

**Captive Supply of Cattle
and
GIPSA's Reporting of Captive Supply**

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

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Executive Summary

This Captive Supply Report is in response to the mandate described in the Conference Report (House Report No. 106-948) that accompanied the 2001 Agricultural Appropriations Bill (Public Law 106-387):

The conferees direct the Secretary of Agriculture to conduct a comprehensive study on the issue of captive supply, and deliver a report by September 30, 2001. 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 of captive supply.¹ The report shall also include the reasons why GIPSA's annual "Packers and Stockyard[s] Statistical Report" frequently reports a captive supply percentage much lower than the percentages reported by other entities.

The term "captive supply" is used throughout agriculture and other industries but has attained perhaps no greater currency than in the fed cattle industry. Simply mentioning captive supply elicits lively discussion among individuals with any vested interest in the fed cattle industry, including producers, packers, marketers, analysts, academics, regulators, and legislators. When used in the fed cattle industry, the term "captive supply" generally refers to cattle that are committed to or are owned by a packer before they are ready for slaughter. Neither practice is prohibited by the Packers and Stockyards Act of 1921, as amended (P&S Act).

Many organizations, including the United States Department of Agriculture, publish statistics commonly understood to reflect the volume of captive supply cattle procured by packers. The body of this report explains the Grain Inspection, Packers and Stockyards Administration's (GIPSA's) "captive supply" statistics as well as those by AMS and by industry organizations. The report explains GIPSA's definition of captive supply, identifies the definitions of captive supply statistics used throughout the fed cattle industry and explains why statistics collectively referred to as "captive supply" statistics do not refer to the same phenomenon. The report also sets out the results of GIPSA's verification of its 1999 captive supply statistics, including the examination of the transactional data underlying the summary information from which GIPSA's captive supply statistics were computed. Finally, the report announces actions GIPSA has taken or will take to improve the captive supply information it publishes.

¹ Although the legislative mandate requires that Secretary to examine and report on whether or not the cattle that are procured pursuant to a captive supply arrangement *by* a packers' non-reporting subsidiaries, affiliates and owners, officers, and employees, GIPSA has interpreted the mandate to refer to cattle that are procured pursuant to a captive supply arrangement *from* a packer's non-reporting subsidiaries, affiliates and owners, officers, and employees.

Appendix A of the report provides captive supply parallels and precedents elsewhere in agriculture. It also discusses the effects that the increase in the size of packing plants and cattle feedlots has had on the marketing of cattle for slaughter. Appendix B presents the arguments supporting and opposing the use of captive supplies by both packers and producers and a summary of the economic studies that address whether the use of captive supplies affects spot market prices. Appendix C discusses captive supply and the P&S Act.

Highlights from the report are set out below.

GIPSA's Definition of Captive Supply

- 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, or livestock that is otherwise committed to a packer more than 14 days prior to slaughter.

The Definition of GIPSA's Captive Supply Statistics

- GIPSA's annual Packers and Stockyards Statistical Report provides statistics on slaughtered cattle that packers reported were packer fed or were procured through forward contracts or marketing agreements. These GIPSA statistics, and their sum as a percentage of the total cattle slaughter, have been commonly referred to and will be referred to in this report as GIPSA's captive supply statistics.
- GIPSA's captive supply statistics are based on summary data provided by packers that purchase at least \$500,000 of livestock for slaughter and slaughter more than 100,000 steers and heifers a year. Packers meeting these thresholds are required to file annual reports with GIPSA with summary procurement information.

Packers' Reporting of Cattle Procured from Non-Reporting Subsidiaries, Affiliates, and Owners, Officers, and Employees

- Cattle that are procured from a packer's non-reporting subsidiary, affiliate, owner, officer, or employee are included in GIPSA's captive supply statistics if the non-reporting subsidiary, affiliate,² owner, officer, or employee sold the cattle through a captive supply arrangement. Purchases by a packer from its non-reporting subsidiaries, affiliates, owners, officers, or employees are not captive supply purchases simply because of the seller's status.
- GIPSA surveyed the largest 15 packers of fed cattle to determine whether they purchase cattle from non-reporting subsidiaries, affiliates, owners, officers, or

² A non-reporting entity is one that does not purchase at least \$500,000 of livestock for slaughter annually, and is not required to file a report.

employees. Nine of these 15 packers reported they purchase cattle from non-reporting subsidiaries, affiliates, owners, officers, or employees. Of these nine firms, six reported they purchased some of these cattle using captive supply arrangements, and all cattle purchased using these arrangements are included in the appropriate captive supply category reported to GIPSA.

- Seven of the largest 15 packers reported formal company policies prohibiting or restricting cattle feeding by owners, officers, and employees. Of the eight remaining packers, four reported a *de facto* prohibition on cattle feeding by owners, officers, and employees, seven reported making no purchases from owners or officers, and two reported purchasing a small number of cattle from employees.

GIPSA's and Other Entities' Captive Supply Statistics

- In their annual reports to GIPSA, packers are required to identify the total number of cattle they slaughtered and the number of cattle they slaughtered that they procured through methods identified in the annual report. Since 1988, GIPSA has required packers to report the number of slaughtered cattle that were 1) packer fed, or purchased through 2) fixed price or basis contracts, 3) marketing agreements, or 4) purchased more than two weeks in advance of slaughter and not reported in 1), 2), or 3).
- Based on summary procurement information filed by packers, GIPSA reports “packer fed” and “forward contract and marketing agreement” procurement information for the largest 4 and largest 15 packers that purchase steers and heifers for slaughter.
- GIPSA compared its captive supply statistics with those of USDA's Agriculture Marketing Service (AMS), Cattle-Fax, the Kansas Livestock Association, Nebraska Cattlemen, the Texas Cattle Feeders Association, and the Western Organization of Resource Councils.
- Differences between GIPSA's captive supply statistics and those reported by other organizations are attributable to differences in captive supply definitions, the data on which the statistics are based, regions, and reporting periods.
- GIPSA is the only entity that collects and reports information on *national* captive supply activity. Most significantly, GIPSA reports captive supply data defined by how packers procure cattle rather than how packers price cattle, which is how the other organizations determine captive supplies.

Verification of GIPSA's Captive Supply Statistics

- GIPSA's captive supply statistics are computed from summary information provided by packers in their annual reports. To verify the 1999 summary

information of the largest four packers, GIPSA obtained their 1999 transaction records. These transaction records are the source of the summary procurement information packers report to GIPSA.

- Based on the summary information submitted by the top four packers in their annual reports, GIPSA would have concluded that 25.2 percent of their total slaughter was procured through captive supply arrangements. Based on its review of the underlying transaction date, GIPSA has estimated that 32.3 percent of the total 1999 slaughter of the top four packers was procured through captive supply arrangements.
- Differences in reporting were caused by misunderstood or misapplied captive supply procurement category definitions and by packer tabulation errors.

GIPSA's Reporting of Captive Supply: Actions

As a consequence of this report, GIPSA has undertaken or will undertake the following actions.

- GIPSA has defined captive supply and will publish the definition in the *Federal Register*.
- GIPSA is developing a new Packer Annual Report form that will clarify reporting definitions for the various types of procurement methods by which it measures captive supply.
- GIPSA will meet with the top 15 packers to review and clarify its current reporting definitions and requirements.
- GIPSA will audit annual reports, including the information on which GIPSA computes its captive supply statistics. In conducting the audits, GIPSA will examine the data used to prepare the annual report submission, and the categorization of the data in the audited annual report.
- GIPSA will report forward contracted and marketing agreement cattle separately, consistent with applicable confidentiality restrictions.
- GIPSA will report the number of head in addition to percentages, and monthly and regional figures in addition to the annual national figures currently reported, consistent with applicable confidentiality restrictions.

Introduction

This report is in response to the mandate described in the Conference Report (House Report No. 106-948) that accompanied the 2001 Agricultural Appropriations Bill (Public Law 106-387) to conduct a comprehensive study on the issue of captive supply. In particular, the Secretary was instructed (1) to examine and report on whether the cattle that are procured pursuant to a captive supply arrangement by a packer's non-reporting subsidiary, affiliate and owners, officers, and employees were being included in the percentages of captive supply; and (2) to include the reasons why the Grain Inspection, Packer and Stockyards Administration's (GIPSA's) annual "Packers and Stockyards Statistical Report" frequently reported a captive supply percentage much lower than the percentages reported by other entities.

During the past decade, captive supply has become an increasingly controversial issue. In the fed cattle industry, "captive supply" nearly always refers to cattle that are available to only one packer prior to the sale of the cattle. This report addresses the issue of captive supply in the fed cattle industry, the issues raised by captive supply, and GIPSA's and other entities' reporting of captive supply. The main body of this report is organized as follows. Section 1 sets out GIPSA's definition of captive supply and reviews the history, definition, and description of GIPSA's captive supply statistics. Section 2 reviews the results of an examination of whether 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 included in the percentage of captive supply reported by GIPSA.

Section 3 compares GIPSA statistics with those of other entities and discusses why GIPSA's annual "Packers and Stockyard's Statistical Report" frequently reports a captive supply percentage lower than the percentages reported by other entities. Section 4 reports the results of a review of GIPSA's 1999 captive supply statistics. Section 5 identifies the actions GIPSA has taken or will take in response to this report.

Appendix A of the report provides captive supply parallels and precedents elsewhere in agriculture. It also discusses the effects that the increasing size of packing plants and cattle feedlots has had on the marketing of cattle for slaughter. Appendix B presents the arguments supporting and opposing the use of captive supplies and a brief summary of the major economic studies that address whether the use of captive supplies lowers spot market prices. Appendix C discusses the use of captive supplies and the P&S Act.

Section 1 – The Definition of GIPSA’s Captive Supply Statistics

When used in the fed cattle industry, the term “captive supply” generally refers to cattle that are committed to or are owned by a packer before they are ready for slaughter. 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, or livestock that is otherwise committed to a packer more than 14 days prior to slaughter.

GIPSA’s annual Packers and Stockyards Statistical Report provides statistics on slaughtered cattle that packers reported were packer fed or were procured through forward contracts or marketing agreements. These GIPSA statistics, and their commonly cited sum as a percentage of the total cattle slaughter, will be referred to in this report as GIPSA’s captive supply statistics.

GIPSA and its predecessor agencies have reported on some elements of captive supply since well before the term “captive supply” was coined. GIPSA has reported on packer feeding in a data series extending back to 1954.³ In 1988, USDA’s Packers and Stockyards Administration (the immediate predecessor to GIPSA’s Packers and Stockyards Programs) began to collect data on cattle purchases through forward contracting, marketing agreements and other advance purchase methods.

GIPSA’s authority to obtain information concerning packer procurement of cattle comes from the Packers and Stockyards (P&S) Act of 1921. Section 401 of the P&S Act requires packers to keep records that fully and correctly disclose all transactions involved in their business. (7 U.S.C. 221.) Section 402 of the P&S Act provides that certain provisions of the Federal Trade Commission (FTC) Act are made applicable to the jurisdiction, power and authority of the Secretary of Agriculture under the P&S Act. These provisions of the FTC Act include authority to gather and compile information from packers and to require packers to file annual or special reports. (7 U.S.C. 222.) Based on this authority, GIPSA requires that packers file annual reports. (9 CFR 201.97.)

Packers that purchase at least \$500,000 of livestock for slaughter and slaughter more than 100,000 steers and heifers annually are required to report to GIPSA on their total slaughter and on the number of steers and heifers procured under various procurement methods. GIPSA publicly reports the aggregated procurement activities of the largest 15 packers. In 1999, 16 packers met the reporting criteria and filed annual reports with GIPSA. Section 5 of GIPSA’s Annual Report of Packers, Form P&SP-125 (see figure 1), the reporting form completed by these packers, has sections for reporting monthly slaughter of livestock procured under “contract,” “marketing agreement,” “packer fed,” and “other.” On the reporting form, GIPSA defines the procurement categories as follows:⁴

³ See, for example, USDA, *Packer Feeding of Cattle – Its Volume and Significance, Marketing Research Report No. 776*, November 1966.

⁴ From the instructions to Section 5, “Livestock Feeding and Contracting Activities,” on GIPSA’s Annual Report of Packers form (Form P&SP-125, page 4).

- Contract -- Fixed price or basis contract.
- Marketing Agreement -- Agreement to purchase livestock at a future date with the price to be determined at or after the time of slaughter.
- Packer Fed -- Include all company owned cattle fed for slaughter, whether custom fed or fed in a company owned or operated lot and any partnership, joint venture, or other feeding arrangement.
- Other -- Any livestock purchased over two weeks in advance of slaughter and not listed [as contract, marketing agreement or packer fed purchases].

The Other category is intended to identify all captive supply cattle that are not identified by the other three categories. On rare occasions, packers have reported a few cattle in the Other category. GIPSA reports Contract, Marketing Agreement and Other cattle as Forward Contract and Marketing Agreement cattle in its Packer and Stockyards Statistical Report.

In June 2001, GIPSA published descriptions for these procurement categories and provided examples of them in *Assessment of the Cattle and Hog Industries, Calendar Year 2000*:⁵

Marketing Agreements – Marketing agreements, which may be written or verbal, establish an ongoing relationship for the sale of fed cattle, rather than negotiating single-lot transactions.⁶ They often include minimum and maximum numbers of head to be delivered per unit of time, delivery specifications, auditing practices, and pricing method. Pricing often is by formula, based on average prices for other cattle slaughtered at the plant or publicly reported prices, with premiums and discounts applied for differences in cattle quality.

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

⁵ USDA, GIPSA. *Assessment of the Cattle and Hog Industries, Calendar Year 2000*, April 2001.

⁶ Ted Schroeder and Rodney Jones, “Captive Supply 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. (As cited in GIPSA’s *Assessment of the Cattle and Hog Industries*.)

Figure 1. GIPSA's Annual Report of Packers

SECTION 4. (Continued) - - PROCUREMENT OF LIVESTOCK FOR SLAUGHTER. Include your slaughter livestock procurement activities and those of the subsidiaries and affiliated companies reported in Section 1. Item 7 - If you reported two or more plants under Section 3, Item 1, also submit a separate Supplemental Report (FORM P&SP-125-1) for each plant. Item 1 through 11, report numbers of livestock by species.

ITEM	NUMBER OF HEAD SLAUGHTERED					
	CATTLE		CALVES	HOGS	SHEEP	OTHER
LIVESTOCK PURCHASED BOTH LIVE WEIGHT AND CARCASS WEIGHT PURCHASES:	Steers and Heifers	Cows and Bulls				
5. LIVESTOCK PURCHASED FROM OTHER PACKERS.						
6. LIVESTOCK SOLD.						
7. LIVESTOCK ON HAND FOR SLAUGHTER OR FEEDING AT THE END OF THE REPORTING PERIOD.						
8. TOTAL LIVESTOCK SLAUGHTERED.						
9. OF TOTAL LIVESTOCK SLAUGHTERED, NUMBER PURCHASED AND PAID FOR ON A DRESSED WEIGHT OR A CARCASS MERIT BASIS?						
10. DO YOU OWN OR OPERATE A SCALE ON WHICH YOU WEIGH LIVESTOCK PURCHASED FOR SLAUGHTER? <input type="checkbox"/> YES <input type="checkbox"/> NO						
11. DO YOU USE ANY TYPE OF ELECTRONIC EVALUATION DEVICE (other than a scale) FOR PAYMENT DETERMINATION? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, TYPE OF EQUIPMENT AND MANUFACTURER.						

SECTION 5. - LIVESTOCK FEEDING AND CONTRACTING ACTIVITIES (include your domestic livestock feeding activities and those of the subsidiaries and affiliated companies reported in Section 1 item 7.)

1. LIVESTOCK FED BY YOU.	NUMBER OF HEAD (removed from feed for slaughter during reporting period)				
	STEERS AND HEIFERS	COWS AND BULLS	CALVES	HOGS	SHEEP

2. LIVESTOCK OWNED BY YOU, BUT FED BY OTHERS	NUMBER OF HEAD (removed from feed for slaughter during reporting period)				
	STEERS AND HEIFERS	COWS AND BULLS	CALVES	HOGS	SHEEP

3. COMPLETE SEPARATE FORM FOR EACH PLANT AND SPECIES - (To be completed for all plants where firms annual total slaughter is greater than 100,000 steers and heifers, 100,000 sheep, or 1,000,000 hogs)

DELIVERY DATE	CONTRACT 1/	MARKETING AGREEMENTS 2/	PACKER FED 3/	OTHER 4/	TOTAL SLAUGHTERED FOR MONTH
JANUARY					
FEBRUARY					
MARCH					
APRIL					
MAY					
JUNE					
JULY					
AUGUST					
SEPTEMBER					
OCTOBER					
NOVEMBER					
DECEMBER					
TOTAL					

1/ FIXED PRICE OR BASIS CONTRACT.
 2/ AGREEMENT TO PURCHASE LIVESTOCK AT A FUTURE DATE WITH THE PRICE TO BE DETERMINED AT OR AFTER THE TIME OF SLAUGHTER.
 3/ INCLUDE ALL COMPANY OWNED CATTLE FED FOR SLAUGHTER, WHETHER CUSTOM FED OR FED IN A COMPANY OWNED OR OPERATED LOT AND ANY PARTNERSHIP, JOINT VENTURE, OR OTHER FEEDING ARRANGEMENT.
 4/ ANY LIVESTOCK PURCHASED OVER TWO WEEKS IN ADVANCE OF SLAUGHTER AND NOT LISTED IN COLUMNS 1, 2, OR 3.

FORM P&SP-125 Page 4 of 7

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

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

* * * * *

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

The sum of packer fed cattle and cattle purchased through forward contracts and marketing agreements, reported as a percentage of total slaughter, is GIPSA’s measure of captive supply.

Section 2 – Packers’ Reporting of Cattle Procured from Non-Reporting Subsidiaries, Affiliates, and Owners, Officers, and Employees

Congress instructed the Secretary 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 of captive supply.” Cattle that are procured from a packer’s non-reporting subsidiary, affiliate, owner, officer, or employee are included in GIPSA’s captive supply statistics if the non-reporting subsidiary, affiliate,⁷ owner, officer, or employee sold the cattle through a captive supply arrangement.⁸ Purchases by a packer from its non-reporting subsidiaries, affiliates, owners, officers, or employees are not captive supply purchases simply because of the seller’s status.

Packers are not required to report the sellers’ identities in their annual reports to GIPSA. To determine if cattle purchased from each packer’s non-reporting subsidiary, affiliate and owners, officers, and employees were reported in one of GIPSA’s captive supply categories, GIPSA examined transactions records, from 1999, of the largest four packers that purchase steers and heifers. The transaction records usually identify the seller as the feedlot from which the cattle were obtained rather than the owner of the cattle.

For GIPSA to identify the sellers, GIPSA would have to trace more than 200,000 individual transactions back through the records of feedlots that fed the cattle. Because GIPSA does not have access to the records of entities that are not subject to the P&S Act except when it serves them with a subpoena, GIPSA could not routinely trace the underlying transactions to determine how packers reported cattle purchased from their non-reporting subsidiaries, affiliates and owners, officers, and employees.

