an environment in which buyers and sellers can communicate with each other very quickly, and does not necessarily indicate behavior in violation of the P&S Act.

Shared Agents–It is common practice for either an independent buyer to represent multiple packers, or packers to represent one another, at livestock auctions. This practice is most prevalent in the market for cull livestock. Auction market owners and livestock sellers have raised concerns that the use of these buying collaborations reduces the

[2] 7 U.S.C. 192.

number of competing buyers. P&SP investigates complaints about buying collaboration at livestock markets, and takes action as warranted.

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 calculated from livestock, meat, or feed prices reported by USDA Market News or other public organizations such as the Chicago Mercantile Exchange, or to internally generated prices such as the average price paid by a packer. Some agreements for cattle guarantee the seller a price equal to the "top price" reported in a region. Proponents of these pricing mechanisms assert that they reduce transaction costs by reducing the need to monitor market conditions and prices. They believe these methods provide sellers some assurance of receiving a price that is representative of the current market price.

These methods of livestock pricing also raise concerns, however. Sellers may have inadequate information about all of the factors that may influence base prices, and some producers 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 the prices that same packer pays for livestock purchased in the spot market, then that 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 to influence those reported prices by not providing full and accurate information.

USDA's Agricultural Marketing Service (AMS) is responsible for enforcement of the Mandatory Price Reporting law (discussed below), but P&SP has jurisdiction over any use of price reporting by packers that results in a violation of the Packers and Stockyards Act. An analysis of fed-cattle procurement conducted as part of a major investigation of fed-cattle procurement in the Texas Panhandle in 1995 and 1996 did not find evidence that packers altered base prices by influencing the average prices paid by the plants in the spot market.[3] The analysts reported, however, that when formula prices are based on plant averages, packers might have an incentive to manipulate the base through strategic conduct in the spot market or by erroneously calculating plant-average prices. Others, including some academic economists, reach similar conclusions about the incentives for packers to manipulate internal prices under such pricing mechanisms.[4] P&SP monitors this issue in its monitoring and investigation of livestock procurement by packers.

Thin Spot Markets–Increased use of various production and marketing contracts has reduced the number of livestock sold through spot markets. Although this is a concern in both cattle and hog markets, the change is most pronounced in hog markets because a smaller proportion of hogs is traded on the spot market. A joint study by the University of Missouri and the National Pork Board found that packers' spot market purchases made up only 17 percent of all of their hog purchases during January 2001, but prices of hogs

[3] 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.

[4] Purcell, Wayne. "White Paper on Status, Conflicts, Issues, Opportunities, and Needs in the U.S. Beef Industry," Research Institute on Livestock Pricing, Bulletin 5-99, Virginia Tech, May 1999.

purchased under contracts often are based on spot market prices.[5] According to that study, more than one-half of contract hog purchases in January 2001 used a formula based on publicly reported spot market hog prices. Producers are concerned that the potential exists for packers to influence prices on the spot market, resulting in lower prices for hogs traded on the spot market or under contracts when the contract price is based on publicly reported prices. The concern is increased if only one or two packers purchase in a particular region.

When spot market transactions account for a small share of total volume traded in a particular market, the market is considered to be a thin market. If buying activity is concentrated among a few firms and selling activity is not, buyers in thin markets may have the potential to influence prices. That potential, however, may be constrained if adequate information on prices is available from other markets. Available research suggests that prices in widely dispersed U.S. markets have been closely linked.[6]

Economic theory suggests that if markets become so thin that they become inefficient, market participants are likely to shift to more reliable pricing bases. For example, buyers and sellers might use futures market prices or a grain or feed market price to establish contract prices for livestock. Investigations conducted by GIPSA have found that prices in meat, grain, and futures markets are being used in some pricing formulas for cattle and hogs. Nonetheless, GIPSA monitors packer behavior in order to identify instances when thin markets may facilitate price manipulation, collusion, or other anti-competitive behavior in violation of the P&S Act.

