



# Summary of Results from USDA's Meatpacking Concentration Study

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During the 1980s, a number of factors contributed to increased concerns among many people regarding livestock pricing and procurement practices by meatpackers. One major contributor was the continued rise in packer concentration for fed cattle. Another was the increased use of non-cash market procurement methods, commonly called captive supplies. In response, Congress appropriated \$0.5 million to the Grain Inspection, Packers and Stockyards Administration (GIPSA) of the U. S. Department of Agriculture (USDA) in 1991, mandating a study of meatpacking concentration. GIPSA issued a request for proposals, had an interagency group review proposals received, and contracted six projects to five universities (Packers and Stockyards Program). Some projects consisted of two or three separate but interrelated components. Some components consisted of alternative analytical approaches.

To support the research, GIPSA, in consultation with contractors, collected primary data from meatpacking firms. GIPSA sent teams of their employees to the 43 largest steer and heifer slaughtering plants to collect data on each transaction of 35 head or more for the period April 5, 1992, to April 3, 1993. Total transactions numbered 200,616. GIPSA collected operating costs and revenue data by mail survey from the same 43 plants and for the same time period as the transactions data. Contractors also conducted mail or telephone surveys for some projects.

Many researchers involved in the GIPSA study have had a long history of addressing concentration, pricing, and related industry issues. Access to data was better for this study than any ever before undertaken. In many cases, data came from a broader segment of the industry, covered a longer time period, and contained information never before available. In short, this was the most thorough work done on these issues to date. This author believes the results should not be buried or ignored. Much was learned. Certainly the work has limitations, some related to data, time available, and administration of the study. Some results surprised the researchers; others were very revealing. This Extension Facts attempts to identify those findings which are believed to be especially pertinent, i.e., findings which will inevitably influence policy decisions and industry structure in the future.

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## Definition of Regional Cattle Procurement Markets

This project consisted of three components (Hayenga, Koontz, and Schroeder). For the three components combined, there were multiple objectives and multiple approaches. In any antitrust matter, one of the first steps is to determine the relevant market. Relevant markets are both product markets and geographic markets. Properly defining the relevant geographic market is essential to correctly describing the structure and assessing the conduct and performance of an industry.

One component used publicly available market price data over several years to estimate linkages between markets from which fed cattle prices are reported. Another used transactions data for one year to map the procurement area of packing plants and to estimate the responsiveness of packing plants to price changes. And the final one used transactions data for one year to estimate price leadership among plants, long-run spatial price relationships among plants, and the speed of price adjustment by plants.

In the first component, arbitrage costs were estimated between price reporting markets. Low costs suggest pairs of comparison markets are in the same geographic market, while high costs suggest the comparison markets are in separate geographic markets. In general, it was found that average arbitrage costs were relatively low. Thus, the probability of finding arbitrage between market pairs was small. For neighboring markets, arbitrage costs approximated transportation costs. This suggests U.S. fed cattle markets for which market prices are reported are reasonably well linked. While there were no clear market separations, there was some degree of market separation on the east and west coasts from markets in the central U.S. There was also some separation between the southwestern and northwestern markets.

Geographic mapping of fed cattle purchases from the cash market over a year-long period was part of the second component. Procurement area mapping indicated that on average, plants obtained 64 percent of their fed cattle in the U.S. from within 75 miles of the plant, 82 percent from within 150 miles, and 92 percent from within 250 miles. Ninety-five percent of purchases came from within 270 miles of each plant on average. However, the average maximum distance from which a plant purchased cattle was 655 miles. Differences were found for plants located in different regions.

Procurement area overlaps were computed as one means of estimating the amount of competition among plants. An overlap was assumed when at least 10 percent of a plant's fed cattle procurement came from an area where cattle were also purchased by one or more other plants. Of the 43 plants studied, the fewest number of overlaps was one and the most was 22. More overlaps were found among larger plants. Plants in the west and east had fewer overlaps than plants in the plains and midwestern states.

In the third component, Granger causality analysis revealed strong causality among most plants, with considerable information flowing among plants. Plants in Kansas and Nebraska tend to be geographic price leaders, regardless of whether daily average prices or day-to-day price differences were used. Similarly, cointegration results found nearly all plants' prices are cointegrated. On a daily basis, a long-run spatial equilibrium price relationship was evident across nearly all plants. Prices did not significantly diverge from each other across plants.