To determine how packers report their purchases from non-reporting subsidiaries, affiliates and owners, officers, and employees, GIPSA contacted the largest 15 packers that purchased steers and heifers in 1999.⁹ The packers reported that purchases from non-reporting subsidiaries, affiliates and owners, officers and employees were reported as captive supply purchases if they were procured through one of captive supply procurement categories identified in GIPSA’s annual report. If a transaction met the captive supply procurement category definition specified in the packer annual report, the packers reported it as such without regard to the identity of the seller.

⁷ A non-reporting entity is one that does not purchase at least \$500,000 of livestock for slaughter annually, and is not required to file a report.

⁸ Although the legislative mandate requires that Secretary to examine and report on whether or not the cattle that are procured pursuant to a captive supply arrangement *by* a packers’ non-reporting subsidiaries, affiliates and owners, officers, and employees, GIPSA has interpreted the mandate to refer to cattle that are procured pursuant to a captive supply arrangement *from* a packer’s non-reporting subsidiaries, affiliates and owners, officers, and employees.

⁹ Aurora Packing, Caldwell Packing (PM Global), ConAgra, Excel Corp., Greater Omaha Packing, Green Bay Dressed Beef, Harris Ranch Beef, IBP, Moyer Packing, National Beef Packing, Nebraska Beef, Packerland, Sam Kane Beef Processors, Shamrock Meats, and Washington Beef.

To address Congress's instructions and for purposes of GIPSA's verification process discussed in section 4 of this report, subsidiaries were defined as any company or business entity more than 50 percent owned by the packing company. Affiliates were defined as (1) any company that the packing company jointly owns with another firm; (2) any company with which the packing company has joint ownership of cattle; or (3) any company which the packing company, the packing company's parent company, any subsidiary of the packing company or the packing company's parent company provides financing for cattle on feed. Owners were defined as any person or firm having more than 5 percent ownership in the packing company. Officers were defined as all corporate officials of the packing company (including chief executive officer, chief operating officer, chairman, president, vice presidents, secretary, treasurer, and chief financial officer) and members of the packing company's board of directors.

Of the 15 packers contacted by GIPSA, nine reported buying cattle from their subsidiaries, affiliates, owners, officers, or employees. Six of those companies stated they buy some of these cattle under at least one of the captive supply procurement methods specified in GIPSA's annual report and they reported these cattle to GIPSA as bought under the procurement method.

Two of the six companies reporting purchases from subsidiaries, affiliates, owners, officers, or employees buy from feeding affiliates. One buys from its feeding subsidiary. Another one buys approximately 100 head a year from an affiliate, which is not required to report to GIPSA, for performance testing and quality control purposes. One company is a cooperative with feedlot members, and the other is owned outright by feedlots. Both buy cattle from their feedlot owner(s) or members.

Three packers buy small quantities of cattle from employees. The packers stated that such purchases are priced on a grid to avoid any appearance of favoritism or discrimination. A grid is used to avoid any potential conflict of interest with the employee's sale to the packer. The packers consider grids to be impartial because they are based on a plant average or publicly reported price.

Seven of the 15 packers reported company policies prohibiting or restricting cattle feeding by owners, officers, or employees. All of the largest four packers have written policies -- generally "conflict of interest" policies -- on cattle feeding and futures trading by owners, officers, or employees. Several of the largest four companies' policies prohibit cattle feeding, and require owners, officers, and/or employees to sign company conflict of interest policies annually. The policy of one of the largest four companies allows employees to feed cattle as long as doing so does not violate the company's conflict of interest policy. That company's policy also requires that any of these cattle sold to the company must be sold on a grid basis.

Eight packers have no official or formal company policy on cattle feeding by owners, officers, and employees. Seven of the eight stated that the company had no purchases from owners or officers. Two of the eight reported purchasing only small quantities of

cattle from employees. Four of the eight declared they have a *de facto* prohibition on cattle feeding by owners, officers, and employees but no written or formal policy.

Section 3 – GIPSA’s and Other Entities’ Captive Supply Statistics

Congress instructed the Secretary to “include the reasons why GIPSA’s annual ‘Packers and Stockyard[s] Statistical Report’ frequently reports a captive supply percentage much lower than the percentages reported by other entities.” GIPSA interviewed representatives from nine industry organizations¹⁰ (including both opponents and proponents of captive supply) to identify the other published captive supply statistics. These organizations included livestock producer groups and their affiliated market research organizations as well as various other organizations. GIPSA identified six organizations that publish or have published statistics related to captive supply: USDA’s Agricultural Marketing Service, Cattle-Fax, Kansas Livestock Association, Nebraska Cattlemen, Texas Cattle Feeders Association, and the Western Organization of Resource Councils. GIPSA asked those sources that produce other captive supply statistics to describe their captive supply statistics.

GIPSA found six fundamental differences between its captive supply statistic and those published by the other entities: 1) GIPSA obtains its captive supply data from summary data that packers are required to report. Five of the six other reporters obtain primary data for their captive supply statistics through voluntary reporting by feedlots or packers, and the sixth reproduces statistics that AMS reported. 2) GIPSA defines captive supply by the transaction’s *procurement method*; others define captive supply by the transaction’s *pricing method* or a combination of procurement and pricing methods. 3) GIPSA reports captive supply statistics on a national basis. The others report regional captive supply statistics. 4) GIPSA reports on an annual basis. Five of the six report or reported on weekly or monthly bases, while one of the six published two reports of captive supply for a limited time period in 1995. 5) GIPSA reports captive supply as a percentage of total slaughter. Three reported captive supply both as the number of head and as a percentage of total estimated movement from feedlots. Two reported captive supply as the number of head. One reported captive supply as a percentage of total cattle movement. 6) GIPSA’s captive supply statistics are based on data reported by the packer slaughtering the cattle so that cattle would be reported in regional statistics according to where they were slaughtered. The other reporters report captive supply statistics from the feedlot shipping the cattle so that cattle would be reported regional statistics according to the location of the feedlot from which they were shipped.

GIPSA’s Captive Supply Statistics

GIPSA has collected summary marketing agreement and forward contracted procurement information from packers since 1988, and summary packer feeding information since the early 1950s. GIPSA requires packers to report the total number of cattle procured and the number of cattle procured through forward contract, marketing agreement, packer fed, and “other methods” in the GIPSA packer annual report form. GIPSA compiles and reports packer fed cattle and cattle purchased with forward contracts and marketing

¹⁰ Cattle-Fax, Kansas Livestock Association, Livestock Marketing Information Center, National Cattlemen’s Beef Association, Nebraska Cattlemen, Organization for Competitive Markets, R-Calf, Texas Cattle Feeders Association, and Western Organization of Resource Councils.

agreements as a percentage of the packers' total steer and heifer slaughter for the largest 4 and largest 15 packers. GIPSA's measure of captive supply is the sum of the packer fed cattle and cattle purchased with forward contracts and marketing agreements expressed as a percent of packers' total slaughter. Monthly forward contract, marketing agreement, and packer fed slaughter by the largest 4 and largest 15 packers from 1990 to 1998, reported to GIPSA, are shown in Tables 1, 2, and 3.

Table 1. Packer Fed, Forward Contract, Marketing Agreement Steer and Heifer Slaughter as a Percentage of Total Steer and Heifer Slaughter for the Largest 4 and Largest 15 Packers, 1990 to 1998

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	Percent												
<u>4 Largest Packers</u>													
1990	29.1	27.3	18.2	24.8	18.9	17.9	20.1	16.1	16.5	20.0	15.7	19.7	20.1
1991	18.6	16.0	22.0	19.7	14.7	22.8	19.6	17.6	17.8	17.1	15.7	23.4	18.7
1992	15.9	21.4	19.1	25.9	22.6	25.4	19.1	21.1	17.1	17.9	16.0	27.2	20.8
1993	19.2	18.3	18.1	24.8	15.5	21.4	16.1	15.4	14.1	14.9	15.7	17.5	17.5
1994	19.3	20.1	18.4	20.2	20.3	22.2	19.2	24.2	21.9	20.8	17.6	25.6	20.9
1995	22.9	25.4	23.0	28.5	19.0	26.3	22.6	20.3	15.6	14.6	14.9	23.2	21.3
1996	20.7	22.1	19.9	26.5	21.2	23.6	26.6	22.2	19.0	21.4	16.8	31.3	22.5
1997	25.0	24.0	17.0	18.0	20.0	18.0	21.5	20.6	19.2	16.8	17.9	24.2	20.1
1998	25.5	24.8	18.2	20.0	22.1	21.5	24.7	24.7	20.2	20.3	25.4	21.8	22.4
Average	22.3	21.6	19.1	24.5	19.8	23.7	21.2	19.8	18.7	18.3	17.8	24.6	20.9
<u>15 Largest Packers</u>													
1990	25.8	25.4	18.4	23.4	16.8	16.4	18.3	15.0	15.9	18.7	14.8	20.1	18.9
1991	16.5	15.1	19.5	17.9	13.4	20.8	17.7	16.5	16.7	15.9	15.2	22.4	17.2
1992	14.7	19.9	18.3	23.5	21.2	23.5	17.7	19.8	16.8	17.2	15.5	24.9	19.5
1993	18.4	18.0	17.7	24.1	15.5	20.9	16.1	15.4	14.4	15.2	16.2	17.9	17.4
1994	18.9	19.5	18.1	19.9	20.1	21.7	19.1	23.2	21.4	20.6	17.5	24.7	20.5
1995	22.2	24.6	22.5	27.6	19.0	25.5	22.2	19.9	15.9	15.4	15.7	23.0	21.1
1996	20.5	21.9	19.9	25.7	20.9	23.0	25.7	22.0	19.3	21.1	17.2	29.6	22.2
1997	22.8	21.1	15.6	16.6	18.8	17.1	19.6	19.1	17.9	16.0	16.9	22.2	18.6
1998	23.7	23.3	17.2	18.9	21.1	20.8	23.4	23.7	19.8	19.8	23.9	21.0	21.4
Average	20.6	20.6	18.2	22.9	18.7	22.2	20.0	18.9	18.0	17.7	17.4	23.5	19.9

Source: Based on GIPSA Packer Annual Reports

Table 2. Packer Fed Purchases of Steer and Heifer Slaughter as a Percentage of Total Steer and Heifer Slaughter for the Largest 4 and Largest 15 Packers, 1990 to 1998

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Percent												
<u>4 Largest Packers</u>													
1990	4.4	4.4	4.8	4.6	5.9	4.6	6.4	5.9	4.9	4.7	4.5	5.5	5.1
1991	5.6	4.4	5.8	5.0	4.3	5.0	4.7	4.2	4.7	5.1	4.0	3.7	4.7
1992	3.3	4.7	3.8	5.3	5.3	3.1	3.7	3.6	4.6	4.4	3.8	3.4	4.1
1993	3.7	4.7	3.7	4.0	3.5	3.4	3.8	4.4	3.6	4.5	3.7	2.3	3.8
1994	3.6	4.0	3.4	2.5	3.1	3.4	4.3	5.8	5.3	4.4	4.6	2.7	3.9
1995	3.6	5.0	4.0	3.1	2.0	3.6	4.7	4.9	1.6	1.5	1.9	2.0	3.2
1996	3.1	4.8	2.8	2.4	3.0	3.8	5.2	4.5	2.3	2.0	2.3	3.9	3.4
1997	5.4	4.8	1.6	1.9	3.8	4.4	5.4	3.8	3.3	3.0	4.2	4.8	3.8
1998	3.5	2.8	2.3	2.8	4.2	4.0	4.7	4.2	3.1	3.4	3.0	3.8	3.5
Average	4.1	4.4	3.6	3.9	4.2	4.2	5.1	4.7	4.0	4.0	3.7	3.8	4.2
<u>15 Largest Packers</u>													
1990	4.5	4.7	5.3	4.6	5.3	4.4	6.2	5.7	4.9	4.7	4.5	5.6	5.0
1991	4.9	4.0	4.9	4.3	4.1	4.8	4.7	4.5	4.8	5.1	4.3	4.0	4.5
1992	3.0	4.4	3.7	4.9	5.1	3.3	3.8	3.8	4.7	4.6	4.2	3.9	4.1
1993	4.0	4.8	3.9	4.3	3.7	3.8	4.2	4.6	4.0	4.8	4.2	3.0	4.1
1994	3.7	3.9	3.3	2.7	3.3	3.5	4.3	5.6	5.2	4.5	4.6	2.9	4.0
1995	3.5	4.7	3.9	3.2	2.3	3.8	4.8	4.8	1.8	1.9	2.4	2.4	3.3
1996	3.4	4.7	2.9	2.5	3.1	3.7	5.0	4.3	2.4	1.9	2.3	3.7	3.3
1997	4.8	4.3	1.5	1.8	3.8	4.4	4.9	3.6	3.3	3.0	4.0	4.5	3.7
1998	3.3	2.8	2.3	2.9	4.3	4.4	5.0	4.7	3.7	3.8	3.2	3.7	3.7
Average	4.0	4.3	3.6	3.8	4.1	4.2	5.1	4.7	4.1	4.1	3.9	4.0	4.2

Source: Based on GIPSA Packer Annual Reports

Table 3. Forward Contract and Marketing Agreement Steer and Heifer Slaughter as a Percentage of Total Steer and Heifer Slaughter by the Largest 4 and Largest 15 Packers, 1990 to 1998

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Percent												
<u>4 Largest Packers</u>													
1990	24.7	22.8	13.4	20.2	13.1	13.4	13.7	10.2	11.6	15.4	11.2	14.2	15.1
1991	13.0	11.6	16.2	14.7	10.4	17.8	14.9	13.5	13.2	12.0	11.7	19.7	14.0
1992	12.6	16.7	15.3	20.6	17.3	22.4	15.4	17.5	13.0	13.5	12.1	23.8	16.7
1993	15.5	13.5	14.4	20.8	12.0	18.0	12.3	11.1	10.4	10.4	11.9	15.2	13.7
1994	15.7	16.0	14.9	17.7	17.2	18.8	14.9	18.4	16.6	16.3	13.0	22.9	17.0
1995	19.3	20.4	19.0	25.4	16.9	22.6	17.9	15.4	14.0	13.2	13.1	21.2	18.1
1996	17.5	17.2	17.1	24.2	18.2	19.9	21.5	17.6	16.6	19.5	14.5	27.4	19.2
1997	19.7	19.3	15.5	16.0	16.2	13.6	16.0	16.8	16.0	13.8	13.8	19.4	16.2
1998	22.0	22.0	15.9	17.3	17.9	17.6	20.1	20.5	17.1	16.9	22.4	18.1	18.9
Average	18.1	17.2	15.5	20.6	15.6	19.5	16.1	15.0	14.7	14.3	14.1	20.8	16.7
<u>15 Largest Packers</u>													
1990	21.3	20.7	13.1	18.8	11.5	12.0	12.1	9.3	11.0	14.0	10.3	14.5	13.9
1991	11.5	11.1	14.5	13.6	9.3	16.0	13.0	12.0	11.9	10.9	10.9	18.4	12.7
1992	11.7	15.5	14.6	18.7	16.1	20.2	13.8	16.1	12.2	12.6	11.3	21.0	15.3
1993	14.4	13.1	13.8	19.8	11.8	17.1	11.9	10.8	10.5	10.4	11.9	14.9	13.3
1994	15.3	15.6	14.7	17.2	16.7	18.2	14.8	17.7	16.3	16.1	12.9	21.7	16.5
1995	18.7	19.9	18.6	24.4	16.7	21.7	17.4	15.2	14.1	13.5	13.3	20.5	17.8
1996	17.2	17.1	17.0	23.2	17.8	19.3	20.7	17.7	16.9	19.2	14.9	25.9	18.8
1997	18.0	17.7	14.2	14.8	15.0	12.7	14.7	15.5	14.5	13.0	13.0	17.7	14.9
1998	20.4	20.6	14.9	16.1	16.7	16.4	18.4	19.0	16.1	16.0	20.7	17.2	17.7
Average	16.6	16.3	14.7	19.2	14.6	18.0	14.9	14.2	13.9	13.6	13.5	19.5	15.7

Source: Based on GIPSA Packer Annual Reports

Other Captive Supply Statistics and Differences From GIPSA's Statistics

GIPSA's interviews with industry sources identified six organizations that publish or have published statistics related to captive supply: USDA's Agricultural Marketing Service, Cattle-Fax, Kansas Livestock Association, Nebraska Cattlemen, Texas Cattle Feeders Association, and the Western Organization of Resource Councils. Their captive supply statistics and comparisons to GIPSA's captive supply statistics are discussed below.

AMS's Additional Movement Statistic¹¹

GIPSA's captive supply statistics are frequently compared with statistics reported by USDA's Agricultural Marketing Service (AMS). GIPSA's and AMS's statistics are often assumed to measure the same industry practices, and people often question why statistics reported by the two agencies are not identical. The two statistics, however, do not measure the same industry practices. The differences between them can be explained in terms of differences in what the statistics measure, the data used to develop them, and how those data are collected.

Prior to USDA's implementation of mandatory price reporting in April 2001, AMS published weekly statistics on the composition of reported feedlot shipments of cattle to packers (feedlot shipment volume) for the week. These quantity statistics supplemented AMS's spot market price reports. AMS's reported feedlot shipment volumes were intended to provide producers with market information about packers' current demand for cattle, often expressed as the "market's strength." AMS collected the data through telephone contacts with feedlots and packers and reported weekly feedlot shipment volume for four cattle marketing regions – Texas/Oklahoma, Kansas, Colorado, and Nebraska/Wyoming.

AMS reported statistics on the four regions' cash sales, estimated total movement, estimated additional movement, and percent estimated additional movement. On its reporting form, AMS described cash sales as "cattle sold on a negotiated live or beef basis, to be delivered within the normal pickup period, with the price to be determined at the time of sale" (see figure 2). Cash sales used in AMS's additional movement reporting reflected the volume of cash sales voluntarily reported to AMS. Total movement was the estimated movement, or shipments, of cattle from feedlots in the region. Additional movement was the difference between estimated total movement and reported cash sales volume, and was characterized by AMS on the reporting form as "(a) cattle that are fed by or for packers, (b) contract or formula agreements, (c) cattle financed by packers and slaughtered by the same packer, and (d) cattle committed to packers with the price non-negotiated prior to change in ownership." Percent additional movement was additional movement in the region expressed as a percentage of estimated total movement in the region.

¹¹ The description of AMS's additional movement statistic is based on discussion with AMS officials and information contained in reports published by AMS.

There are several differences between GIPSA's captive supply statistics and AMS's additional movement (table 4). First, GIPSA obtains its data for computing captive supply from annual reports packers are required by law to file with GIPSA; it publishes captive supply statistics for the largest 4 and the largest 15 packers on an annual basis. In contrast, AMS obtained its data from voluntary reporting from feedlots and packers; it published additional movement from feedlots on a weekly basis.

Second, GIPSA reports captive supply on a national basis. AMS reported additional movement for four regions: Texas/Oklahoma, Kansas, Colorado, and Nebraska/Wyoming.

Third, procurement methods are the basis for GIPSA's captive supply statistics. Packers report to GIPSA the number of slaughtered cattle that were procured through any of the four defined procurement categories that comprise GIPSA's captive supply definition. In contrast, AMS estimated additional movement as the residual difference between estimated total movement and voluntarily reported cash sales.