Mandatory Price Reporting–Congress enacted the Livestock Mandatory Reporting Act of 1999.[7] On April 2, 2001, USDA's Agricultural Marketing Service implemented a Livestock Mandatory Price Reporting System (MPR). Prior to its implementation, packers and producers voluntarily reported market information to regional USDA offices that disseminated information through daily and weekly reports to the public. Under the new program, larger packers and importers are required to report to USDA the details of all transactions involving purchases of livestock and imported boxed lamb cuts, and the details of all transactions involving domestic and export sales of boxed beef cuts, sales of domestic and imported boxed lamb cuts, and sales of domestic lamb carcasses. AMS conducts routine and regular visits to the plants covered by MPR to verify compliance.

AMS revised its reporting guidelines on August 20, 2001, allowing it to publicly report more price information. AMS estimates that it reports price information on over 90 percent of federally inspected slaughter of fed cattle and hogs, over 80 percent of federally inspected slaughter of sheep and lambs, and 90 percent of the information required to be reported by packers on negotiated boxed beef and negotiated lamb

[5] Grimes, Glenn, "Hog Marketing Contract Study January 2001." University of Missouri and National Pork Board, March 12, 2001.
[6] 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; Hayenga, M. L., et al., "Definition of Regional Cattle Procurement Markets," GIPSA-RR 96-1, May 1996.
[7] 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.

carcasses and cuts. Pork sales are not subject to mandatory price reporting, and AMS estimates that it reports price information on less than 5 percent of all pork production.

A number of livestock procurement contracts and agreements use the AMS price series in pricing formulas used to determine prices paid to livestock sellers. MPR eliminated some of these price series. GIPSA monitors the adjustments packers have made and continue to make in their pricing formulas in response to AMS' price reporting changes in order to help assure that producers are properly notified of the changes and to guard against other possible violations of the P&S Act.

Changes in Vertical and Horizontal Coordination

For many years, livestock sellers took their animals to terminal stockyards and auction markets where a number of buyers bid on and purchased livestock. In recent decades, trade in slaughter livestock moved away from these organized public markets toward various forms of direct trading between buyers and sellers. For many years, direct trading has occurred primarily through spot market transactions, in which livestock are neither offered to nor purchased by packers until the animals are ready for slaughter. In recent years, alternative means have emerged to coordinate the production, marketing, and trade of slaughter livestock. For example, increasing numbers of cattle and hogs are traded through various types of marketing agreements and forward contracts. Some producers also are forming cooperatives, which often involve both horizontal and vertical coordination, to increase their involvement in downstream activities. The decline in the use of spot markets and increase in the use of alternative forms of vertical coordination have raised concerns about potential adverse effects on competitive behavior in the livestock and meatpacking industries.

Captive supplies–Packer use of captive supplies has been a concern for some industry participants. There is some confusion about what the term "captive supplies" means. Some define captive supplies in terms of commitment of animals to a packer prior to the time when the animals are ready for slaughter. Some define captive supplies in terms of how the livestock are priced and, thus, include purchases in which the final price is not known at the time the agreement is entered. Under this definition, livestock purchased for immediate delivery and priced on a carcass-merit basis would be considered captive supplies. GIPSA considers captive supplies to be livestock that a packer owns or has a contract to purchase before the animals are ready for slaughter. More specifically, GIPSA defines captive supply as livestock owned or fed by a packer more than 14 days prior to slaughter, livestock procured by a packer through a contract or marketing agreement that has been in place for more than 14 days, or livestock otherwise committed to a packer more than 14 days prior to slaughter.

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. 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. They argue that captive supplies depress prices paid for fed cattle by reducing the number of cattle that a packer

must procure on the spot market and reduce 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. Certain producers, especially small producers, have expressed a concern that if competition necessitates their participation in forward-sales agreements, they would be unable to obtain satisfactory terms or they would be excluded from the most favorable 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, or demand for, livestock. Proponents of the use of captive supplies argue that captive supplies merely shifts the distribution of purchasing activity between spot markets and contract markets. Many livestock producers and university economists believe that captive supplies reduce transactions costs and improve price signals that reflect differences in animal quality.[8] They argue that captive supplies are forward sales arrangements that are critical to the long-term health of the beef and pork industries and are necessary to improve coordination of production with changing consumer preferences.