Another approach found that Nebraska tended to be the center for price discovery. Plants in Texas and Kansas tend to follow prices discovered in Nebraska. Plants in other regions had weaker links to prices in Nebraska or other regions. Plants in Texas and Kansas react most quickly to price changes at plants in Nebraska and Colorado. Rapid adjustments by plants suggest those plants are in the same geographic market. Plants in Nebraska and other states react slowly to price changes in Texas and Kansas. Thus, plants in Texas and Kansas generally do not have a rapid influence on daily price adjustments in other states.

Cointegration increased for plants with overlapping procurement areas. Plants with overlapping procurement areas also are more likely to have significant price causality with each other. Plants purchasing a high percentage of their slaughter in the cash market are less likely to have prices cointegrated with other plants, are slower to adjust to price changes elsewhere, and are more likely to have price changes at other plants influence their prices.

Larger plants have prices that are less likely to be cointegrated, respond more slowly to deviations from spatial equilibrium, and are less apt to have prices affected by price changes at other plants. These results suggest larger plants operate somewhat independently relative to smaller plants in discovering daily prices. They may operate with greater concern for volume needs and high levels of plant utilization than for market prices. Plants operated by the same firm were more likely to have cointegrated prices. Firms having plants in different locations can more easily ship cattle between plant locations or purchase cattle from the fringe of each plant's trade area and ship cattle to either plant.

In summary, regardless of the various approaches and data used, general results were quite consistent. A few states, primarily Nebraska, Kansas, and Texas represent the core geographic market for fed cattle and the center of price discovery. All other cattle feeding areas are linked to this market center, but the strength of the linkage diminishes as plants are located farther from the core. The weakest linkages and areas most likely to comprise a separate geographic market are in the eastern and western U.S. Linkages were stronger when considering firms rather than plants.

## Price Determination in Slaughter Cattle Procurement

The primary objective of this project was to describe and assess the pricing and procurement practices of meatpackers (Texas Agricultural Market Research Center). Transactions data provided information on what packers' pricing and procurement practices for fed cattle were, and a survey of packers and feeders provided insight on why such practices were followed. There were two approaches to the what component and one to the why component.

Cash market transactions accounted for 82.3 percent of the sale lots; market agreements, 8 percent; forward contracts, 7 percent; and packer-fed transactions, 2.7 percent. Live weight pricing was used for 45.6 percent of the transactions; carcass weight, 37.6 percent; and formula prices, 16.8 percent. Consequently, cash market transactions with pricing based on either live weight or carcass weight accounted for three-fourths (74.7 percent) of all transactions.

An average sale lot consisted of 115 head of 1,157-pound steers and heifers. A high percentage of sellers (88.8 percent) sold less than 1,000 cattle and 74.3 percent of all sellers had fewer than 5 transactions during the one-year data period. On average, 53.8 percent of the transactions were all steers; 32.2 percent all heifers; and 5.7 percent dairy (including fed Holsteins). The average percentage Choice grade was 57.2 percent, with 35.2 percent Select cattle. Carcasses in the average sale lot were 49.4 percent yield grade 2 and 42.1 percent yield grade 3. Yield or dressing percentage per sale lot averaged 62.6 percent.

Data were provided by GIPSA on packer capacity. From that and the transactions data, capacity utilization was estimated. Plant utilization differed widely for larger versus smaller firms. The three largest firms had an average daily capacity in their plants of 3,026 head and an average capacity utilization of 80.4 percent. Comparable figures for the next five largest firms were 1,542 head and 72.1 percent, while for the remaining, smaller firms, the figures were 451 head and 59.4 percent. In theory, larger firms which have plants capitalizing on economies of size should be able to pay more for fed cattle. However, if larger firms are exercising market power, they will pay less for fed cattle. Data showed that plants both with larger capacity and with higher plant utilization paid higher prices on average for fed cattle compared with smaller, less efficiently utilized plants. Consequently, efficiency gains were being passed back to cattle feeders in the form of higher fed cattle prices. There was evidence that as regional concentration increased, fed cattle prices declined, but the authors termed the magnitude "negligible." Small price declines were offset by higher prices associated with keeping plants operating at high rates of capacity utilization.