Fourth, some transactions included in AMS's additional movement would not be reported to GIPSA as captive supply transactions. For example, packers often use formula pricing for transactions that are not associated with an established, ongoing agreement between the packer and the feedlot. These transactions would not be reported to AMS as cash sales because the cattle did not receive a fixed live-weight or carcass-weight price at the time of sale, but they would be included in AMS's estimates of additional movement. Similarly, cash sales that were not voluntarily reported to AMS as cash sales would be treated as AMS's additional movement if they were subsequently reported in total movement. Cattle procured in these transactions would not be included in GIPSA's definition of captive supply, and GIPSA would not require packers to report them in any of its captive supply categories.

Figure 2. AMS's Additional Movement, Reported Weekly on AMS's Website until Implementation of Mandatory Price Reporting

AM_LS170

Amarillo, TX Mon Apr 02, 2001 USDA-TX Dept of Ag Market News

Breakdown of Reported Feedlot Volume for Week Ending - March 01, 2001

Total volume of slaughter cattle reported by USDA (Monday through Sunday) in Texas/Oklahoma, Kansas, Colorado, and Nebraska/Wyoming.

	Current Week	Week Ago	Year Ago
Texas/Oklahoma			
Cash Sales	46,200	51,700	57,900
Additional Movement	51,800	47,000	44,600
Total	98,000	98,700	102,500
Percent Add'l Movement	53%	48%	44%
Kansas			
Cash Sales	51,800	37,000	34,600
Additional Movement	21,200	24,300	25,900
Total	73,000	61,300	60,500
Percent Add'l Movement	29%	40%	43%
Colorado			
Cash Sales	12,600	11,400	5,100
Additional Movement	12,100	17,700	13,100
Total	24,700	29,100	18,200
Percent Add'l Movement	49%	61%	72%
Nebraska/Wyoming			
Cash Sales	46,000	68,000	57,400
Additional Movement	13,300	17,200	23,800
Total Movement	59,300	85,200	81,200
Percent Add'l Movement	22%	20%	29%
Total Cash Sales	156,600	168,100	155,000
Total Additional Movement	98,400	106,200	107,400
Total	255,000	274,300	262,400
Percent Add'l Movement	39%	39%	41%

Cash sales include cattle sold on a negotiated live or beef basis, to be delivered within the normal pickup period, with the price determined at the time of sale.

Additional movement (a) cattle that are fed by or for packers (b) contract or formula agreements (c) cattle financed by packers and slaughtered by the same packer and (d) cattle committed to packers with the price non-negotiated prior to change in ownership.

 This report will be discontinued on March 30, 2001. Starting April 2, 2001, market information contained in this report is included in the reports developed for Livestock Mandatory Reporting. A list of all mandatory livestock reports is available at the following web site.
<http://www.ams.usda.gov/lsg/mpr/MPRreport.htm>

Source: USDA-Texas Dept of Ag Market News, Amarillo, TX
 806/372-6361 - 24 hr Markets 806/372-3494
www.ams.usda.gov/mnreports/am_ls170.txt

1330c pj

Table 4. Major Differences between GIPSA’s Reported Captive Supply Statistics and AMS’s Additional Movement Statistics

<u>GIPSA’s Captive Supply Statistics</u>	<u>AMS’s Additional Movement Statistics</u>
<u>Collection Method</u>	
Mandatory annual reporting by packers on a written report form.	Voluntary weekly reporting by feedlots and packers in response to telephone queries by AMS market news reporters.
<u>Geographic Focus</u>	
Steer and heifer slaughter by all plants in the United States operated by the largest 15 steer and heifer slaughterers.	Steer and heifer shipments from voluntarily reporting feedlots in Texas, Oklahoma, Kansas, Colorado, Nebraska, and Wyoming.
<u>Types of Transactions Included</u>	
Transaction types include: - Forward or basis contracts - Packer fed - Marketing agreements - Other purchases more than 14 days in advance of slaughter.	Transaction types include: - Packer fed - Contract or formula agreements - Cattle financed by packers and slaughtered by the same packer - Cattle committed to packers with the price non-negotiated prior to the change in ownership.
<u>Calculation of Captive Supply</u>	
Captive supply calculated from volume of cattle slaughtered reported to have been procured under one of the four transaction types.	Additional movement calculated as the difference in cattle reported to be cash sales and the reported total movement.

Source: GIPSA and AMS publications and conversations with AMS personnel.

Finally, there is an arithmetic difference between the two statistics when expressed on a “percent captive” or “percent additional movement basis.” (table 5) GIPSA’s captive supply statistic and AMS’s additional movement statistic are reasonably close in terms of number of head but much different in terms of their percentage of total slaughter and total movement because packers report substantially more cattle being slaughtered at packing plants in AMS’s reporting regions than AMS estimates total movement from feedlots in those regions.

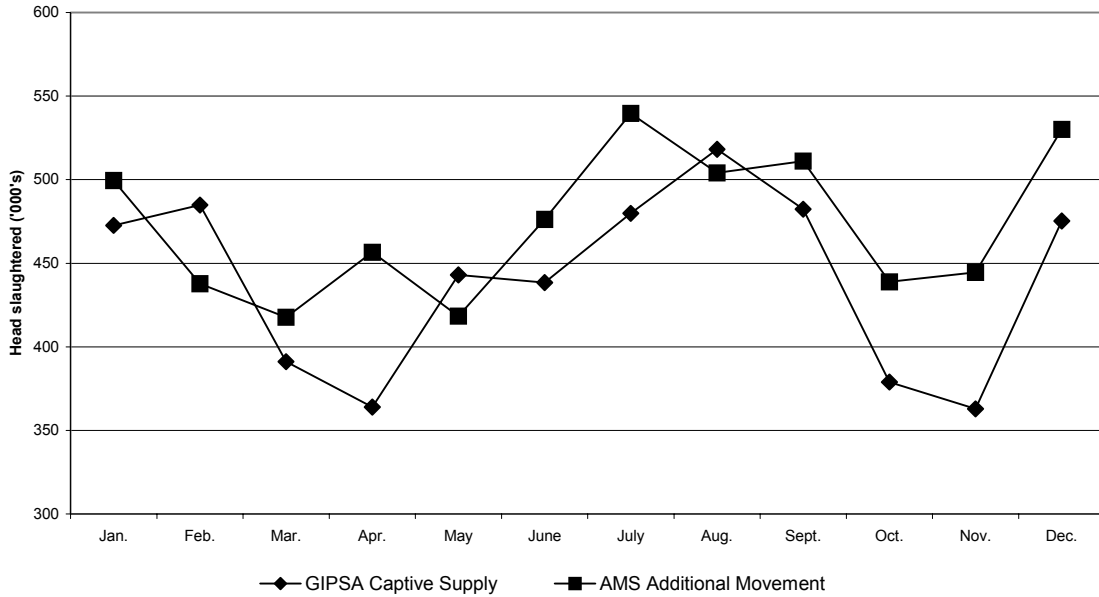
Table 5. GIPSA's Captive Supply Statistics and AMS's Additional Movement Statistics, 1999

	GIPSA's captive supply for the largest 15 Packers	Captive Supply as a Percentage of Largest 15 Packers' Steer and Heifer Slaughter	AMS's Additional Movement from feedlots in AMS's reporting regions	Additional Movement as a Percentage of AMS' Total Movement
	Head	Percent	Head	Percent
Texas & Oklahoma	1,869,801	35.3	2,027,241	38.4
Kansas	1,903,748	24.1	1,779,800	40.1
Colorado, Nebraska & Wyoming ¹	1,517,607	17.0	1,967,400	30.3
Total for AMS's Additional Movement Reporting Regions	5,291,156	23.7	5,774,440	35.6
Total United States	6,559,559	23.6	--	--

¹ Colorado, Nebraska, and Wyoming were combined to protect the confidentiality of GIPSA data. Source: Packer annual reports to GIPSA and AMS publications.

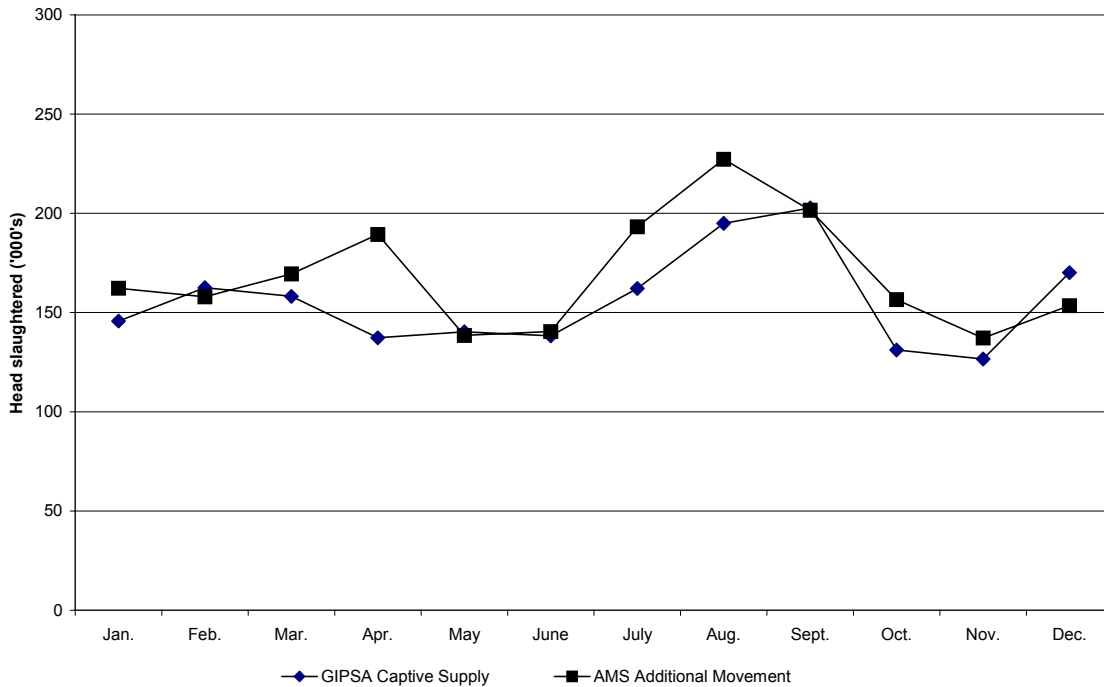
Despite large discrepancies in the two captive supply measures when expressed as percentages of their respective totals (table 5's, 17.0 percent and 30.3 percent for Colorado, Nebraska and Wyoming, for instance), the strong relationship exists between the two measures when expressed in the number of head (graphs 1, 2 and 3).

Graph 1. GIPSA Captive Supply and AMS Additional Movement for Colorado, Kansas, Oklahoma, Nebraska, Wyoming, and Texas by Month, 1999



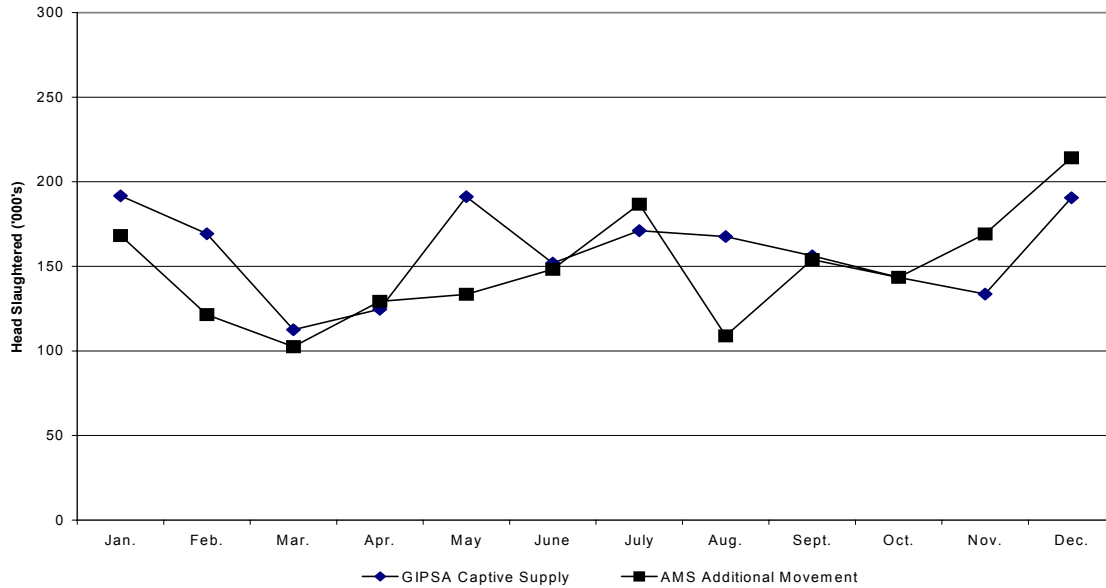
Source: Packer annual reports to GIPSA and AMS publications

Graph 2. GIPSA Captive Supply and AMS Additional Movement for Texas/Oklahoma by month, 1999



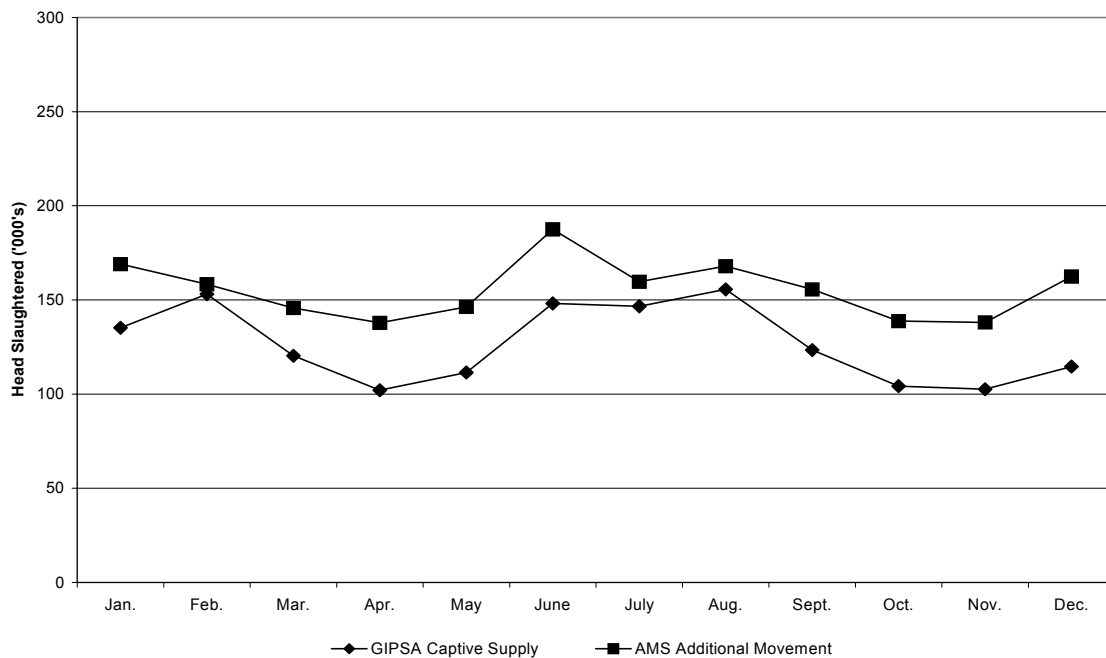
Source: Packer annual reports to GIPSA and AMS publications.

Graph 3. GIPSA Captive Supply and AMS Additional Movement for Kansas by Month, 1999



Source: Packer annual reports to GIPSA and AMS publications.

Graph 4. GIPSA Captive Supply and AMS Additional Movement for Colorado, Nebraska and Wyoming by Month, 1999



Source: Packer annual reports to GIPSA and AMS publications.

Cattle-Fax Captive Supply Statistics

Cattle-Fax, the marketing research arm of the National Cattlemen's Beef Association, issues a series of reports to its members that track forward contracted and formula cattle shipments from feedlots in Kansas, the Texas Panhandle and parts of Oklahoma, Colorado, Nebraska, and parts of the Dakotas. Cattle-Fax's reports are developed from surveys of Cattle-Fax members. The reports are designed to capture non-cash and non-negotiated cattle transactions. Data on forward contracted and formula sales are reported to Cattle-Fax members in three formats: a daily report, a weekly report issued at the end of the week, and a monthly report with projections three months ahead. Cattle-Fax has been issuing these reports for approximately 13 years.

Cattle-Fax's captive supply statistic does not include packer fed cattle. After subtracting packer fed cattle from GIPSA's statistics, GIPSA reported more captive supply in Kansas and Texas than Cattle-Fax reported, and less captive supply in Colorado and Nebraska than Cattle-Fax reported in 1999 (Table 6).

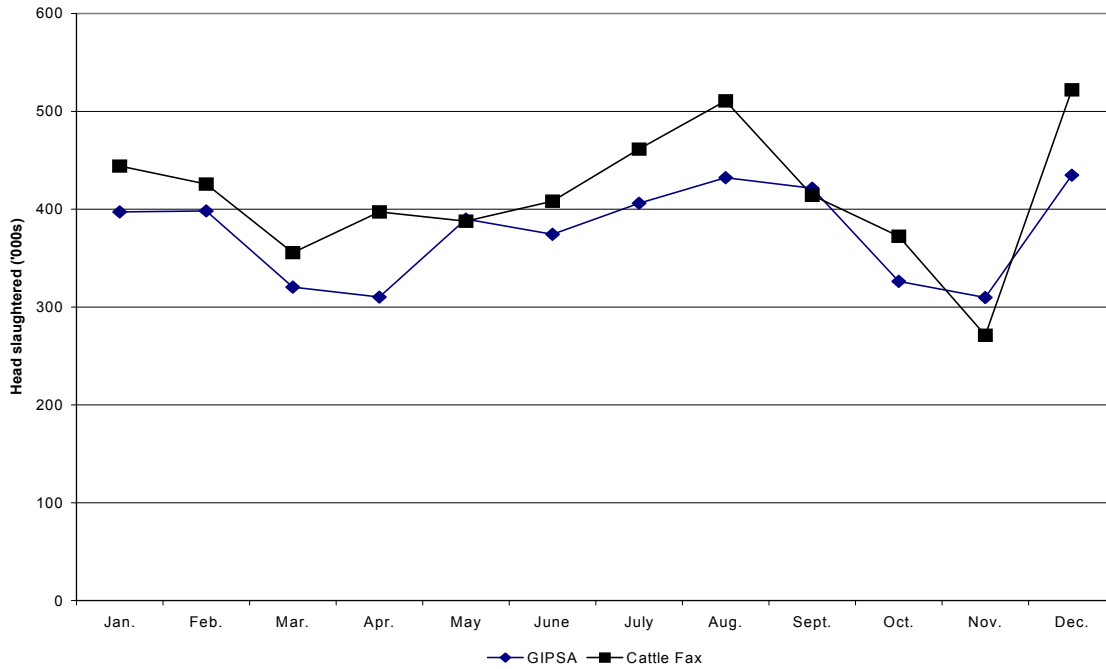
The explanation for the differences between GIPSA's captive supply statistics and Cattle-Fax's captive supply statistics is essentially the same as the explanation for differences between those of GIPSA and AMS. Cattle-Fax collects information from member surveys, while GIPSA develops its information from reports packers are required to submit to the Agency. Cattle-Fax measures captive supply from the feedlot side includes cattle that are shipped for slaughter to packing plants outside the region. GIPSA measures captive supply from the packer side and will pick up cattle that are shipped into the region for slaughter from feedlots outside the region. Finally, GIPSA and Cattle-Fax use different captive supply categories with Cattle-Fax using pricing methods and GIPSA procurement methods. Despite these differences, however, the two measures are related. This is especially apparent when viewing their monthly patterns (graph 5). GIPSA's (adjusted) monthly captive supply percentage and Cattle-Fax's monthly captive supply percentage followed similar paths in 1999.