Little research has examined whether cattle sold through captive supply arrangements are of higher quality than cattle sold on the spot market. Although some research suggests that cattle obtained through marketing agreements may be of higher quality than cattle obtained through the spot market, the research results overall reveal that the issue is not fully resolved.[9]

Concerns about the possible effects of captive supplies are complicated by questions about the accuracy of publicly available captive supply statistics. In response, the Conference Report on USDA's fiscal year 2001 appropriation directed the Secretary of Agriculture to conduct a comprehensive study on the issue of captive supplies, 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

[8] 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; Anderson, J.D. and J.N. Trapp, *Estimated Value of Non-Price Vertical Coordination in the Fed Cattle Market*, Research Bulletin 2-99, Research Institute on Livestock Pricing, Virginia Tech, February 1999; Fausti, S.W., et al., "Value Based Marketing for Fed Cattle: A Discussion of the Issues," *International Food and Agribusiness Management Review* 1(1998):73-90.

[9] See, for example, Williams, Gary, et al., Slaughter Cattle Procurement and Pricing Study Team, "Price Determination in Slaughter Cattle Procurement," GIPSA-RR 96-2, September 1996; Schroeter, John R., and Azzeddine Azzam, "Econometric Analysis of Fed Cattle Procurement in the Texas Panhandle," Report to Grain Inspection, Packers and Stockyards Administration. Department of Economics, Iowa State University and Department of Agricultural Economics, University of Nebraska-Lincoln, November, 1999; and Hayenga, Marvin, et al., "Meat Packer Vertical Integration and Contract Linkages in the Beef and Pork Industries: An Economic Perspective," Iowa State University, May 2000, as cited in Ward, Clement, Marvin Hayenga, Ted Schroeder, John Lawrence, and Wayne Purcell. "Contracting in the U.S. Pork and Beef Industries: Extent, Motives, and Issues," paper presented at workshop on The Economics of Contracting in the Agri-Food Sector, Saskatoon, Saskatchewan, December 2000.

"Packers and Stockyard[s] Statistical Report" frequently reports a captive supply percentage much lower than the percentages reported by other entities.[10]

GIPSA conducted this captive supply study and released a report in January 2002, identifying the following points:[11]

- Differences in captive supply statistics available from various organizations result from different definitions of what constitutes captive supply and variations in the geographical coverage of the data collection. P&SP defines captive supply as livestock owned or fed by a packer more than 14 days prior to slaughter, livestock that is procured by a packer through a contract or marketing agreement that has been in place for more than 14 days, or livestock that is otherwise committed to a packer more than 14 days prior to slaughter. P&SP's captive supply statistics are the only captive supply statistics based on a packer's forward commitment to purchase livestock before the animals are ready for slaughter.

- P&SP's analysis of the top four beef packers' 1999 procurement transactions data showed that the captive supply data the packers reported to P&SP in their Packer Annual Report filings included cattle procured from non-reporting subsidiaries, affiliates, owners, officers and employees to the extent those cattle were procured through a captive supply arrangement.

- P&SP's review of the top four packers' 1999 procurement transactions records found that captive cattle supplies accounted for 32.3 percent of the firms' total slaughter rather than the 25.2 percent originally reported by the packers in their annual report submissions to P&SP. Marketing agreement and forward contract cattle accounted for 23.9 percent of the top four packers' slaughter, and packer fed cattle accounted for 8.4 percent. The data discrepancies were attributed to misunderstandings about captive supply definitions.

As a result of the findings, GIPSA will publish its definition of captive supply in the *Federal Register*, revise the Packer Annual Report form to clarify reporting definitions, audit future Packer Annual Reports, and report captive supply information in more detail.

Recordkeeping–The first Assessment of the Cattle and Hog Industries that GIPSA published noted that there were concerns about a lack of uniformity in records that packers maintain.[12] The report indicated that P&SP intended to address concerns about inadequate recordkeeping. The findings discussed above from GIPSA's study of captive supply confirmed the wide variation in packer records, but also helped to further define the issues and suggested solutions. The measures that GIPSA is taking as a result of the findings of the study, including clarification of reporting definitions and revision of the

[10] Conference Report 106-948, 106th Congress, 2d Session, to accompany H.R. 4461, October 6, 2000.
[11] Grain Inspection, Packers and Stockyards Administration, *Captive Supply of Cattle and GIPSA's Reporting of Captive Supply*, GIPSA-USDA, January 11, 2002.
[12] Grain Inspection, Packers and Stockyards Administration, *Assessment of the Cattle and Hog Industries, Calendar Year 2000*, GIPSA-USDA, June 2001.