Packers also paid higher prices for cattle sold in larger sale lots and for cattle sold by larger cattle feeders (feedlot capacities of 16,000 head or more). Higher prices were paid for marketing agreement cattle compared with cash market cattle, while lower prices were paid for forward contracted cattle. Higher prices were paid for cattle in the most geographically concentrated cattle feeding areas, i.e. west north central and southern plains states. Packers paid a small premium for cattle purchased from within 100 miles of the plant and

a small discount for cattle purchased from over 300 miles of the plant. These results suggest packers are not exercising spatial monopsony pricing. Packers paid higher prices for sale lots of cattle which were predominantly yield grades 2 and 3, and there was evidence that packers preferred uniform sale lots.

Packers and feeders ranked their preferred pricing methods similarly with a preference for live weight pricing. Packers preferred a longer delivery period than feeders did for contract cattle. Packers preferred 30 days or more, while feeders preferred 10 days or less. A majority of packers and feeders agreed that premiums were paid for higher quality cattle. A higher percentage of packers than feeders indicated a premium was paid for sorting privileges. Feeders perceived that packers discount cattle only for dark cutters and excessive mud. Packers agreed to discounting for those factors, along with inconsistent quality, high yield grade (i.e., yield grades 4-5), large-framed cattle, small -framed cattle, excessive ear/loose skin, weighing conditions, and reputation of the cattle.

Packer and feedlot respondents rated the same three feedlot services/characteristics highest in importance in purchase/sale of fed cattle; i.e., honesty, reliability, and dependable delivery dates. However, packers rated the first two significantly higher than feeders. Packers also rated the following factors as more important than feedlots; feed primarily non-Brahman cattle, feed mostly steers or feed mostly heifers, and sorting pens to finish evenly.

In summary, in terms of what packers were doing, larger and more efficient packers appeared to be passing back some of their efficiency gains to feeders in the form of higher prices. Larger packers paid higher prices in general. They paid higher prices for cattle purchased from the most concentrated feeding areas and paid higher prices for cattle purchased closer to their plants. Higher prices were paid for fed cattle purchased by marketing agreements, while lower prices were paid for forward contracted cattle, both relative to cash market cattle. As to the why of purchasing/marketing fed cattle, there appeared to be more agreement among packers and feeders than disagreement and more than might have been expected by many cattlemen and others.

## Role of Captive Supplies in Beef Packing

Three alternatives to cash market purchases include packer feeding, forward contracting, and marketing agreements. Combined, these three procurement methods are commonly called captive supplies. The captive supplies project consisted of two components, one estimating long-run impacts from captive supplies and the other estimating short-run impacts (Ward et al.). The objective for the long-run component was to identify the determinants for packers using contracts and marketing agreements. This was the first research attempting to measure the factors affecting packers' use of captive supplies. The short-run component consisted of multiple objectives and approaches, but the overriding objective was to estimate the impacts captive supplies had on cash transaction prices.

A model was estimated using special captive supply survey data for the long-run study to identify those factors which affect how much a plant uses contracts and marketing agreements for fed cattle procurement. Transactions data were used for the short-run impacts study, and three models were estimated, each taking a slightly different approach to

measuring the effects of captive supplies on cash market prices. Models focused on the effects deliveries of captive supply purchases had on cash prices, impacts an inventory of captive supply purchases had on cash prices, and differences between prices paid by packers for fed cattle purchased by alternative methods, i.e., captive supply methods versus cash market purchases.

In examining monthly captive supply data collected by GIPSA, it was found that forward contracting (including here marketing agreement purchases) and packer feeding varied greatly among plants. Use of captive supplies was higher for larger plants compared with smaller plants. Average monthly captive supply purchases were nearly three times higher for larger than smaller plants (17,872 and 5,818 head per month, respectively, across all plants). Larger plants also had higher plant utilization than smaller plants. Use of packer feeding was relatively constant during the year, whereas use of forward contracts and marketing agreements was more variable, increasing in April, June, and December.

The captive supply determinant model found that larger plants use captive supplies strategically. Captive supply usage increased as cash prices increased for larger plants but not smaller plants. Captive supply usage increased as cash price variability increased, moreso for larger plants than smaller plants. Captive supply usage also increased as plant utilization increased. Lastly, for larger plants, contracting and marketing agreements were substitutes for packer feeding. Therefore, in summary, larger plants used captive supplies to increase plant utilization and to mitigate rising or more variable prices. Cattle availability over the five-year data period did not affect captive supply levels.