Table 6. Comparison of Cattle-Fax's Contract and Formula Priced Cattle Shipments to GIPSA's Forward Contracted and Marketing Agreement Slaughter Reported by Plants Operated in Cattle-Fax Regions by Largest 15 Packers, 1999

	Colorado and Nebraska		Kansas		Texas Panhandle		Total	
	Cattle-Fax	GIPSA	Cattle-Fax	GIPSA	Cattle-Fax	GIPSA	Cattle-Fax	GIPSA
January	143,350	69,137	152,300	185,682	148,600	142,520	444,250	397,339
February	149,250	77,815	120,300	160,924	157,200	159,706	425,750	398,445
March	126,875	52,501	83,300	111,087	145,800	156,859	355,675	320,447
April	135,240	52,037	112,000	122,795	150,100	135,385	397,340	310,217
May	139,200	60,961	123,400	190,646	125,100	138,341	387,700	389,948
June	162,950	85,175	128,100	151,909	117,100	137,455	408,150	374,539
July	131,600	73,978	144,700	171,069	185,200	161,145	461,500	406,192
August	150,500	70,687	153,800	167,670	206,500	194,025	510,800	432,382
September	120,200	66,113	121,000	156,221	173,100	199,166	414,300	421,500
October	110,800	52,493	115,100	143,512	146,600	130,215	372,500	326,220
November	85,900	54,214	96,900	133,588	88,400	122,103	271,200	309,905
December	155,600	75,360	211,900	190,555	154,600	168,912	522,100	434,827
Total	1,611,465	790,471	1,562,500	1,885,658	1,798,300	1,845,832	4,971,275	4,521,961

Source: Packer annual reports and Cattle-Fax publications.

Graph 5. Cattle-Fax Total Captive Supply and GIPSA's Captive Supply Statistics for Largest 15 Packers in Cattle-Fax's Reporting Area, 1999¹



¹ To ensure a like-with-like comparison, packer fed cattle are excluded from GIPSA's captive supply statistics depicted here.

Source: Packer annual reports and Cattle-Fax publications.

Cattle-Fax does not estimate total shipments of cattle in its reporting regions. Therefore, comparisons to GIPSA's captive supply statistics as a percentage of total slaughter are unavailable. However, in all other respects, Cattle-Fax's captive supply statistics reflect volume of captive supply similar to GIPSA's.

Kansas Livestock Association Captive Supply Statistics

The Kansas Livestock Association (KLA), a trade association representing producers involved in all segments of the livestock industry including cow-calf production, cattle feeding, swine, dairy and sheep, currently reports no captive cattle supply statistic, but did survey its membership twice during 1995 on the extent of captive supply shipments in Kansas. KLA conducted the surveys as a member service to aid in a better understanding of the use of captive supply.

In its first survey, KLA defined three categories of shipments as captive supply: cattle that were packer owned, forward contracted, and sold on a formula basis. Information to develop the first survey, covering the period February 27, 1995 to April 22, 1995, was provided by 106 Kansas feedlots that reported shipping 517,647 head of cattle to IBP, inc., Excel Corporation, ConAgra Beef Company, and Farmland National Beef during the period. Feedlot operators reported that 29 percent of the 517,647 head were procured by packers through captive supply arrangements.

KLA modified its definition of captive supply in its second survey to also include “cash sales picked up in more than 7 days.” KLA conducted the second survey, an extension of the first, for the period February 27, 1995 to October 31, 1995. KLA asked its members to report cash and captive supply movement during the nine months covered by the survey, with cash movement identified as “cash sales picked up in 7 days,” and captive defined as “cash sales picked up in more than 7 days, packer owned, forward contracted, and formula sales.” Feedlot operators reported that captive supply movement was 417,420 head, or 22.8 percent of the total 1,827,099 head shipped during the period (Table 7). Captive shipments to the largest four packers were equivalent to 4.4 percent, 17.3 percent, 22.4 percent, and 32.4 percent of the feedlots’ shipments to the four largest packers, while captive shipments to all other packers averaged 38.1 percent of their total shipments.

Table 7. Kansas Livestock Association Captive Supply Survey, Feb. 27, 1995 through Oct. 31, 1995

Cash, < 7 days	Cash, > 7days	Packer-owned	Forward Contracted	Formula Sales	Total
Number of Head					
1,409,679	92,638	19,973	100,300	204,509	1,827,099
Percent of Total					
77.2	5.1	1.1	5.5	11.1	100.0

Source: Kansas Livestock Association publications.

Data limitations preclude a direct comparison of KLA’s captive supply statistics with GIPSA’s captive supply statistics. However, there are important similarities and differences between the two captive supply measures that deserve discussion. KLA’s method of computing captive supply is similar to GIPSA’s in that both measure captive supply according to distinct procurement categories. They differ in their category definitions because KLA included cash sales picked up in more than 7 days in their definition of captive supply, while GIPSA does not. Finally, they also differ in that KLA obtained its information from voluntary reports by Kansas feedlots while GIPSA obtains its information from packers who report to GIPSA on a mandatory basis.

Nebraska Cattlemen Captive Supply Statistics

Nebraska Cattlemen, a producer organization representing Nebraska cattle producers, has been reporting captive supplies to its members since 1991. Nebraska Cattlemen collects and reports monthly data on captive supplies from its members who participate in the organization’s Market Reporting Service (figure 3). Nebraska Cattlemen’s fee-based Market Reporting Service currently represents over 140 feedlots with a combined capacity in excess of 650,000 head, with member feedlots ranging in size from 500 to 45,000 head.

Figure 3. Nebraska Cattlemen's Market Reporting Service

Market Reporting Service						
Cattle on Feed Report - December 1, 1999						
	1999 (Head)	1998 (Head)	99/98 (Percent)		5 yr avg. (Head)	99/5yr (Percent)
Feedlot Capacity	500,000	500,000	100%		500,000	100%
Inventory, Dec 1	356,620	361,061	99%	Dec 1 Inv.	318,038	112%
Nov Placements	61,354	62,700	98%	Nov Plcd.	51,732	119%
Nov Marketings	97,768	92,935	105%	Nov Mktd.	96,251	102%
Forward Sold, Dec*	7,182	5,280	136%		n/a	n/a
Nov Disappearances	598	496	121%	Nov O.D.	940	64%
Marketing Intentions						
December	101,133	90,034	112%	December	97,140	104%
January	70,496	74,618	94%	January	69,943	101%
February	62,175	68,545	91%	February	61,162	102%
After Feb 28th	122,816	127,865	96%	After Feb 28th	89,792	137%
Total	356,620	361,061	99%	Total	318,038	112%
Packer Captive Supplies						
December	10,972	9,779	112%	December	6,046	181%
January	7,275	8,133	89%	January	4,685	155%
February	6,864	5,982	115%	February	4,200	163%
After February 28th	13,860	13,500	103%	After Feb 28th	6,054	229%
Total	38,971	37,395	104%	Total	20,984	186%
Steer Inventory						
<600#	1,914	6,753	28%	<600	2,064	93%
6-700	3,762	6,817	55%	6-700	3,481	108%
7-800	10,010	12,681	79%	7-800	7,580	132%
8-900	20,307	26,191	78%	8-900	18,769	108%
9-1000	24,069	28,859	83%	9-1000	27,660	87%
10-1100	31,806	42,011	76%	10-1100	38,985	82%
11-1200	52,463	56,646	93%	11-1200	56,981	92%
>1200#	36,256	40,481	90%	>1200#	35,750	101%
Total	180,588	220,439	82%	Total	191,269	94%
Heifer Inventory						
<600#	4,594	5,026	91%	<600#	3,114	148%
6-700	9,602	7,735	124%	6-700	6,162	156%
7-800	16,996	16,563	103%	7-800	14,147	120%
8-900	26,089	23,247	112%	8-900	20,891	125%
9-1000	38,851	28,835	135%	9-1000	28,462	136%
10-1100	36,929	31,168	118%	10-1100	33,093	112%
11-1200	37,949	25,330	150%	11-1200	18,387	206%
>1200#	4,156	1,517	274%	>1200#	1,527	272%
Total	175,167	139,420	126%	Total	125,785	139%

* Cattle sold in the previous month to be shipped this month.

Nebraska Cattlemen defines captive supply as cattle not purchased on a traditional bid and offer basis. Captive supplies are reported as the number of head sold relative to a base 500,000 head feedlot capacity in Nebraska and not as a percentage of the total number sold. Nebraska Cattlemen also makes comparisons to the previous year and the previous 5-year average. Nebraska Cattlemen believes the sample has a bias towards cash marketings, thus understating captive supply shipments from Nebraska feedlots.

Because feedlots report voluntarily, the reporting sample changes over the course of a year, and Nebraska Cattlemen adjusts for this by standardizing reporting to a base 500,000 head feedlot capacity. If survey results generate less reporting than a 500,000 head base, results are adjusted upward to that target; conversely, if results generate more reporting than a 500,000 head base, results are adjusted downward.

Limited survey participation and a perceived survey bias towards cash marketings precludes meaningful comparisons with GIPSA’s data for the top 15 packers operating in Nebraska Cattlemen’s market area, but two differences should be noted. First, Nebraska defines captive supply based on pricing mechanisms while GIPSA defines captive supply based on the procurement method. Second, GIPSA’s captive supply statistics obtained from mandatory packer reporting in Nebraska are far greater than Nebraska Cattlemen’s captive supply statistics based on responses from their members and standardized to a 500,000 head feedlot capacity (Table 8).¹²

Table 8. Captive Supply in Nebraska Reported by Nebraska Cattlemen and by GIPSA, 1999

Month	Nebraska Cattlemen	GIPSA
	head	head
January	1,927	48,089
February	2,392	46,545
March	2,767	24,964
April	3,752	24,919
May	4,917	35,079
June	6,505	56,184
July	2,669	34,908
August	5,624	36,112
September	4,603	37,112
October	2,887	26,396
November	7,533	29,905
December	10,972	48,303
Total	56,548	449,516

Source: Nebraska Cattlemen and GIPSA

Texas Cattle Feeders Association Captive Supply Statistics

The Texas Cattle Feeders Association (TCFA) represents cattle feeders in Texas, Oklahoma, and New Mexico, and provides its members with a series of captive supply estimates. TCFA defines captive supply as cattle procured through formula agreements or forward contracts. It reports to its members on aggregated formula sale shipments in the Texas, Oklahoma, and New Mexico region on a weekly basis and on aggregated formula and forward contract sale shipments in the Texas, Oklahoma, and New Mexico region on a monthly basis.

TCFA calls its member feedlots every Monday to obtain information about formula shipments scheduled for the coming week. TCFA defines formula shipments as “cattle committed to a

¹² Cattle procurement with forward contracts and marketing agreements accounted for 95.9 percent of total use of captive supplies in Nebraska by plants reporting use of captive supplies to GIPSA in 1999.

packer in advance of a price”. TCFA specifies no time period for “commitments in advance of a price” beyond those formula sales scheduled to be shipped in the current week. TCFA also conducts a monthly contract cattle survey, and provides its membership with estimates of contracted sales three months into the future. The monthly contracted estimates are combined with TCFA’s weekly formula shipments and estimated cash marketings in a monthly report to members. The report also provides an estimate of total marketings developed from National Agricultural Statistic Service’s monthly *Cattle on Feed* reports. A summary of TCFA’s monthly reports for 1999 is shown in table 9.

Table 9. Monthly Total Marketings and Shipments by Type as Reported by Texas Cattle Feeders Association, Texas Cattle Feeders Association Trade Area, 1999¹

Month	Total Marketings		Shipments by Type Reported by TCFA			
	NASS	TCFA	Cash Marketings	Formula Shipments	Forward Contracted	Total Captive Supply ²
			Head			
January	571,000	504,760	362,466	136,337	5,957	142,294
February	524,000	445,196	285,803	148,698	10,695	159,393
March	647,000	446,643	261,474	170,045	15,124	185,169
April	663,000	655,719	475,937	120,199	59,583	179,782
May	610,000	463,343	304,227	146,154	12,962	159,116
June	605,000	401,592	264,277	130,128	7,187	137,315
July	605,000	518,296	342,040	172,025	4,231	176,256
August	604,000	483,086	223,388	254,656	5,042	259,698
September	647,000	486,947	304,981	178,553	3,413	181,966
October	619,000	551,051	398,380	147,450	5,221	152,671
November	535,000	332,074	174,260	155,809	2,005	157,814
December	485,000	366,344	232,708	129,151	4,485	133,636
Total	7,115,000	5,655,051	3,629,941	1,889,205	135,905	2,025,110

¹ Texas, Oklahoma, and New Mexico.

² Formula shipments plus forward contracted cattle.

Source: Texas Cattle Feeders Association.

For all of 1999, TCFA’s statistics show member feedlots shipped 2,025,110 head using formula pricing or forward contracts. By comparison, plants in Texas, Oklahoma and New Mexico operated by the largest 15 firms that reported to GIPSA purchased 1,845,832, head with forward contracts or marketing agreements (Table 10 and Graph 6). TCFA’s members reported 35.8 percent of their cattle shipments to packers consisted of captive supply. The largest 15 packers reported to GIPSA that 35.6 percent of the cattle they purchased for their plants in the states surveyed by TCFA were procured using captive supply procurement methods excluding packer feeding. On a monthly basis, GIPSA’s statistics were higher than TCFA’s in six months and lower in the other six.

Table 10. Comparison of TCFA's and GIPSA's Captive Supply Statistics, 1999

	Total Captive		Percent Captive	
	TCFA ¹ head	GIPSA ²	TCFA ³ Percent	GIPSA ⁴
January	142,294	142,520	28.2	34.9
February	159,393	159,706	35.8	38.8
March	185,169	156,859	41.5	35.3
April	179,782	135,385	27.4	34.0
May	159,116	138,341	34.3	29.3
June	137,315	137,455	34.2	29.5
July	176,256	161,145	34.0	39.5
August	259,698	194,025	53.8	42.0
September	181,966	199,166	37.4	42.3
October	152,671	130,215	27.7	31.2
November	157,814	122,103	47.5	30.0
December	133,636	168,912	36.5	40.6
Total	2,025,110	1,845,832	35.8	35.6

1 Formula priced and forward contract shipments.

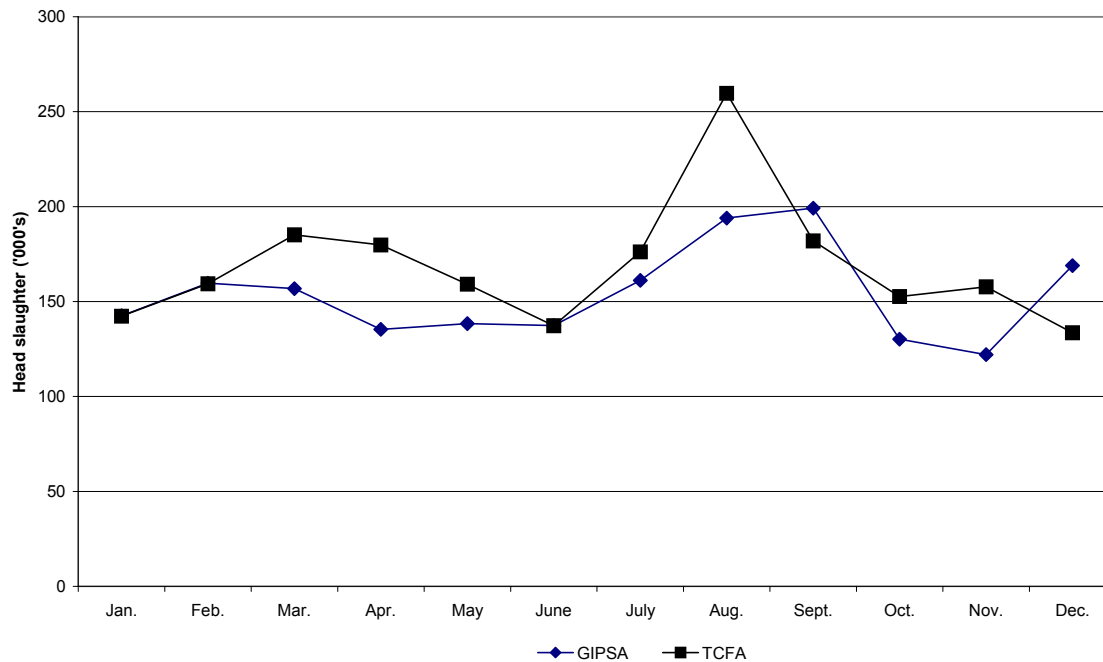
2 Purchased using forward contracts or marketing agreements.

3 Percent of total shipments reported by TCFA.

4 Percent of total slaughter by plants reporting to GIPSA.

Although TCFA and GIPSA measure captive supply arrangements from the feedlot and packer side, respectively, TCFA and GIPSA both define captive supply by procurement method. When GIPSA's captive supply statistics are adjusted by removing packer fed cattle to make them comparable to TCFA's captive supply statistics, TCFA and GIPSA report similar levels of captive supply as a percentage of total marketings and total slaughter, respectively. Without this adjustment, GIPSA's captive supply statistics would include packer fed cattle and would be greater both in number and in percentage of total slaughter terms than TCFA's captive supply statistics.

Graph 6. Texas Cattle Feeders Association (TCFA) Total Captive Supply and GIPSA's Captive Supply Statistics for Largest 15 Packers in TCFA's Reporting Area, 1999



Source: Packer Annual Reports and TCFA.