Packer Annual Report form, will help to improve the quality of data maintained by packers and collected by P&SP. As a part of this initiative, P&SP will also be meeting with packers to obtain additional insights into their recordkeeping systems. This process will enable P&SP to identify any additional measures that may be needed to improve uniformity and completeness of data maintained by packers.

Market Access and Price Inequalities–Changes in the organization of livestock production and procurement has raised a number of concerns about producers' access to markets. Some producers are concerned that few packing plants are available in their area, or that they may have difficulty obtaining a production or marketing contract. Some are concerned that packers may not offer contracts to new producers because they have enough animals already under contract and scheduled for delivery.

Some producers and industry observers 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. Some smaller volume producers are concerned that they may not receive an equal payment for animals of similar quality to those of larger volume producers. However, packers may be willing to pay a volume premium, that is, pay more for steady delivery of a large number of cattle than for steady delivery of a small number of cattle.

Some industry observers and academic analysts suggest that normal economic forces reward more efficient firms and thus motivate consolidation of packing operations and a decline in the number of smaller firms. Economic efficiency arguments indicate that the number 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 the availability of production and marketing contracts.

Rulings in a case brought by USDA against IBP, inc. during the 1990s concluded that valid business reasons might justify price differences offered by a packer to different 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, gave an unreasonable preference, or were otherwise in violation of the Act.

Fair Treatment in Contracts–Increased use of production and marketing contracts for livestock raises producer concerns about potential unfair treatment of livestock producers. For example, some production and marketing contracts may stipulate that the producer must agree to keep the contract terms confidential. As a result, producers are concerned that they may sign the contracts without fully understanding all its 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 Internet, 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. In deciding how to address

producer concerns about contract terms, the P&S Act must balance the interests of producers against the need for regulation of packers so that contract terms are fair.[13]

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 devices have been adapted to measure animal carcass quality characteristics. Each packer develops its own procedures for paying on a carcass-merit 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 basis of the number of pounds of primal meat.

Each packer determines what devices or approaches to use to estimate lean percentage. The hog packing industry uses 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 other USDA agencies; the ASTM International (ASTM) (formerly American Society for Testing and Materials)[14]; State Departments of Weights and Measures; the National Institute of Standards and Technology, Office of Weights and Measures; livestock producers; meat packers; equipment manufacturers; trade groups; academics; and other government agencies to develop industry-wide standards. ASTM-affiliated Committee F10 on Livestock, Meat, and Poultry Evaluation Systems was created to address design specifications, device performance criteria, user requirements, and predictive accuracy.

P&SP believes the development of these standards will increase the likelihood that P&SP and producers can verify the accuracy of payments based on new and developing carcass evaluation techniques.

Committee F10 is reviewing issues related to the use of the equipment (e.g., operator error, measurement resolution, and issues involving the units of measure); the accuracy

[13] Section 10502 of the Farm Security and Rural Investment Act of 2002 (Title X – Miscellaneous) amended the Packers and Stockyards Act by making any swine contractor, i.e. any person engaged in the business of obtaining swine under a swine production contract for the purpose of slaughtering the swine or selling them for slaughter, subject to the jurisdiction of the Packers and Stockyards Act. Persons contracting with others to raise and care for feeder pigs or other swine that are not intended for slaughter are not covered.

[14] ASTM International, "Name Change Reflects Global Scope," ASTM International Press Release, December 7, 2001. Accessed at http://www.astm.org/cgi-bin/SoftCart.exe/PRESS_RELEASE/astm_international.html?L+mystore+uwdz5955+1021869561.

and ability of equipment to measure product characteristics that are used to predict product quality (e.g., repeatability of measurements, testing accuracy, procedures for testing equipment, and determining tolerance levels regarding inaccuracies); and how operators use the equipment (e.g., the installation and maintenance of equipment and operator training and calibration requirements).

E-Commerce–Internet marketing (e-commerce) is a relatively new innovation in the livestock and meatpacking industries. Few Internet sites market hogs and feeder cattle today, but the amount of livestock sold electronically is expected to increase in the future. Packers have begun developing electronic marketing capabilities for meat sales, including forming joint ventures involving multiple packers.