No previous research recognized that decisions by packers to use captive supplies are made simultaneously with decisions of whether to purchase cattle in the cash market and how much to pay for cash market cattle. In one of the short-term impact approaches, simultaneity was found in the decision to deliver forward contracted and marketing agreement cattle and the decision to purchase cash market cattle. The same simultaneity was not found for packer fed cattle. This suggests packers feed cattle for different reasons than they use for contracts and marketing agreements. Packer feeding may be motivated more by cattle feeding profit opportunities and maintaining a steady flow of cattle to the plant, and less by using packer fed cattle strategically to reduce procurement costs via its influence on cash market prices. As the percentage delivery from the inventory of forward contracted cattle increased by one percent (from the average for the year), transaction prices were found to decline by \$0.03-\$0.05/cwt. (dressed weight prices). The range of price effects corresponds to several modeling approaches. Captive supply inventory periods of 14 days and 28 days were considered, and some models included variables for plants, while others used firms. A consistent negative relationship was also found for marketing agreement cattle. As the percentage delivery from the inventory of marketing agreement cattle increased one percent, cash market transaction prices declined by \$0.10-\$0.41/cwt.

Another approach measured the impacts between the size of captive supply inventory and level of transaction prices. Results again were mixed. For the total inventory of captive supply cattle, results were consistently negative but small. Cash market transaction prices declined by \$0.01/cwt. or less as the inventory of captive supply cattle increased by

1,000 head from the average quantity for the year. For forward contracted cattle, the cash market impacts were consistently positive; for packer fed cattle, the impacts were mixed; and for marketing agreement cattle, the impacts were consistently negative but small (\$0.01-\$0.04/cwt.).

This study was the first to compare prices paid by packers among fed cattle procurement methods. Importantly, price differences were found among procurement methods. Compared with cash market prices, packers paid \$3.02-\$3.16/cwt. less (dressed weight prices) for forward contracted cattle over the one-year period. Packer-fed prices were about the same as cash market prices and prices paid by packers for marketing agreement cattle were \$0.07-\$0.10/cwt. higher than for cash market prices. These results suggest cattle feeders pay a risk premium to packers for forward contracting cattle. And while not large, the higher marketing agreement prices may suggest that packers provide a small incentive to feeders for the higher quality or quantity of fed cattle they purchase via marketing agreements.

Modeling results confirmed much prior research as well as research from other projects of the GIPSA study. For example, substantial price differences were found among packing plants and firms. Highest prices were found in general for plants in the Kansas area, though not corresponding to state boundaries. Compared to a base plant, plants in or near Kansas paid about \$0.36/cwt. higher prices on average. Prices tended to decline as plant locations increased in distance from that core area. Prices were about \$0.90/cwt. lower on average for plants located in an area bounded by South Dakota, Colorado, the northern half of Texas, and Missouri. Prices were about \$2.63/cwt. lower on average for plants located outside that bounded area. These results corresponded to findings in the regional market definition component of the GIPSA study.

In summary, larger plants made greater use of captive supply procurement methods to keep plant utilization high. Larger plants tended to use captive supplies strategically, i.e., increasing the use of captive supplies as cash market prices and price variability increased. Decisions to deliver cattle from an inventory of purchased cattle by captive supply methods and decisions to purchase cash market cattle were interrelated for marketing agreement and forward contract cattle. Price impacts from captive supplies were often negative, though small. A large price difference was found between forward contracted cattle and cash market purchases. Plants in the vicinity of Kansas, not necessarily corresponding to the state's boundaries, paid highest prices for fed cattle, similar to findings in the regional market definition and price determination projects of this study.

## **Effects of Concentration on Prices Paid for Cattle**

For many producers and others, the expected results from this portion of the GIPSA study were clear; concentration impacts on fed cattle prices would be large and negative. However, no concrete conclusions about the effects of concentration on fed cattle prices were made (Kambhampaty et al.). Data limitations hampered the analysis more for this project than others. Cost and revenue data were collected by mail survey and data were sometimes not available or data were not kept uniformly across packers. Follow up phone contact by P&SP failed to resolve many of the problems.