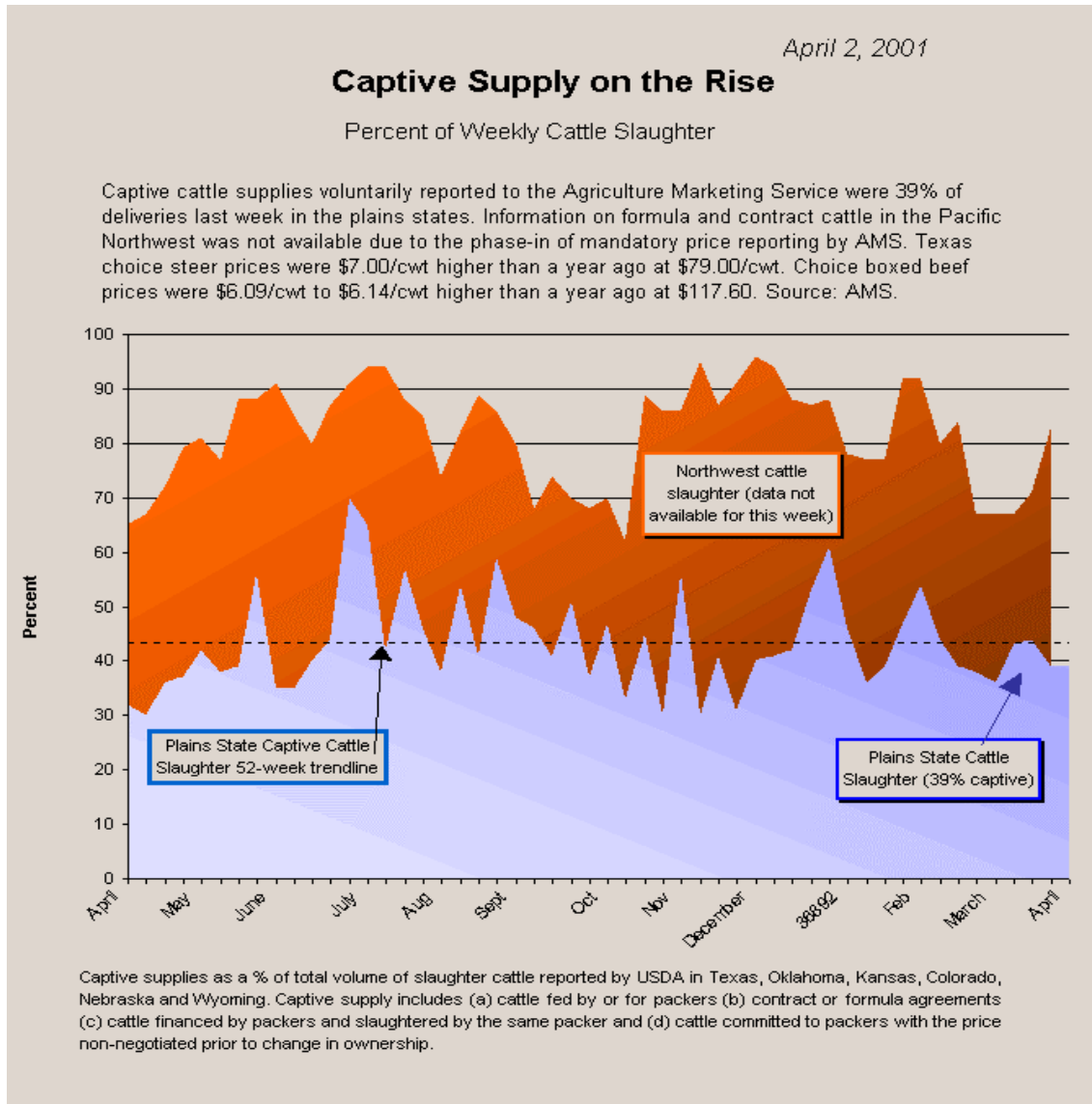
Western Organization of Resource Councils

The Western Organization of Resource Councils (WORC) publishes a captive supply graph on its website. Until recently, the graph reported WORC's captive supply through April 2, 2001 (Figure 4), the date when the availability of the AMS data used by WORC to develop the graph ended. WORC's current website reports the same graph through September 14, 2000.

WORC's "Plains States Captive Supply" ranged from approximately 32 percent to 68 percent over the twelve months from April 2000 to April 2001, the period covered by the graph currently posted on WORC's web page. WORC's "Northwest cattle slaughter" showed captive supply in the Northwest ranging from 30 percent to 95 percent over the same period.

Since "Plains States Captive Supply" is AMS's additional movement, the source, geographic scope, reporting coverage, and reporting intent represented by WORC's "Plains States Captive Supply" are addressed in the previous section on AMS's additional movement. So, too, are comparisons of WORC's captive supply measurement (i.e., AMS's additional movement) for the Plains States with GIPSA's captive supply statistics for the Plains States. (See pp. 13-16.)

Figure 4. WORC’s Graph of Captive Supply



WORC’s graphic representation of “Northwest cattle slaughter” was based on AMS’s Market News report from Moses Lake, Washington (AMS’s ML LS135). Prior to USDA’s implementation of mandatory price reporting, AMS’s Moses Lake, Washington Market News office reported weekly cattle slaughter sales in Washington, Oregon, and Idaho. AMS reported “direct sales” and “formula sales.” WORC’s graph used AMS’s formula sales as a percent of AMS’s total sales to depict captive supply in the Northwest. AMS, however, never reported Northwest formula sales as a percentage of total sales in its additional movement series. The Moses Lake series for 1999 is shown in Table 11.

WORC’s use of the Moses Lake formula sales data in combination with AMS’s Plain States’ Additional Movement to produce a graph entitled “Captive Supply on the Rise” significantly misrepresents the actual level of captive supply on a national basis, especially when the resulting

graph portrays captive supply frequently exceeding 90 percent. GIPSA data suggest WORC's graph also misrepresents the actual level of captive supply in the Pacific Northwest.

The WORC graph in Figure 4 shows Plains States captive supply at 39 percent. AMS data on captive supply in the Plain States, which account for 79 percent of the national steer and heifer slaughter, is more representative of the national captive supply than is AMS's Moses Lake data, which captures sales in states accounting for only 4 percent of the national steer and heifer slaughter.

Table 11. Slaughter Sales for Moses Lake, Washington, 1999

	Direct Sales	Formula Sales	Total	% Formula
January	15,400	101,800	117,200	86.9
February	24,900	114,350	139,250	82.1
March	34,380	115,330	149,710	77.0
April	32,570	97,470	130,040	75.0
May	18,500	80,300	98,800	81.3
June	13,440	80,000	93,440	85.6
July	18,660	112,200	130,860	85.7
August	27,660	110,040	137,700	79.9
September	54,740	96,210	150,950	63.7
October	39,350	112,600	151,950	74.1
November	22,600	128,100	150,700	85.0
December	16,100	125,450	141,550	88.6
Total	318,300	1,273,850	1,592,150	80.0

Source: USDA, AMS, 1999

Confidentiality restrictions preclude publishing comparisons of the Moses Lake series with data on the use of captive supply by plants operated by the largest 15 firms in Washington, Oregon, and Idaho that report to GIPSA. Only three plants operate in the region, and one packer owns two of them. However, reporting packers in the region reported use of captive supply considerably below the number of cattle sold through formula sales as reported in AMS's Moses Lake data in 1999.

Washington State slaughters more fed cattle than it produces, which is typical in the Pacific Northwest in general. Accordingly, Washington State imports a relatively high percentage of its slaughter from Canada, and procures a significant portion of its domestic slaughter through captive supply arrangements.

AMS's Moses Lake data is not broken down by the class of cattle selling in the Pacific Northwest, but a comparison of federally inspected slaughter in the Pacific Northwest with AMS's Moses Lake data suggests the Moses Lake data captures sales of cows, bulls, and possibly calves and feeder cattle in addition to finished steers and heifers. AMS's report of Moses Lake sales of 1,592,150 head in 1999 was 32 percent, or 384,000 head, larger than the total steer and heifer slaughter in Washington, Oregon, and Idaho during the year.

Section 4 – Verification of GIPSA’s Captive Supply Statistics

GIPSA’s captive supply statistics for cattle are computed from summary information reported by packers that purchase at least \$500,000 of livestock and slaughter more than 100,000 steers and heifers during the reporting year. Packers meeting these thresholds are required to file annual reports with GIPSA with summary procurement information. In their annual reports, packers are required to identify the total number of head slaughtered and how the cattle were procured. Since 1988, GIPSA has required packers to report the number of slaughtered cattle that were “packer fed” or purchased through “contracts,” “marketing agreements,” or “other” arrangements in which cattle were committed to the packer more than two weeks in advance of slaughter. From this summary information, GIPSA computes the percentage of cattle that were “packer fed” or procured using “forward contracts or marketing agreements” as a percentage of total slaughter by the largest 4 and largest 15 packers that purchased steers and heifers. These captive supply statistics are published annually in GIPSA’s Packers and Stockyards Statistical Report and are commonly called “GIPSA’s captive supply statistics.”

GIPSA’s captive supply statistics are only as accurate as the information provided by packers in their annual reports. To verify the accuracy of GIPSA’s captive supply statistics and to ensure that the packers were categorizing the manner in which they procured cattle consistently with GIPSA’s captive supply definitions, GIPSA 1) contacted the largest 15 packers that purchased steers and heifers in 1999 to determine how they interpreted GIPSA’s procurement category definitions when they completed the GIPSA packer annual report form and 2) compared the summary information provided on annual reports submitted by the largest 4 packers that purchased steers and heifers in 1999 with the underlying transactions records.

Packer’s Stated Understanding of Procurement Categories

As GIPSA attempted to verify the numbers in GIPSA’s captive supply statistics, it became clear that the vagueness of some of the captive supply category definitions in the report led packers to misunderstand and misapply some of the reporting criteria. As a consequence, GIPSA contacted the largest 15 packers that purchased steers and heifers in 1999 to determine how they interpreted GIPSA’s procurement category definitions when they completed the GIPSA packer annual report form.

The marketing agreement category in GIPSA’s annual report form is defined as an “agreement to purchase livestock at a future date with price to be determined at or after the time of slaughter.” Packers generally interpret marketing agreements to be formula sales. A formula sale generally sets a final price for cattle based on the cattle’s carcass quality and yield grades, which are typically assigned by a USDA inspector after slaughter. Because packers understood the marketing agreement category to be formula pricing, some packers did not report cattle procured under marketing agreements when the marketing agreement did not price cattle using a formula. Further, some packers reported packer fed cattle in the marketing agreement category because they were priced under a formula.

The “packer fed” category in GIPSA’s annual report form is defined as “all company owned cattle fed for slaughter whether custom fed or fed in a company owned or operated lot and any partnership, joint venture, or other feeding arrangement.” In verifying GIPSA’s captive supply numbers, GIPSA found that packers interpreted company owned cattle in different ways. One packer reported cattle sold to other packers as packer fed cattle, stating “GIPSA’s questionnaire asks packers for ‘livestock fed,’ not ‘livestock fed for slaughter by reporting packer.’” Packers variously defined packer fed as “packer-owned;” “packer-owned or third party cattle fed in company feedlot;” “packer-owned and custom fed;” or “packer-owned and controlled,” where “controlled” meant full packer control over the feeding regimen and marketing date.

Packers interpreted and reported joint venture cattle, a subcategory of “packer fed” cattle, in various ways, as well. Three packers said jointly owned cattle belonged in the packer fed category. One said they did not belong in the packer fed category. Four said it would depend on the particulars of the joint ownership agreement. For example, one of the four packers stated that if its ownership share of the cattle was more than 50 percent, the cattle would be reported to GIPSA as packer fed. If its ownership share was less than 50 percent, the cattle would be a joint venture and the packer would seek guidance from GIPSA for proper reporting. The remaining eight said one of two things: the question was not relevant because they had no jointly owned cattle, or they had no jointly owned or packer owned cattle and remained silent as to the appropriate reporting category. Three packers said that they reported all jointly owned cattle as packer fed. One said it reported the cattle in which it had an interest but the particulars of the agreement determined the procurement category to which the packer assigned the cattle. The remaining 11 packers either stated that they owned no joint venture cattle or did not mention joint venture cattle.

The contract category in GIPSA’s annual report form is defined as “fixed price or basis contract.” Packers interpreted contracts to be basis contracts, which generally derive prices from the Chicago Mercantile Exchange (CME). Packers’ understanding of the GIPSA’s contract category did not differ markedly from GIPSA’s annual report form definition.

Verification of GIPSA Annual Report Submissions through Transactions Records

As noted, GIPSA captive supply statistics are only as reliable as the packer information from which they are computed. GIPSA compared the summary information provided in 1999 annual reports submitted by the largest 4 packers that purchase steers and heifers with their 1999 cattle transactions records (the packers will be referred to, arbitrarily, as Packer One through Packer Four). In doing so, GIPSA also used the packers’ descriptions of those transactions records. If the packer described a class of cattle transactions as forward or basis contract transactions, the transactions were included in the contract category. If the packer described a class of cattle transactions as marketing agreement transactions, the transactions were included in the marketing agreement category. If the packer reported an ownership interest in the cattle or reported procurement from affiliate or subsidiary feedlots through a marketing agreement or forward contract, the cattle were included as packer fed. Packers report either on a fiscal or calendar year basis on their annual reports. Three packers reported on a fiscal year and fiscal month basis. One packer reported on a fiscal year basis and, depending on the plant, on either a

fiscal or calendar month basis. The packers did not use identical fiscal years and months. Tabulations and graphs of these comparisons are presented later.

GIPSA replicated the 1999 annual report submission of Packer One from the transaction records for 1999 with less than a one percent discrepancy given the descriptions of the records. When GIPSA informed Packer One of the small discrepancy, Packer One stated that the transactions data given to GIPSA were not the data used to generate the submission. Packer One had modified the data after submitting its annual report to GIPSA.

GIPSA could not replicate Packer Two's annual report submissions for 1999 from the transaction records for 1999. GIPSA contacted Packer Two for further clarification of the transactions records and their descriptions. GIPSA learned that Packer Two pro-rated some joint venture cattle to packer fed and marketing agreement categories according to the packer's ownership share. In addition, Packer Two reported cattle that were fed at affiliate feedlots as cattle procured through marketing agreements. GIPSA then attempted to verify Packer Two's submissions based on transaction records, the record descriptions, and the Packer Two's clarification. The submissions could be verified to within a one percent discrepancy. As with Packer One, Packer Two modified the data after submitting its annual report to GIPSA.

GIPSA replicated Packer Three's annual report submissions for 1999 with less than a one percent discrepancy given the packer's description of how the submissions were computed. However, Packer Three's descriptions of transactions were often at odds with its description of the method of computation. For example, Packer Three described some transactions as marketing agreements but did not include them as marketing agreement transactions in its annual report submission. Packer Three asserted that it did not report the cattle as procured through a marketing agreement because the marketing agreements in question did not fit the definition of marketing agreement in GIPSA's annual report form. For other transactions, Packer Three had an ownership interest in the cattle while they were fed but reported the cattle in the marketing agreement category and not as packer fed. Packer Three offered two explanations for this grouping: first, the cattle fit both marketing agreement and packer fed categories, and Packer Three chose to report them in the marketing agreement category; second, Packer Three believed its ownership interest did not make the cattle packer-owned or part of a joint venture, but the agreement did establish that the cattle were priced under a formula so they were marketing agreement cattle.

GIPSA could not replicate Packer Four's annual report submission for 1999. GIPSA contacted Packer Four for further clarification of the transactions records and their descriptions. GIPSA learned that Packer Four had made substantial clerical errors in compiling the submission. In addition, some joint venture cattle were double counted in both packer fed and marketing agreement categories. Finally, Packer Four did not assign some cattle to the marketing agreement category because Packer Four stated that, prior to preparing its 1999 report, a GIPSA field employee instructed it to include only cattle procured under written marketing agreements and the agreements in question were oral agreements. Packer Four's total number of reported marketing agreement cattle was smaller than if the packer had also reported the cattle procured through oral marketing agreements.

As originally submitted, the largest four packers reported to GIPSA captive supply procurement totaling 6,030,106 head, equivalent to 25.2 percent of their combined steer and heifer slaughter. GIPSA's revised estimates for the largest four packers identify 7,710,143 head purchased through captive supply arrangements, equivalent to 32.3 percent of their slaughter. In total, GIPSA's revised captive supply estimate is 1,680,037 head greater than that originally reported in the largest four packers' annual report submissions. GIPSA also used the packers' records to estimate captive supply reporting on a calendar year basis for 1999, as opposed to the combined calendar and fiscal reporting submitted by the packers. GIPSA's calendar year estimate for captive supply was 7,860,345 head of cattle and about 32.4 percent of the packers' combined steer and heifer slaughter.

In the course of verifying the largest four packers' reporting of captive supply and of speaking with the largest 15 packers about their understanding of GIPSA's captive supply categories, GIPSA discovered no evidence suggesting that the packers' errors in reporting captive supply were other than good-faith errors arising from the vagueness of GIPSA category definitions. In section 5 of this report, GIPSA's actions to ensure that such errors do not arise again are discussed.

Table 12. Largest 4 Packers' 1999 Captive Supply¹ Reporting to GIPSA, GIPSA's Replication of Packers' Reporting Developed From Packers' Transactions Records, and GIPSA's Estimate of What Packers Should Have Reported

	Submitted by Packers in Annual Reports ²	Replicated from Packers' Transactions Records ²	GIPSA's Estimate from Packers' Transactions Records ²	GIPSA's Calendar Month Estimate from Packers' Transactions Records	Calculated by GIPSA from Data Submitted in Packers' Annual Reports ²	Calculated by GIPSA from Replication using Packers' Transactions Records ²	GIPSA's Estimate from Packers' Transactions Records ²	GIPSA's Calendar Month Estimate from Packers' Transactions Records
			Head		Percentage of Largest 4 Packers' Steer and Heifer Slaughter			
January	528,008	390,067	483,516	620,476	28.0	24.8	30.7	31.6
February	540,238	507,450	651,790	576,475	28.2	24.9	32.0	31.7
March	451,585	397,771	539,815	541,990	22.0	20.3	27.6	26.7
April	417,256	476,390	594,071	671,892	23.2	26.2	32.7	33.7
May	498,859	516,920	663,940	594,157	23.8	22.8	29.3	29.1
June	498,923	516,320	667,183	683,884	23.4	24.1	31.2	31.3
July	539,462	528,721	668,747	721,697	28.3	27.0	34.1	34.0
August	581,773	591,085	782,511	770,570	27.8	27.0	35.7	35.9
September	550,264	545,620	724,051	694,533	25.3	25.5	33.9	33.0
October	442,573	442,430	590,884	607,791	22.4	22.3	29.8	29.8
November	429,499	432,149	604,611	620,306	22.3	21.9	30.6	32.6
December	551,668	553,006	735,292	752,840	28.0	30.1	40.0	40.1
Total ³	6,030,106	5,901,662	7,710,143	7,860,345	25.2	24.7	32.3	32.4

¹ Packer fed, Contract, Marketing Agreement and Other cattle.

² Based on reporting packers' fiscal months.

³ Months may not sum to Total because some transactions had missing sales dates but known sales year.

Table 13. Largest 4 Packers' 1999 Reporting of Forward Contract and Marketing Agreement Procurement to GIPSA, GIPSA's Replication of Packers' Reporting Developed From Packers' Transactions Records, and GIPSA's Estimate of What Packers Should Have Reported

	Forward Contract				Marketing Agreement			
	Submitted by Packers ¹	Replicated from Packers' Transactions Records ¹	GIPSA's Estimate from Packers' Transactions Records ¹	GIPSA's Calendar Month Estimate from Packers' Transactions Records	Submitted by Packers ¹	Replicated from Packers' Transactions Records ¹	GIPSA's Estimate from Packers' Transactions Records ¹	GIPSA's Calendar Month Estimate from Packers' Transactions Records
January	89,147	36,839	36,839	50,417	349,893	298,171	310,245	391,753
February	72,033	69,288	69,288	61,900	368,764	369,097	395,566	360,048
March	72,997	47,228	47,228	46,172	295,555	293,536	362,918	363,150
April	96,663	148,973	148,973	184,470	258,114	268,560	335,747	372,533
May	98,773	102,206	102,206	79,950	336,520	337,806	433,283	395,990
June	86,163	103,742	103,742	94,049	337,002	336,092	406,733	420,107
July	42,007	28,081	28,081	25,669	409,603	412,462	436,178	464,690
August	43,171	47,016	47,016	54,275	441,421	439,909	472,152	475,140
September	56,417	40,753	40,753	29,703	422,651	425,272	466,086	449,535
October	43,525	41,250	41,250	47,494	335,683	339,947	401,119	408,748
November	55,163	40,732	40,732	44,140	314,991	324,677	416,564	432,514
December	91,432	74,558	74,558	72,433	407,588	407,417	479,402	481,974
Total ²	847,489	780,664	780,664	790,672	4,277,783	4,254,906	4,917,051	5,280,367

¹ Based on reporting packers' fiscal months.