Livestock producers and others have raised concerns about these operations. Many start-up entrepreneurs may not be aware of all of the legal requirements that they must meet in order to operate under the P&S Act, and employees may be making business decisions and handling money without realizing their responsibility for financial accountability. There have been concerns that there is a potential for deceptive practices in Internet transactions, such as inflating the prices of livestock or creating false appearances about the level of bidding activity.

All packers and livestock firms that use e-commerce are subject to the P&S Act to the same extent as firms that only operate traditional brick and mortar businesses. P&SP monitors bidding processes to ensure that Internet firms disclose all bidding rules and customs and otherwise comply with the P&S Act. Electronic marketing operations based on joint ventures could potentially facilitate collusive behavior among the parties to the venture because they provide an easy means for prices, other market information, and buying and selling intentions to be communicated among competitors.

Advocates of Internet marketing argue that Internet marketing has the potential to increase competition. They point out that it can increase the number of active competitors in a market and increase the amount of information available to participants. Internet marketing could lead to significant changes in the way livestock and meat are marketed. P&SP is monitoring developments in and operations of Internet marketing to help assure that all parties are aware of, and conform to, the requirements of the P&S Act.

Fair Trade and Financial Protection

There are several activities that raise concerns with regard to 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 more desirable livestock. Alternatively, some feedlots or packers may attempt to impose an "all or nothing" agreement in which the packer buys all (or a specified quantity) of livestock as a single purchase. Under these circumstances, known

as a "string sale," a single price may be paid for livestock owned by multiple owners, regardless of variation in the quality of the livestock offered for sale by the individual owners. This pricing method may provide some reduction in transaction costs by reducing the number of separate negotiations, but it results in one average price for all livestock. Several feedlot operators reportedly prefer to utilize this pricing method because it avoids the need to explain widely different prices to individual owners of the cattle sold and may help sellers find buyers for cattle that buyers would otherwise avoid.

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. An owner of high-value cattle, for example, may receive a lower price when lower value cattle are included in the transaction, and the final price is based on the overall average value of all of the cattle in the transaction. The critics argue that individual owners may, therefore, not receive fair compensation for the value of their cattle.

This concern is potentially amenable to self-regulation. P&SP has not received complaints from producers that feedyards have refused to follow producers' instructions to sell their cattle on the merits of the producers' cattle.

Drug Residues–Packers are required by USDA's Food Safety and Inspection Service to perform additional tests for drug residues on meat destined for human consumption as a result of recent reforms in meat inspection. Some animals, particularly cull cattle, may have drug residue levels that cause their meat to be declared unfit for human consumption, substantially reducing the value of the animals. Packers purchase a large number of cull cows at livestock auction markets. Although packers are required by the P&S Act to pay for these animals by the close of the next business day following purchase, they may seek restitution or other relief from the sellers of animals with the drug residues.

Retaliation–Many producers have expressed concerns about possible retaliation by packers if producers challenge the terms offered to them by a packer or file a complaint against a packer with P&SP. 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. This situation poses a difficult dilemma for producers and for P&SP, because P&SP cannot bring a successful action against a packer on an allegation of retaliation without the cooperation of the target of the alleged retaliation.

Auction Market Stability–The financial stability of livestock auction markets has been a concern to producers and others for many years. Financial failure of auction markets result in some livestock sellers not receiving payment for livestock. In 2001, P&SP's review of auction markets' annual reports and site investigations of 322 auction markets identified 156 custodial account shortages worth $7.2 million. Through P&SP's oversight and enforcement, the markets either fully or partially restored 87 of those custodial account shortages worth $6.3 million. By comparison, P&SP audited 374 markets in 2000, finding 154 custodial account shortages worth $9.1 million and

restoring $5.9 million to the benefit of livestock sellers. The number of registered auction markets did not change substantially over the 2-year period.

Conclusions

Substantial changes are occurring in industry structure and the behavior of firms in the livestock and meatpacking industries. Technological developments, changes in consumer demand, and other competitive forces drive many of the changes. Many of the changes are healthy for the industries involved and for consumers. However, the changes also bring the potential for packers, dealers, and market agencies to engage in activities that are prohibited under the P&S Act.