² Months may not sum to Total because some transactions had missing sales dates but known sales year.

Table 14. Largest 4 Packers' 1999 Reporting of Packer Fed and "Other" Forward Procurement Commitments¹ to GIPSA, GIPSA's Replication of Packers' Reporting Developed From Packers' Transactions Records, and GIPSA's Estimate of What Packers Should Have Reported

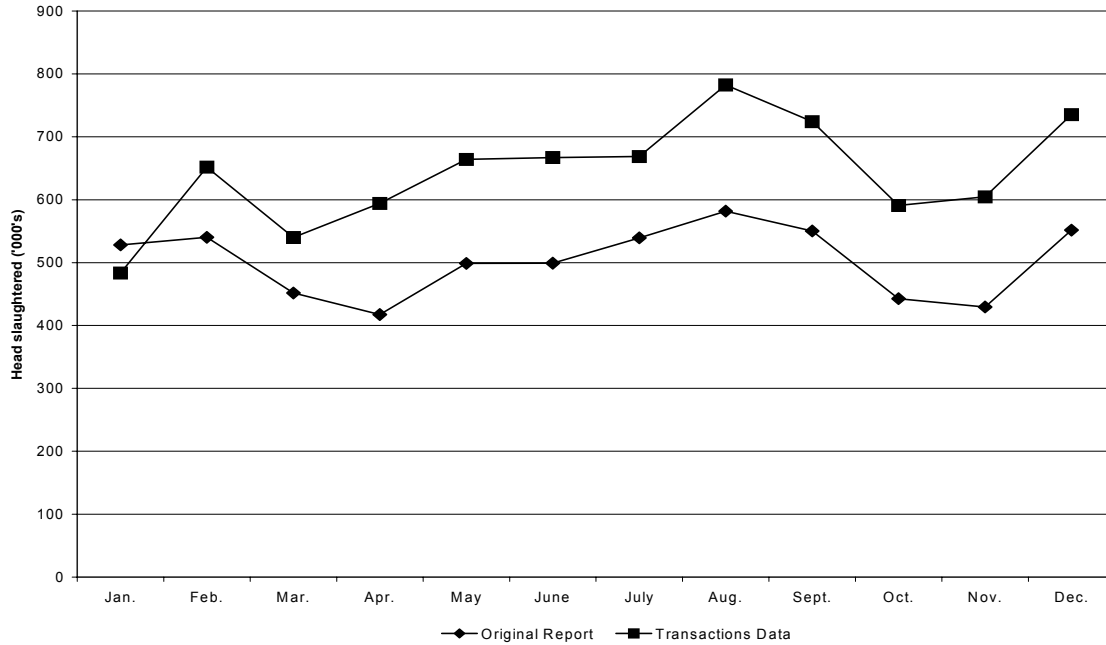
	Packer Fed				"Other" ¹			
	Submitted by Packers ²	Replicated from Packers' Transactions Records ²	GIPSA's Estimate from Packers' Transactions Records ²	GIPSA's Calendar Month Estimate from Packers' Transactions Records	Submitted by Packers ²	Replicated from Packers' Transactions Records ²	GIPSA's Estimate from Packers' Transactions Records ²	GIPSA's Calendar Month Estimate from Packers' Transactions Records
January	86,928	53,560	136,178	178,052	2,040	1,498	254	254
February	95,944	66,526	184,712	152,303	3,498	2,540	2,224	2,224
March	80,879	55,213	125,058	128,057	2,155	1,795	4,611	4,611
April	61,046	57,416	109,146	114,684	1,434	1,441	205	205
May	62,959	74,740	127,755	117,521	608	2,169	696	696
June	73,929	74,246	156,228	169,248	1,829	2,241	480	480
July	82,786	84,564	203,318	229,929	5,066	3,615	1,170	1,409
August	91,994	102,280	262,076	240,127	5,187	1,881	1,267	1,028
September	66,936	77,549	215,679	213,064	4,260	2,046	1,533	2,231
October	60,043	57,931	146,682	150,358	3,322	3,303	1,833	1,191
November	57,207	64,847	145,782	142,175	2,138	1,893	1,533	1,477
December	50,205	66,293	180,336	196,734	2,443	4,738	996	1,699
Total ³	870,855	836,736	1,995,626	2,034,928	33,980	29,356	16,802	17,505

¹ Other procurement over two weeks in advance of slaughter and not reported as forward contract, marketing agreement or packer fed.

² Based on reporting packers' fiscal months.

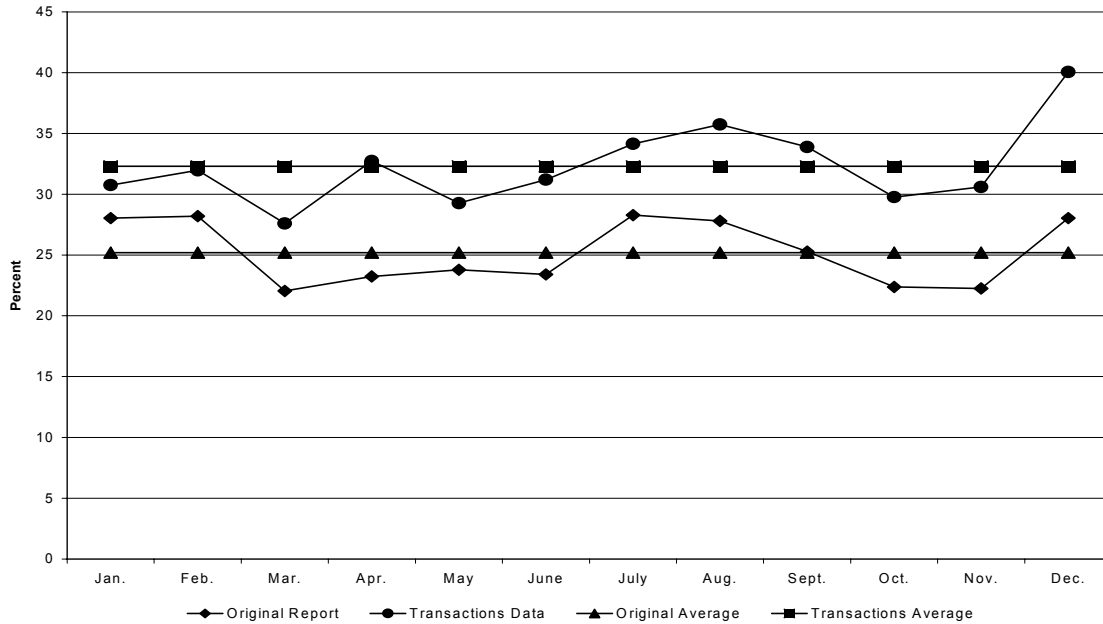
³ Months will not sum to Total because some transactions had missing sales dates but known sales year.

Graph 7. Comparison of GIPSA's Originally Reported Captive Supply and GIPSA's Estimate of Captive Supply from Transactions Data, 1999



Source: Packer Annual Reports and GIPSA estimates from packer Transactions data.

Graph 8. Comparison of GIPSA's Originally Reported Captive Supply and GIPSA's Estimate of Captive Supply from Transactions Data as a Percentage of Total Slaughter



Source: Packer Annual Reports and GIPSA estimates from packer Transactions data.

Section 5 – Actions to be Undertaken

GIPSA has taken or will take the following actions to improve packers' accuracy in reporting captive supply to the Agency, to enhance the Agency's reporting of that information to the public, and to facilitate the public's understanding of the reported information. These actions fall under several broad categories.

Definition of Captive Supply and Related Procurement and Pricing Methods

- GIPSA has defined captive supply and will publish the definition in the *Federal Register*.

The debate and discussion surrounding captive supply has focused on the use and effects of captive supply, but relatively little attention has been paid to the fundamental issue of defining and measuring the many different procurement methods and pricing methods packers use to obtain cattle. This report clarifies the distinctions among several data series regarded as measures of captive supply, including those reported by GIPSA and by AMS.

Improved Data Collection

Prior to the mandate from Congress to produce this report, GIPSA had begun revising its packer annual report forms. GIPSA will complete the revisions, which will include revisions of the sections on reporting of livestock purchases by various procurement methods. GIPSA's current reporting form (P&SP-125, see figure 1) is being revised to more clearly and accurately define and identify the wide variety of procurement methods.

- GIPSA is developing a new Packer Annual Report form that will clarify reporting definitions for the various types of procurement methods by which it measures captive supply.
- GIPSA will clarify current reporting requirements and will work closely with packers to ensure more accurate reporting until the new Packer Annual Report form is implemented.

Improved GIPSA Auditing and Reporting of Procurement Information

GIPSA will improve its auditing and reporting of procurement information in its annual Packers and Stockyards Statistical Report and in other public releases by including additional information on the various procurement methods which underlie GIPSA's captive supply statistics.

- GIPSA will audit packer's annual reports to GIPSA, including the information on which GIPSA computes its captive supply statistics. In conducting the audits, GIPSA

will examine the data used to prepare the annual report submission, and how transactions have been categorized in the data in the audited annual report.

- GIPSA will report forward contracted and marketing agreement cattle separately, consistent with applicable confidentiality restrictions.
- GIPSA will report the number of head in addition to percentages, and monthly and regional figures in addition to the annual national figures currently reported, consistent with applicable confidentiality restrictions.

Appendix A – Captive Supply: Precedents and Parallels in Agriculture

For most of this country's history, farmers and ranchers produced unbranded, generic foodstuffs that consumers prepared at home. Over the last several decades, U.S. food consumption habits have changed markedly to include a wider variety of food products, more processed items, and more food eaten away from home. To meet these changes, food processors have developed a complex processing and distribution system that transforms agricultural commodities into specific food products to meet consumer demand and delivers those products through an ever-growing number of marketing channels. Over the last decade, these changes in the food processing and distribution system have accelerated and been associated with contracting and vertical integration. Two studies from USDA's Economic Research Service report on these changes.¹³

Production contracting is one form of close vertical coordination between a producer and purchaser of agricultural commodity. Under production contracting, the purchaser has considerable influence over the seller's production process. Processors report entering into production contracts with producers to ensure the timeliness and quality of commodity purchases, to exercise control over how the commodity is produced, to increase efficiency, and ensure steady supplies of foodstuffs with specific attributes. Farmers report using production contracts to lower costs and enhance the operational productivity of their farms. Farmers and further processors also use production contracts to manage risk by ensuring a certain buyer and, respectively, supplier of product.

Production contracts are common when production technologies are complex and use specialized inputs or when the end product must have uniform characteristics, such as poultry production. Production contracts are also used for commodities that are traditionally characterized by cycles of oversupply and undersupply, or where the risk-return tradeoffs are advantageous to both the producer and the contractor. Production contracts are also used when commodities are highly perishable and have specific production technologies and where uniform, knowledge-based, centralized management is feasible.¹⁴

Based on its 1998 Agricultural Resource Management Survey, the Economic Research Service (ERS) reports that the value of production using contracting accounted for 35 percent of the value of all agricultural production in 1998 (column 3, Table A-1).¹⁵ ERS further reported that in 1998 43.5 percent of the value of production under contracting

¹³ USDA, ERS. "Contracting Changes How Farms Do Business," *Rural Conditions and Trends*, Vol. 10, No.2, 2000. USDA, ERS. "Managing Risk in Farming: Concepts, Research, and Analysis." *Agricultural Economic Report* No. 774, March 1999.

¹⁴ USDA, ERS. "Managing Risk in Farming: Concepts, Research, and Analysis." *Agricultural Economic Report* No. 774, March 1999.

¹⁵ The value of production for products whose ownership changes between seller and buyer is the proceeds of the sale. For products whose ownership remains with the seller, such as in broiler production where payment is for a grower's services, the value of production is the value of the product when it is physically transferred from seller to buyer.

was accounted for by the production of hogs, cattle, and poultry under contracting (column 2, Table A-1).

Table A-1. Share of Contract Value of Production for Selected Commodities, 1998

Commodity	Commodity Share	Share of Commodity Produced
	Of all Contract Production	Under Contract
	Percent	
Corn	3.7	13.1
Soybeans	3.2	12.2
Cotton	3.0	50.6
Vegetables	7.5	45.4
Fruit	8.7	56.7
Cattle	11.7	25.3
Hogs	5.5	42.9
Poultry	24.3	94.9
Dairy	22.7	54.8
All other commodities	9.7	14.4
All commodities	100.0	35.0

Source: USDA, ERS, 1998 Agricultural Resource Management Study.

ERS reported on two contract types, production and marketing. Marketing contracts focus on products for sale by the producer and pricing terms, and they give the producer more control over the production process than do production contracts. In terms of both value of production and number of farms using contracting, marketing contracts were more common than production contracts in 1998 (Table A-2).

ERS also reported that although only 11.5 percent of farms used contracting in 1998 the value of production occurring under contracting accounted for 35 percent of all farms' value of production.

ERS identified three categories of farms in its survey, small family farms, large family farms and nonfamily farms. Small family farms were the most prevalent in 1998 accounting for 90.5 percent of all farms and 61 percent of all farms producing under contracts. Large family farms were second most prevalent; 7.4 percent of farms were large family farms, while 34.1 percent of all farms producing under contracts were large family farms.

In terms of value of production, large family farms accounted for most agricultural production of farms; their production was valued at \$102,650 million compared with the total \$191,851 million produced among all farms. Large family farms were even more important contributors to production under contracts. Despite accounting for only 34.1 percent of all farms producing under contract, large family farms accounted for 65.6 of the value of production under contracts. Similarly, nonfamily farms accounted for only 4.9 percent of farms producing under contract, but the value of their production accounted for 15.1 percent of the value of all production under contract.

Table A-2. Use of Contracting by Type of Farm, 1998

	Unit	Small Family Farms	Large Family Farms	Nonfamily Farms	All Farms
<u>Farms</u>					
All Farms	No.	1,869,201	153,212	42,296	2,064,709
Share of Farm Type in All Farms	%	90.5	7.4	2.0	100.0
Share of Farm Type in Farms w/Contracts	%	61.0	34.1	4.9	100.0
<u>Production Value</u>					
Total	\$ Mil.	63,205	102,650	25,995	191,851
Contract	\$ Mil.	12,911	44,035	10,144	67,090
Production Contract	\$ Mil.	4,175	17,624	5,413	27,212
Marketing Contract	\$ Mil.	8,736	26,410	4,731	39,878
Share of Farm Type in Total Value of Contract Production	%	19.2	65.6	15.1	100.0
<u>Share of Farms with:</u>					
Contracts	%	7.8	53.0	27.5	11.5
Production Contracts	%	1.3	19.2	2.6	2.6
Marketing Contracts	%	6.7	37.1	26.3	9.4
Value of Production Under Contract	%	20.4	42.9	39.0	35.0

Source: USDA, ERS, 1998 Agricultural Resource Management Study.

Fifty three percent of large family farms and 27.5 percent of nonfamily farms reported producing under contract compared with only 7.8 percent of small family farms. That said, the 7.8 percent of small family farms that do produce under contract accounted for 20.4 percent of the value of production of all small family farms. Similarly, the 27.5 percent of nonfamily farms producing under contract accounted for 39 percent of the value of production of all nonfamily farms. In contrast, the 53 percent of large family farms producing under contract accounted for only 42.9 percent of the value of production of all large family farms. In total, the 11.5 percent of all farms producing under contract accounted for 35 percent of the total value of production.

Consolidation and Vertical Coordination in Beef Production

Domestic production and distribution of beef have undergone major changes over the past 20 years. Production has changed from an industry dominated by small-scale firms toward one dominated by larger firms. The cattle feeding and beef packing sectors have consolidated and become more concentrated. Food retailing also has become more consolidated, and retailers have demanded more value-added products from meat packers in response to improvements in meat-processing technology and changing consumer pressures.

Concentration in beef packing increased sharply during this period of change and leveled off in the mid 1990s (Table A-3). The four largest packers accounted for 81.5 percent of steer and heifer slaughter in 2000, versus 71.6 percent in 1990 and 35.7 percent in 1980. The share of the largest 4, 8 and 20 firms has changed little since 1993.

Table A-3. Steer and Heifer Slaughter Concentration: 4, 8 and 20 Largest Firms

	Largest 4 Firms	Largest 8 Firms	Largest 20 Firms
	Largest firms' combined percentage share of federally inspected slaughter		
1991	74.5	83.9	92.1
1992	77.8	86.7	94.0
1993	80.7	88.6	94.9
1994	81.7	88.6	95.1
1995	80.8	87.7	94.7
1996	78.8	86.1	94.0
1997	79.5	87.8	95.0
1998	80.4	88.1	95.1
1999	81.2	89.7	95.8
2000	81.5	N.A.	N.A.

Source: USDA, GIPSA, *Packers and Stockyards Statistical Report, Various Reporting Years*, 1999 reporting year unpublished at time of this report's release.

A structural shift towards larger operations has been underway in cattle feeding. Small feedlots account for the majority of all feedlots, but their numbers and their share of total fed cattle marketings are declining. Larger feedlots account for an increasing share of fed cattle marketings. Feedlots with capacities exceeding 32,000 head accounted for 0.02 percent of all feedlots in the 13 major cattle feeding states from 1985 until 1995, but their share of all fed cattle marketings in the 13 major states grew from 29.0 percent to 37.6 percent over that period (Table A-4). Across the United States, the number of large feedlots with capacity over 32,000 head rose by over 27 percent from 1996 to 2000.

Table A-4. Share of All Feedlots and Fed Cattle Marketings by Feedlot Size

	Under 1,000 Head Capacity			Over 32,000 Head Capacity			Over 50,000 Head Capacity		
	Number & Percent of All Feedlots	Percent of All Fed Cattle Marketings	Percent of All Fed Cattle Marketings	Number & Percent of All Feedlots	Percent of All Fed Cattle Marketings	Percent of All Fed Cattle Marketings	Number & Percent of All Feedlots	Percent of All Fed Cattle Marketings	Percent of All Fed Cattle Marketings
	<u>Total United States</u>								
1996	113,000	98.2	15.4	91	0.08	34.5	45	0.04	21.5
1997	106,075	98.0	15.1	93	0.09	35.3	39	0.04	20.3
1998	104,000	98.0	14.6	105	0.10	38.4	45	0.04	22.6
1999	100,000	97.9	15.3	110	0.11	39.2	47	0.05	23.6
2000	95,000	97.8	14.2	116	0.12	39.8	52	0.05	24.5
	<u>13 Major Feeding States</u>								
1985	49,279	96.8	17.9	77	0.2	29.0	--	--	--
1990	42,507	96.3	15.4	78	0.2	30.6	--	--	--
1995	39,429	95.3	9.7	89	0.2	37.6	--	--	--

Source: USDA, NASS. *Cattle on Feed*, various issues.

In 1996, the National Agricultural Statistics Service (NASS) began reporting on feedlots with one-time capacities exceeding 50,000 head and switched from a 13 state reporting

base to a total U.S. feedlot inventory. By 2000, 52 feedlots with one-time capacities of 50,000 head or more, representing 0.05 percent of all feedlots, accounted for 24.5 percent of all fed cattle marketings.

Commonly Expressed Concerns About Captive Supply

Changes in concentration and vertical coordination have generated concerns, especially among feedlots and livestock producers. In 1997, Ward and Schroeder produced a report in which they identified several concerns about captive supply and suggested their perceived causes.¹⁶ One concern was that the use of captive supply reduces public market information because prices of captive supply sales are not reported to AMS. At the time of Ward and Schroeder's report, price reporting to USDA's AMS was voluntary and no mechanism existed to report prices or other conditions of trade for transactions outside the spot market. Mandatory price reporting to USDA's AMS now provides for reporting of all prices, regardless of procurement method, but limitations still exist on reporting of specific contractual arrangements and terms of trade.

Another concern about captive supply identified by Ward and Schroeder is the belief that the use of captive supply reduces competition for fed cattle on the spot market. When a packer has a portion of its slaughter needs committed to it in advance of slaughter through captive supply arrangements, the packer is in a stronger negotiating position on the spot market and may bid less aggressively for cattle in the spot market, reducing prices paid for cattle in the spot market.

Closely related to the concern about the effect of captive supply on the aggressiveness of bidding for fed cattle is the concern that packers holding a captive supply of cattle have increased market power. That is, packers may maintain enough rights on timing of cattle delivery under captive supply arrangements to time deliveries of captive supply so as to decrease prices they pay for cattle on the spot market. In addition, because prices for many captive supply arrangements are calculated from formulas derived from spot market prices, some believe prices paid for all cattle are decreased by packers' strategic use of captive supply to meet their slaughter needs.

Some suggest that increases in captive supply may increase the potential for exercise of market power. A common perception is that packers gain an advantage when cattle procurement moves away from spot markets toward marketing agreements, forward contracts, packer feeding, vertical alliances, and other forms of vertical coordination between producers and packers. Some also suggest that some types of vertical coordination may constrain smaller producers' marketing opportunities. For example, some marketing arrangements are not available to smaller volume producers, but packers' use of such arrangements may diminish the need and therefore the demand for cattle in the spot market where the smaller volume producers sell their cattle. There is also concern that packers may use captive supply arrangements as a mechanism for discriminating among producers. Larger volume producers may be given more favorable

¹⁶ Ward, C. and T. Schroeder. *Captive Supply and Their Impacts*, Oklahoma Cooperative Extension Service, Oklahoma State University, WF-555, December 1997.

terms and higher prices through captive supply arrangements, while smaller volume producers may be subject to less favorable terms and lower prices. Additionally, there is concern that larger packers may use captive supply predatorily to block smaller packers from supply.

Commonly Expressed Support for Captive Supply

Captive supply proponents argue that the economic benefits accruing to both producers and packers are the primary drivers behind the shift from spot markets toward increasing vertical coordination between producers and packers. One potential source of cost savings is a reduction in transactions costs. Spot market transactions require negotiation over each transaction, subjecting both the buyer and the seller to transaction costs at each negotiation. In contrast, marketing agreements establish trading and pricing terms for many transactions over an extended period of time, spreading a one-time transaction cost over all transactions under the marketing agreement.

Proponents of captive supply often note that producers have made significant investments to improve animal quality to meet packer and consumer demands. These individuals contend that spot markets do not send appropriate price signals throughout the marketing channel. In particular, proponents contend that the traditional method of buying cattle prices a pen of cattle according to the cattle's average value. Consequently, it does not encourage the production of desirable beef qualities or discourage the production of undesirable beef qualities. In contrast, they contend marketing arrangements between packers and producers utilize formula- or grid-pricing systems that pass clear signals to producers about packer and consumer preferences that reward desired quality and discount undesired quality.

Proponents also argue that captive supply procurement arrangements reduce market volatility and are an essential component of risk management. Marketing agreements, for example, provide producers with assurance of a buyer for their cattle. Proponents say these arrangements improve producer access to financing, as some lenders seek assurance that borrowers have long-term commitments with buyers for cattle.

In short, proponents argue that captive supply arrangements provide benefits to producers and packers. They reduce transactions costs, better reward cattle of higher quality, reduce market risk, and increase access to financing.

Appendix B – Summary of Analyses of Captive Supply

Captive supply, its use, and its effects on livestock markets have been a steady topic of academic and government research for many years. This appendix summarizes this research.

Early Academic Studies

Ward and Bliss surveyed 3,700 cattle feedlots in 1989 to estimate the extent of forward contracting.¹⁷ They also asked the feedlot operators to identify the benefits associated with forward contracts. Their survey results indicated that 96 percent of all forward contracting in 1988 was between feedlots and the largest 3 packers identified by Ward and Bliss as IBP, ConAgra, and Excel. Almost 67 percent of all forward contracting was by cattle feedlots that marketed 20,000 or more head of cattle per year. Ninety percent of forward contracting in 1988 occurred in the states of Nebraska, Colorado, Kansas, Oklahoma, and Texas. Nearly two-thirds of all contracting was found in just two states: Texas and Kansas. The survey also indicated that 12.7 percent of fed cattle in the major cattle feeding states were procured using forward contracts.

According to Ward and Bliss, the surveyed feedlot operators indicated that the primary benefits of forward contracting were improved financing and securing a known buyer. The feedlot operators indicated that they believed the primary benefits to packers were guaranteed supplies of cattle for slaughter and increased control over the timing of deliveries of cattle for slaughter.

Schroeder, Mintert, Barkley and Jones (1992) examined the short-run price impacts of captive supply on prices for fed cattle.¹⁸ They collected data from 1,407 pens of cattle representing 166,338 head sold by 13 feedlots in selected counties in southwest Kansas from May 21, 1990 through November 24, 1990. For each pen of cattle sold, a record was made of price bids, feedlot and animal characteristics, transaction cost factors, wholesale market conditions, and the forward contracted deliveries of all cattle in the week the pen was sold. The number of contract cattle shipped for slaughter each week was collected from AMS's Dodge City, Kansas office. The percentage of cattle slaughter represented by contract cattle from May through November 1990 ranged from a low of 2 percent of weekly slaughter in August to a high of 15 percent in July.

Statistical results from the Schroeder, Mintert, Barkley and Jones (1992) study indicated a negative statistical relationship between fed cattle prices and captive supplies. Over the

¹⁷ Ward, C. and T. Bliss. *Forward Contracting of Fed Cattle: Extent, Benefits, Impacts and Solutions*. Blacksburg, VA: Virginia Tech University, Research Institute on Livestock Pricing, Research Bulletin 4-89, November 1989.

¹⁸ Schroeder, T., J. Mintert, A.P. Barkley, and R. Jones. "Implications of Captive Supply in the Fed Cattle Industry." *Pricing and Coordination in Consolidated Livestock Markets: Captive Supply, Market Power, and IRS Hedging Policy*. Wayne Purcell, ed. Blacksburg, VA: Virginia Tech University, Research Institute on Livestock Pricing. April 1992.

six-month period, contract deliveries were associated with decreased fed cattle prices in the surveyed feedlots of \$0.15 to \$0.31 per cwt.¹⁹

Elam conducted another early study of the market effects of captive supply,²⁰ looking at two possible implications of captive supply. In the first part of a two-part study, he compared forward contracted cattle sales in six Texas feedlots with hedged fed cattle from May 1987 to September 1989. His results indicated that contract prices were \$0.28 to \$0.59 per cwt lower than hedged prices for steers and \$0.86 to \$1.64 per cwt lower for heifers. Elam concluded cattle feeders were giving up a portion of the basis price to packers when they sold cattle through forward contracts, with the difference representing a risk transfer premium from cattle feeders to packers. Specifically, Elam's conclusion suggests that to the extent the packer assumes the feeder's price risk under a forward contract, the feeder receives a lower price for cattle.

Elam also examined the aggregate effect that deliveries of captive supply cattle had on fed cattle prices in the U.S. and in the states of Texas, Kansas, Colorado, and Nebraska. Using time series regression analysis, Elam found a negative statistical relationship between captive supplies and monthly average fed cattle prices over the period from October 1988 to May 1991. For each 10,000 cattle delivered under captive supply arrangements, U.S. fed-cattle prices were lower by \$0.03 to \$0.09 per cwt. Results for individual states varied from no price difference to lower prices ranging from \$0.15 to \$0.37 per cwt.

Hayenga and O'Brien (1992) examined the effect deliveries of captive supplies had on weekly average fed cattle prices and price variability in the major cattle feeding states during the 15-month period from October 1988 to December 1989.²¹ They found no conclusive evidence that forward contracting diminished fed cattle prices over the period. They also found no conclusive evidence that forward contracting adversely affected the variability of fed cattle prices.

Schroeder, Jones, Mintert and Barkley (1993) expanded on their 1992 analysis examining the short-run impacts of forward contracted cattle. Using data from the same feedlots in southwest Kansas during the same six-month period in 1990,²² they found that average cattle prices were affected by many factors, but that when forward contract shipment levels are high, changes in forward contract shipments had a larger impact on prices than when shipments are low, and that price variability increased under these conditions.

¹⁹ cwt = 100 pounds. For a 1,200 pound steer, \$0.15 per cwt equals \$1.80 (15 cents times 12). In a \$70 per cwt. cattle market, the steer would sell for \$840.

²⁰ Elam, E. "Cash Forward Contracting vs. Hedging of Fed Cattle, and the Impact of Cash Contracting on Cash Prices." *Journal of Agricultural and Resource Economics* 17(1992): 205-217.

²¹ Hayenga, M. and D. O'Brien. "Packer Competition, Forward Contracting Price Impacts, and the Relevant Market for Fed Cattle." *Pricing and Coordination in Consolidated Livestock Markets: Captive Supply, Market Power, and IRS Hedging Policy*. Wayne D. Purcell, ed. Blacksburg, VA: Virginia Tech University, Research Institute on Livestock Pricing. April 1992.

²² Schroeder, T. and R. Jones, J. Mintert and A. Barkley. "The Impact of Forward Contracting on Fed Cattle Transaction Prices." *Review of Agricultural Economics* 15 (May 1993): 325-37.

USDA Sponsored Concentration Study

In 1992, GIPSA commissioned university researchers and researchers from ERS to conduct seven in-depth studies as part of a comprehensive investigation of concentration in the meatpacking industry. The studies examined whether large firms possess and use market power, and if efficiency gains from large-scale production exist to offset adverse market power effects of concentration.

University researchers conducted six of the studies, and the seventh was conducted by ERS. Four of the seven studies focused on cattle: “Definition of Cattle Procurement Markets,” “Price Determination in Slaughter Cattle Procurement,” “Role of Captive Supply in Beef Packing,” and “Effects of Concentration on Prices Paid for Cattle.” The results of the seven studies were summarized in GIPSA’s February, 1996 report, *Concentration in the Red Meat Packing Industry*.

Overall, the report depicted a complex and dynamic meat packing industry. Information appeared to flow rapidly and freely among regions, encouraging a national cattle market in which forces of supply and demand largely determined behavior of market participants. Product movement did not appear to be inhibited. The relatively low cost of transporting cattle over long distances diminished the ability to manipulate prices in isolated regional markets. A variety of pricing methods and procurement methods were available and used, and they appeared to be associated with changing market conditions.

A study of the role of captive supply was conducted by Oklahoma State University’s Clement Ward and Stephen Koontz and Kansas State University’s Ted Schroeder and Andrew Barkley. GIPSA asked them to determine the extent to which various captive supply arrangements are used, and to determine relationships between captive supply and the structure, conduct, and performance of slaughter cattle markets. Of particular interest to GIPSA was the effect that captive supplies have on prices paid for cattle.

The researchers used data from 28 plants slaughtering 75,000 or more steers and heifers annually. The plants were owned by 9 firms. Together, the 28 plants accounted for 82 percent of the 1993 federally inspected steer and heifer slaughter. GIPSA provided the researchers with data from the plants on each transaction of 35 head or more slaughtered from April 5, 1992 to April 3, 1993, and supplemented them with data from AMS and the Chicago Mercantile Exchange.

The researchers surveyed the 25 largest beef packing firms and the 25 largest cattle feeding firms. Fifteen of the 25 feeding firms and six of the 25 packing firms responded to the voluntary survey. Survey responses supported the industry perception that use of captive supplies is generally higher in the late spring and early summer months than at other times of the year. Respondents to the survey identified three impacts from the use of captive supply: (1) captive supply benefits packers who use it; (2) captive supply ensures a given supply of cattle to packers; and (3) captive supply reduces market information since fewer prices are publicly reported. Feeders and packers agreed that

current spot market prices were most important in setting the delivery date of captive supply cattle. Cattle feeders additionally believed that captive supply arrangements benefit feeders who use them but benefit packers more, and that the use of captive supply arrangements result in lower spot market prices.

According to data used in the study, nationwide, about 300 large feedlots (those selling more than 16,000 head in a year) accounted for 82 percent of all marketing agreement transactions, 89 percent of all packer fed transactions, and 56 percent of forward contracts during the period April 1992 to April 1993. Those large feedlots handled 42 percent of all transactions and 57 percent of all cattle in all transactions.

By contrast, over 17,000 small sellers (those selling less than 1,000 head per year) accounted for 22 percent of all transactions and 13 percent of all cattle sold in all transactions. A large majority (88 percent) of small sellers were much more likely to use spot markets. Small sellers accounted for only 1.6 percent of packer fed transactions, 2.6 percent of marketing agreements, and 15.2 percent of forward contracts.

Ward, Koontz, Schroeder and Barkley divided the captive supply project into two studies. The first, conducted by Andrew Barkley and Ted Schroeder, examined the long-run impacts of captive supply. The second study, conducted by Clement Ward, Stephen Koontz, and Ted Schroeder, examined the short-run impacts of using captive supply arrangements on spot market prices.

The overall objective of the study of short-run impacts of captive supply was to quantify the relationships between using captive supply arrangements and spot market prices for fed cattle by estimating:

- the interdependence between deliveries of captive supply fed cattle and spot market prices for fed cattle;
- the relationship between inventories of captive supply fed cattle and spot market prices for fed cattle; and
- price differences between fed cattle purchased on the spot market and those purchased by captive supply methods.

Three models were developed to measure the short-run effects of captive supply on spot market prices. Model 1 focused on the effects deliveries of captive supply purchases had on spot market prices. Model 2 focused on the effects an inventory of captive supply purchases had on spot market prices, and Model 3 focused on differences between prices paid by packers for fed cattle purchased under captive supply arrangements versus prices paid for fed cattle purchased on the spot market.

In Model 1, Ward, Koontz and Schroeder found evidence that packers decide whether to take delivery of forward contracted and marketing agreement cattle at the same time they

decide whether to purchase spot market cattle. There was no similar relationship found for packer fed cattle. The research suggests that the reasons packers feed cattle are different than the reasons they use contracts and marketing agreements. Packer feeding may be motivated more by cattle feeding profit opportunities and by maintaining a steady flow of cattle to the plant than by its potential influence on spot market prices.

Model 2 yielded mixed results regarding the relationship between inventory of captive supply and spot market prices for fed cattle. For the total inventory of captive supply cattle, the relationship was consistently negative for the entire period examined. However, the impact was small and not economically significant. A 1,000-head increase in the total inventory of captive supply cattle was associated with a \$0.01 per cwt or smaller decrease in spot market prices. When estimating the impacts of different captive supply methods, results were mixed. The inventory of forward contracted cattle was associated with a generally positive effect on spot market prices. For packer fed cattle, the inventory-price relationship was mixed negative and positive. The relationship for marketing agreement cattle was consistently negative.

Model 3 showed significant price differences among procurement methods. Forward contract prices were \$3.02 to \$3.16 per cwt lower than spot market prices for fed cattle. Prices for packer fed cattle were not significantly different than prices for spot market cattle. Prices for cattle purchased through marketing agreements were \$0.07 to \$0.10 per cwt higher than prices for cattle purchased on the spot market. These results suggest cattle feeders pay a risk premium to packers for forward contracting cattle, and higher marketing agreement prices suggest that packers pay a premium for the higher quality or quantity of fed cattle they purchase through marketing agreements.

Barkley and Schroeder attempted to examine the long-run relationships between captive supply and spot market prices for fed cattle. Data limitations precluded Barkley and Schroeder from estimating long-run supply and demand functions for contracted cattle, but they were successful in characterizing several determinants of captive supply use.

They used monthly packer transactions data provided by GIPSA at the firm and plant levels during 1989- 1993, from 31 plants representing 12 firms. The 31 plants accounted for 87 percent of the 1993 federally inspected steer and heifer slaughter. A slight downward trend in total captive supply use was observed from 1989 to 1993, but captive supply levels fluctuated annually. Forward contracted and marketing agreement cattle accounted for 75 percent of total captive supply, or an average of 9,100 head slaughtered per plant per month. Slightly less than 3,000 head of packer fed cattle were slaughtered each month.

Packer feeding remained fairly constant as a percentage of slaughter over the period, averaging just over 6 percent. Forward contracted and marketing agreement cattle decreased from 18 percent of annual slaughter in 1989 to 15.5 percent in 1993. Use of packer feeding was relatively constant during the period, whereas use of forward contracting and marketing agreements was more variable, increasing in April, June, and December. The April and December peaks in forward contracted and marketing

agreement cattle as a percentage of slaughter resulted in part from decreases in total slaughter levels during those months.

Barkley and Schroeder found that forward contracting, marketing agreements, and packer feeding vary greatly among plants. Use of captive supply was higher for larger plants than for smaller plants. Larger plants' average monthly captive supply purchases were nearly three times higher than small plants' (17,872 and 5,818 head per month, respectively, across all plants). Larger plants also had higher plant utilization than smaller plants.

Their findings suggest that large plants use captive supply strategically. Captive supply usage by larger plants increased as cash prices increased. This relationship between captive supply and cash prices did not hold for smaller plants. Captive supply usage increased as cash price variability increased, and more so for larger plants than smaller plants. They found larger plants used captive supply to increase plant utilization and to mitigate rising or more variable prices. Total cattle availability over the period of study did not affect captive supply levels.

Barkley and Schroeder's study of the determinants of captive supply had seven major findings:

- There is a huge variability of contracting and packer-feeding across plants, which does not appear to be systematically related to firms, plant locations, or regions.
- Spot market prices play a major role in determining the use of captive supplies among the 16 largest plants, but do not influence the use of captive supply by the 15 smaller plants.
- Spot market price variability is positively associated with the level of contract cattle for the 16 largest plants, but is not a factor in packers' use of packer fed cattle or packers' total use of captive supply.
- Plant utilization is an important determinant of captive supply for both large and small cattle packing plants, with a larger impact on small plants, reflecting high costs of slaughter levels below full capacity.
- Information on cattle availability, as measured by total U.S. slaughter from 1 year prior to slaughter, does not appear to be a consistently important determinant of captive supply.
- Contracted cattle and packer fed cattle appear to be substitute methods of meeting slaughter capacity for packers, particularly for the 16 largest plants.
- The level of captive supply is higher among small plants and large plants. Average-sized plants use captive supply to a smaller degree.