P&SP regulates industries comprised of thousands of firms that handle over $100 billion worth of products per year. P&SP has about 185 employees throughout the United States. In the late 1990s, USDA restructured its Packers and Stockyards Programs 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 to assist in investigations. P&SP is continuing its restructuring initiative by developing new investigative procedures, working more closely with the Office of the General Counsel at the initial stage of case development, during investigation of complex cases incorporating economists and legal specialists 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 conducted 1,619 investigations during FY 2001. About 400 of these investigations resulted from complaints filed with P&SP, and the remaining investigations were initiated by P&SP as a result of monitoring industry behavior, following up on problem areas, responding to questionable items on P&SP reports or other activities revealing information about the industry. The investigations may be broadly categorized under the three major functions of P&SP as follows:

Competition-GIPSA receives many complaints about issues such as concentration and mergers that may relate to competition but which do not involve potential violations of the Act and do not result in investigations. During fiscal year 2001, P&SP conducted 27 investigations involving potential anticompetitive practices. Competition investigations tend to be complex and often require sophisticated economic modeling and analyses. The potential incidents of anticompetitive behavior which were investigated in FY 2001 include the following:

- Attempted restriction of competition
- Failure to compete
- Buyers acting in concert in the purchase of livestock
- Apportionment of territory
- Conflict of interest
- Price discrimination
- Price manipulation

- Predatory pricing

Nine of the 27 investigations were completed in FY 2001. One resulted in a letter of notice advising the party of a conflict of interest requiring corrective action, and the other 8 did not reveal violations of the Act. During the first quarter of FY 2002, GIPSA initiated 3 new competition investigations and closed 3 investigations with a finding of no violations.

Trade Practice–P&SP conducted 877 trade practice investigations in FY 2001 regarding potentially unfair practices under the P&S Act. These investigations dealt with the following types of potential offenses:

- Using poultry growing arrangements in an unfair manner
- Unfairly implementing poultry contract settlements
- Failing to adhere to the terms of poultry contracts entered into with growers
- Operating without bond or inadequate bond
- Buying or selling livestock on the basis of false weights
- Misrepresenting the weight and price of livestock
- False weighing of livestock
- Checkweighing poultry and livestock at auction markets, dealer buying stations, meatpacking and poultry processing plants, in order to determine if scales were inaccurate or proper weighing procedures were not used by industry personnel

Many of the trade practice investigations were concerned with ensuring that payments for livestock and payments to poultry growers were based on accurate weights. For example, in FY 2001 P&SP conducted 304 checkweighing investigations, and found false or incorrect weighing requiring corrective actions in 5 percent of them. Complaints were issued against 4 entities for allegedly selling livestock at weights that were more than the actual weight of the livestock. Investigations of poultry integrators prompted procedural changes by several firms.

Financial–P&SP conducted 715 financial investigations in FY 2001 in response to complaints or to monitor the financial integrity of firms in the livestock, meatpacking and poultry industries. P&SP reviews financial reports, conducts audits of payment practices, and conducts investigations to determine compliance of subject businesses with the financial requirements of the P&S Act and Regulations. These investigations addressed the following types of potential violations:

- Failing to pay for livestock, meat, or poultry
- Failing to pay when due for livestock, meat, or poultry
- Operating subject to the P&S Act in an insolvent condition
- Investigations involving packer trusts
- Failing to properly maintain trust accounts as required by the P&S Act and regulations

Auction markets maintain custodial accounts for the benefit of unpaid livestock sellers. Markets are required to maintain funds in the accounts to ensure the markets have sufficient funds to pay livestock sellers. Financial investigations in FY 2001 resulted in $6.3 million being restored to custodial accounts that lacked the required funds. Livestock sellers recovered over $844,000 under the packer trust provisions of the P&S Act. Livestock sellers were paid $276,000 from bonds maintained by dealers and market agencies. Additional bond claims of $556,094 are pending.

P&SP will address the concerns discussed in this report by continuing to monitor changes in industry structure and behavior, and by examining practices that raise concerns in the industry and are within P&SP's authority under the P&S Act. When circumstances indicate the possibility of a violation of the P&S Act, P&SP will conduct formal investigations and follow up with the appropriate enforcement action if violations are shown to exist. P&SP will conduct research and other analyses to assess the economic, competitive, trade practice, and financial implications of the structural and behavioral changes that are taking place in the industry. P&SP will initiate regulatory initiatives if necessary to assure that effective enforcement of the P&S Act keeps pace with changes in industry structure and business practices.