USDA Advisory Committee on Agricultural Concentration

On February 14, 1996, former Secretary of Agriculture Dan Glickman announced the formation of the USDA Advisory Committee on Agricultural Concentration. The Advisory Committee was charged with investigating concentration in virtually any segment of the agricultural economy where it might be evident. Among its many duties and responsibilities, the Committee was tasked with reviewing studies concerning captive supply arrangements and their market impacts, and making findings and recommendations based on its review. The Committee released its findings and recommendations on June 6, 1996 in *Concentration in Agriculture: A Report of the USDA Advisory Committee on Agricultural Concentration*.

The Committee reviewed existing scientific studies and reports from academicians and government agencies, including GIPSA's *Concentration in the Red Meat Packing Industry*. The Committee also studied reports of analyses commissioned by GIPSA concerning concentration in the red meat industry. The Committee encouraged and received input and advice from trade associations and other industry experts, and heard the concerns and advice of over 70 individuals and organizations, representing producers, processors, wholesalers, rural communities – their families and businesses – environmental groups, and animal rights groups in a series of public hearings. In addition, hundreds of pages of written testimony and correspondence were submitted to the Committee. The Committee also considered the current interpretation and application of antitrust policy.

The Committee reviewed evidence from government studies, academic studies, trade associations, and basic data. The Committee found that growing concentration in agricultural industries has not been accompanied by overt or obvious market power and the extraction of monopoly or monopsony profits; however, the potential and opportunity for extracting these profits has increased.

Among its many findings from all sources of evidence, the Committee found:

- Sharp declines in cattle prices in the period leading up to the Committee's formation were attributable to supply and demand conditions, but there is a growing sense in some parts of the producer community that these price declines extend beyond those attributable solely to ordinary market forces of supply and demand.
- Packers sometimes offer an above-market price on the condition that the higher price is not reported. This action is a price manipulation because it affects prices offered to other sellers. However, it is very difficult to verify this practice and its frequency.
- Some producers have a real and significant distrust of current procurement methods and believe that packer concentration is excessive and that this concentration has been used to depress cattle prices.

- The level of concentration is historically high and growing higher in meat packing. The merger movement of the past decade has contributed to the increasing concentration throughout the agricultural economy. This concentration increases the opportunity to both use and abuse market power.
- It is widely agreed that accurate market information available to all producers improves the price discovery and determination process. Poor information can lead to unnecessary price volatility or slow adjustment to changing supply and demand conditions. Inadequate information can cause some market players to be disadvantaged relative to others.
- GIPSA's *Concentration in the Red Meat Packing Industry* study does not provide an adequate basis for determining if smaller volume sellers receive lower prices than large volume sellers, because it was designed to assess the general state of competition in the market and not the extent of price discrimination. What price discrimination may exist, according to the study, is likely limited, and the study's collected price data were narrowly distributed around the average. It is possible that some sellers are receiving prices that are below those received by better-informed sellers.
- Captive supply and other forms of vertical integration and coordination at levels in which they occur – in some regions and at some times of the year – are potentially detrimental to both competition and price discovery. Captive supply arrangements tend to thin market reporting (reduce the volumes on which reported prices are based) and shorten the weekly marketing window, which can disadvantage suppliers who do not have a packer arrangement and distort reported market prices downward.

The Committee endorsed and recommended a policy to support and improve market information as a vital component of a competitive marketplace. One of the Committee's specific recommendations was that packers be required to report the following: numbers of cattle purchased in the spot market on a daily basis; all captive supply committed for delivery at the start of each week; numbers of forward contracted cattle in all future months; Canadian or Mexican cattle committed for delivery at the start of each week; numbers and prices of cattle slaughtered on a daily basis; and beef exports on a weekly basis.

Most diverging opinions dealt with the appropriate measures to implement the policies recommended. Where some committee members felt strongly about particular measures or approaches to implementing the recommended policies, their views were contained in the report's "Minority Views."

There were three minority views, two with findings concerning captive supply. According to the first minority report, USDA's study of concentration in the red meat packing industry and GIPSA's attitudes to enforcement in general are overly focused on general macroeconomic factors, such as average pricing. To be effective, GIPSA enforcement must be aimed more at specific company practices.

The first minority report argued that the use of captive supply engenders fear and distrust of market fairness and endangers competitive operation of livestock markets.²³ It also argued that “the use of factors within the control of packers as a base price for purchase of captive supply is a violation of section 202 of the Packers and Stockyards Act.” Its recommendations on captive supply were:

- Packer feeding of livestock should be eliminated except where the owners of the livestock own the packing facility in a cooperative arrangement. If packer feeding is allowed, the livestock must be offered for sale on an open-market basis, and the price at which these livestock move into the market should be reported separately.
- Packers and principals in packing operations should be barred from custom-feeding livestock for others.
- Packers should be prohibited from futures market trading except for economically justifiable hedging activities.
- Formula contracts as they are presently constituted should be banned.
- Value-based pricing must be based upon readily verifiable market factors outside the control of the packer/buyer and must be made uniformly available within the limits of the packer’s purchasing needs.

According to the second minority report, concentration in the meat packing industry has very little impact on producers and consumers, or other market participants. Further, captive supplies have very little or no impact on spot market prices.

The third minority report criticized the Committee for not adequately addressing concentration in the domestic lamb market.

Recent Academic Studies

Schroeder, Ward, Mintert, and Peel (1997) used interviews with cattle feedlots and packers and previous research to investigate why consumer demand for beef has declined.²⁴ Included in their investigation were questions concerning why packers and feedlots participate in captive supply arrangements, particularly exclusive marketing agreements and alliances.

The interviews revealed several incentives for forming or participating in exclusive marketing agreements, and that “(n)early all relate to moving toward value based pricing; improving price signals between stages in the vertical production, processing, and

²³ The first minority report defined captive supply as “packer-owned, formula, futures, and custom-fed cattle.”

²⁴ Schroeder, T., and C. Ward, J. Mintert and D. Peel. *Value-Based Pricing of Fed Cattle: Challenges and Research Agenda*. Unpublished paper. March 18, 1997.

distribution channel; overcoming problems associated with and related to pricing on averages; and reducing the adversarial relationship between feeders and packer” (Schroeder, Ward, Mintert, and Peel, pp. 7, 8).

Most marketing agreements involve a pricing formula that consists of a base price with premiums and discounts for carcasses above and below some base quality characteristics. The researchers reported that how these base prices and quality premiums and discounts are established impacts price discovery in fed cattle markets.

Schroeder, Mintert, Barkley and Jones’s interviews indicated that there were several base prices used. One was based on the average price of fed cattle purchased by the plant where the marketing agreement cattle were slaughtered. A second base price was tied to a reported price for the live cattle futures market price. Others were based on specific market reports, such as the highest reported price for a specific market. In some cases, the base price was negotiated, although typically it was not. Some base prices were defined on a carcass weight basis, others on a live weight basis.²⁵ Some respondents expressed the belief that the base prices need to be tied to boxed beef prices if the animal’s realizable beef value is to be accurately captured in the live price.

A study by Parcell, Schroeder and Dhuyvetter (1997) built on previous studies of the impact captive supply have on fed cattle prices by focusing on live cattle basis,²⁶ the difference between a local cash price and live cattle futures price. Both producers and packers require accurate basis predictions to determine expected prices and make sound pricing, hedging, and forward contracting decisions.

Parcell, Schroeder and Dhuyvetter found that a one percent increase in captive supply shipments was associated with a \$0.02/cwt and \$0.03/cwt reduction in basis in Colorado and Texas. Parcell, Schroeder and Dhuyvetter did not find a statistically significant impact for Kansas or Nebraska. According to the authors, the \$0.02/cwt to \$0.03/cwt decrease in basis in Colorado and Texas is minimal in the cattle producers’ formulation of price expectations, with other factors such as corn futures prices and live cattle futures prices playing more important roles.

Lyford, Hicks, Ward, Trapp and Peel used the Fed Cattle Market Simulator developed by Oklahoma State University to examine the effects that contracting has on the spot market price for fed cattle in the laboratory.²⁷ They found that “contracting substantially changes pricing dynamics and price formation related to supply conditions even at a modest contracting level of 25%” (p. 12). Contracting appeared to have a substantial impact on spot market price variability. The experimental market showed that, in the presence of contracting, spot market prices experience lower week-to-week volatility followed by

²⁵ Although priced on a live weight basis, they were based on yields of the cattle slaughtered.

²⁶ Parcell, J., T. Schroeder and K. Dhuyvetter. *The Effect of Captive Supply Cattle on a Live Cattle Basis*. Presented at 1997 Western Agricultural Economics Association Meetings, Reno, NV.

²⁷ Lyford, C., R. Hicks, C. Ward, J. Trapp and D. Peel. *The Effect of Contracting on Pricing Dynamics in the Fed Cattle Market: An Experimental Simulation Approach*. Paper presented at the American Agricultural Economics Association Meetings, Chicago, Illinois, August 5-8, 2001.

significantly large price changes when contracts exist. That was especially true as contracting levels increased.

Lyford, Hicks, Ward, Trapp and Peel's study suggests that the response of spot market price to changes in fed cattle supply with contracting depends on the level of fed cattle supply with contracting. Lyford, Hicks, Ward, Trapp and Peel's research suggests that earlier empirical studies that showed negative or mixed relationships of contracting with spot market prices may be the result of market supply conditions that existed at the time of the studies. Their research underscores the need to account for overall supply and demand conditions in analyses of captive supply's impact on spot market prices.

GIPSA Investigation of Fed Cattle Procurement in the Texas Panhandle

As part of its investigation of fed cattle procurement in the Texas Panhandle, GIPSA entered into a cooperative agreement with John R. Schroeter of Iowa State University and Azzedine Azzam of the University of Nebraska to examine the relationships between captive supply and spot market prices. The results of their study, *Econometric Analysis of Fed Cattle Procurement in the Texas Panhandle*, were published in November 1999.

Schroeter and Azzam used GIPSA data from February 5, 1995 through May 12, 1996 for four large beef packing plants located in the Texas Panhandle. The primary data set included information on every lot of cattle over 35 head purchased by the four plants during the period. Supplementary data included regional average steer and heifer prices, boxed beef cutoff values, Chicago Mercantile Exchange live cattle futures prices, and other variables.

Schroeter and Azzam addressed the following questions: (1) Who is responsible for deciding how many cattle procured by non-spot means will be delivered to a packing plant within any given week; and how far in advance of delivery is that determination made? (2) What is the empirical relationship, in the short run, between the use of non-cash supply sources and spot market prices? (3) What economic mechanisms could be behind the empirical relationship? (4) Does the nature of the base price in the formula used to price marketing agreement cattle influence a packer's spot market pricing conduct?

They found:

- The feedlot determines the number of cattle it will deliver to a plant under a given marketing agreement and within a given week. The feedlot normally determines the number of marketing agreement cattle to be delivered within any given week two weeks in advance of delivery. Once the feedlot sets the volume of marketing agreement deliveries for a given week, the packer chooses the specific day or days of the week on which delivery will be made.
- There is a negative statistical relationship between weekly non-spot procurement methods (captive supply) and the weekly average spot market price.

- In deciding when to deliver the cattle, rational, profit-maximizing feedlots chose to deliver marketing agreement cattle in that week which promised the highest expected spot market price because the marketing agreement cattle brought a price based on the spot market price. Because marketing agreement cattle delivered in two weeks bring a price based on the spot market price paid for cattle next week, one would expect to see a positive statistical relationship between captive supply delivered in two weeks and the expected spot market price for the next week. Similarly, one would expect to see a negative statistical relationship between captive supply delivered in two weeks and the current forecast of spot market price in two weeks. The observed statistical relationship between spot market prices and cash supply deliveries arises because expected prices are positively correlated with actual market prices. Under this scenario, deliveries of captive supply in a week do not cause spot prices during that week to be low. Rather, the expectation of low spot prices in two weeks time, which usually come to pass, leads feedlots to sell more cattle a week early and deliver them the following week later. This mechanism does not support the argument that increases in captive supply deliveries cause average spot market price decreases.
- Econometric results do not support the hypothesis that packers try to manipulate formula base prices through their pricing strategies in spot market purchases. When Schroeter and Azzam compared marketing agreement deliveries with a price based on plant-average hot cost to those with a price based on the USDA-reported price, they found no systematic difference in the relationship between the volume of market-agreement deliveries one week and spot market prices paid the previous week.

The researchers recommended “that the agency should not rely on the statistical finding of a negative correlation between the use of non-cash procurement methods and spot market prices as evidence of intent by packers to depress cattle prices through the use of non-cash procurement, or as evidence of the unintentional consequence of lower prices as a result of the use of non-cash methods” (pp. 9,10).

USDA Forum on Captive Supply in the Livestock Industry

USDA sponsored a forum on captive supply in the livestock industry in Denver, Colorado, on September 21, 2000 (the forum). At the forum, producers and others expressed concerns about captive supply:

- Captive supply arrangements may cause a lack of or reduced spot market information because they are private negotiations between packers and participating cattle feeders. With no mechanism for reporting captive supply prices or other conditions of trade, producers may not have enough information to make sound business decisions.
- Because contracts with formula pricing typically have base prices derived from spot market prices, captive supply may create an incentive for packers to lower spot

market prices. If packers use captive supply to push down spot market prices, then packers may pay less and producer revenues could fall.

- Captive supply arrangements may lower spot market prices if packers bid less aggressively for cattle in the spot market because they have large percentages of slaughter secured by captive supply.
- If spot market prices were to be lowered because large percentages of slaughter are secured by captive supply, then packers could be contributing to increased spot market price variability.
- Captive supply may result in thin or closed markets because the volume of cattle traded in the spot market falls when packers have large percentages of slaughter secured by captive supply.
- If spot markets thin or close, some cattle producers may be forced to enter contracts with packers or go out of business.
- Captive supply may restrict competition among packers. Large packers may use captive supply arrangements to block smaller packers from obtaining cattle. As a result, smaller packers may go out of business, further increasing concentration of an industry already highly concentrated.
- Over time, reported spot market prices could become less representative of market conditions as they account for a declining share of the overall market.
- Cattle sold under captive supply arrangements might receive higher prices than cattle of the same quality purchased on the spot market.

Known Effects of Captive Supply on Markets

Spot Market Price

Econometric studies of captive supply have shown a negative statistical relationship between levels of captive supply and spot market prices paid by packers for fed cattle; increases in the level of captive supply tend to be associated with reductions in spot prices. However, the studies have not shown that increases in the use of captive supply cause spot market prices to fall, or that packers' use of captive supply causes spot market prices to change.

Econometric studies have shown that the relationship between the use of captive supply and spot market prices for cattle differs according to the type of captive supply arrangement. For example, Ward, Koontz and Schroeder found the inventory of forward contracted cattle had a positive statistical relationship with spot market prices (increases in the number of forward contracted cattle are associated with increases in spot market prices); however, the relationship between the inventory of marketing agreement cattle

and spot market prices was negative. For packer fed cattle, the inventory-price relationship was mixed negative and positive.

In addition, the available research does not support the perception that packers decide the weekly levels and timing of captive supply deliveries. In their study of four large beef packing plants located in the Texas Panhandle, Schroeter and Azzam found that under a marketing agreement, the feedlot chooses which week to deliver the cattle and how many cattle to deliver. After the feedlot chooses the delivery week and quantity, the packer chooses the specific day or days of the week for delivery.

Captive Supply Prices

Prices for cattle purchased using different procurement methods vary according to the particular procurement method. Econometric studies of captive supply arrangements show spot market prices for fed cattle tend to be higher than forward contracted prices, but are not significantly different than prices for packer fed cattle. These studies also show spot market prices for fed cattle tend to be less than prices for marketing agreement cattle. Some researchers have interpreted these results to suggest that cattle feeders pay a risk premium to packers for forward contracted cattle and packers pay a premium to producers for some assurance of higher quality or quantity of fed cattle purchased through marketing agreements. Other researchers interpret these findings as evidence of price discrimination.

Unresolved Questions About Effects of Captive Supply on Markets

Causality

The cause-and-effect relationship between the use of captive supply arrangements and prices paid for cattle is not known. A negative statistical relationship between the use of captive supply and the spot market price of fed cattle has been identified in several studies, but researchers have not concluded that an increase in captive supply causes a decrease in spot market prices. Some researchers believe a more complete behavioral model is needed to test for causal effects.

Market Access Implications

Issues relating to the market access implications of captive supply have not been well documented. No study has shown that substantial numbers of producers have been precluded from selling cattle because others have captive supply arrangements or that marketing opportunities for producers have been enhanced by packers' captive supply arrangements. Studies have identified some of the features that make captive supply arrangements attractive for producers and packers, but have not shown how specific

management practices or production technologies at a feedlot factor into a producer's or packer's decision to establish a captive supply arrangement. In addition, studies have not shown how specific packer practices, contractual issues, or price settlement mechanisms factor into decisions to enter into captive supply arrangements.

Long-run Implications of Captive Supply on the Marketplace

Most studies of the impacts of captive supply have focused on short-term implications. In general, analysis of long-run implications of captive supply has been hampered by lack of detailed data over long periods of time. A comprehensive analysis of the long-run effects of captive supply would look at its effects over a complete cattle cycle or several cycles.²⁸ With cattle cycles lasting an average of 7-11 years, a long-term analysis of this type would require several decades of information. Many of the captive supply procurement methods common today were not in common use in previous cattle cycles. Therefore, this type of study could not be done with data for previous cattle cycles. In addition, with the rate of change in the development of new procurement methods, both the types of captive supply arrangements and their importance relative to total procurement will continue to change. Whether studying the long-run effects of captive supply over a cattle cycle or another long time period, the data required to analyze captive supply's implications for price in the long run are, in effect, changing and moving targets. Hence, there are few quantitative findings regarding long-run implications of the use of captive supply.

Market Information

With voluntary price reporting prior to April 2001, the use of captive supply was linked to a reduced amount of market information because fewer prices were publicly reported. Less market information can inhibit efficient price discovery and determination. Poor information may lead to unnecessary price volatility or slow adjustment to changing supply and demand conditions. Currently, under mandatory price reporting, information for all types of purchases is reported to AMS. Nonetheless, questions remain about the amount of information reported about captive supply and the commensurate effects on the market.

²⁸ Livestock production historically follows a pattern of decreasing production followed by a period of increasing production. The period of time from a production trough to the next production trough is known as a "cycle."

Appendix C – Captive Supplies and the Packers and Stockyards Act

The Packers and Stockyards Act (the Act) confers authority upon the Secretary to regulate the activities of the livestock industries, but the Secretary may not prohibit an activity or practice unless it violates the Act. The Act does not expressly prohibit the use of captive supplies in any form, including packer feeding of livestock, and GIPSA may not prohibit packers from using captive supplies without evidence that the use of captive supplies causes harm or is likely to result in the type of harm that the Act was intended to prevent.

As discussed earlier in this report, many buyers (packers) and sellers (producers) choose to enter captive supply arrangements for valid business reasons. Captive supply arrangements, like other market innovations and changing business practices, benefit those market participants, both buyers and sellers, who use them even while other market participants, who rely exclusively on the spot market, may not realize these benefits. However, if GIPSA finds evidence that a packer is using captive supply to manipulate spot market prices or to violate the Act in any other manner, GIPSA may bring a formal disciplinary action and seek an appropriate civil penalty.