This project was the first attempt to estimate packer concentration impacts with detailed weekly and monthly cost and revenue data from packers for individual plants. Most previous attempts used aggregated time series data. Previous research indicated data aggregation harmed efforts to estimate market power by a widely employed methodology. Therefore, the opportunity to test for market power with weekly data was welcomed. However, imprecise and inaccurate cost and revenue data hampered the ability to draw definitive conclusions.

A model was developed to test whether packers attempted to maximize profits, both for packers that slaughter only and packers that slaughter and fabricate. Results suggest packers are not strict short-term profit maximizing firms. Deviations from profit-maximizing output levels occurred as frequently as 16 percent of the time for some plants. Packers are apparently constrained by contractual and labor commitments to such an extent that they do not choose weekly periods over which to maximize profits.

In summary, more information is needed regarding packer behavior. Goals of packers, if not strict profit maximization, need to be better understood to identify better means of estimating packer concentration impacts on fed cattle prices. This finding was deemed to be very important since strict profit maximization is an underlying assumption for methodology estimating market power. Thus, more emphasis needs to be placed on understanding and analyzing firm behavior in imperfect markets.

## **Vertical Coordination in Hog Production**

This project was the only one dealing exclusively with hogs (Hayenga et al.). It focused on the largest packers, feed companies, and hog producers/contractors. Its objectives were to identify and estimate the relative importance of current vertical coordination arrangements, determine projections for vertical coordination changes, and identify implications from those changes.

Nineteen of the largest pork packing firms purchased about 87 percent of their hogs from the cash market in 1993. Nearly 11 of the remaining 13 percent were supplied by long-term contracts. Changes expected in the next five years are noteworthy. Purchases from the cash market are expected to decline from 87 to 66 percent by 1998. Conversely, long-term contracts are expected to increase from 11 to 25 percent in the same five-year period. The sharp reduction in use of cash markets has clear implications for price discovery and price reporting. Fewer prices will be publicly available to report and be used in discovering contract prices. However, if nearly two-thirds of hogs marketed still are purchased in the cash market, price discovery may not be hampered significantly.

Many long-term marketing contracts were formal, written contracts for a fixed time period (often four to seven years). Half of the packers involved in long-term contracts reported requiring a minimum number of hogs and either a minimum quality or specified genetics. The dominant pricing arrangement was a formula price consisting of a base price tied to a reported market price and carcass merit adjustments based on cutout value of the hogs. Some innovative risk-sharing contracts were found. The two most important reasons for long-term contracts were improved quality and reduced quality risks. More advantages of long-term contracts were

mentioned by packers than disadvantages. Financial benefits to hog producers, either increased capital availability or lower financial risk, were cited most often as the primary advantages. The most frequently mentioned disadvantage for producers in the view of packers was reduced flexibility. Not surprisingly, given the above, the largest packers expect closer producer-packer linkages in the next five years.

The largest hog producers expect to increase production from the 1993 level of 13 million head to 30 million head by 1998, an increase of 144 percent. Nearly three-fourths of the hogs they marketed in 1993 were contracted to packers. Larger producers also expect closer ties with packers in the future. By 1998, they expect to market only 10 percent of their hogs in the cash market. A larger percentage of hogs in 1998 than in 1993 is expected to be produced by packers or in joint ventures with packers, but forward contracts will comprise nearly three-fourths of expected marketings.

Large hog producers cited a guaranteed market outlet as the primary benefit from forward contracts. Reduced market risk was second, followed by a tie between better prices and reduced transaction costs. Producers verified what packers indicated about disadvantages of contracts. Producers cited the inability to shop for better prices as the biggest limiting factor surrounding contracts. Producers cited the assurance of hog supplies as the most important benefit to packers. Lower buying costs and better quality hogs ranked second and third. Relatively few disadvantages for packers were mentioned by producers. Nearly 80 percent of the largest hog producers were involved in hog production contracting of a type similar to the broiler industry. Besides closer ties with packers in the future, large hog producers anticipate a reduced role in hog production by commercial feed companies, though large feed companies anticipated a slightly larger role in hog production.

Survey results indicated large packers contract with large hog producers. Most contracts were not fixed price contracts, thus not transferring price risk from hog producers to packers. The primary motivation for long-term contracting was a guaranteed outlet, especially among those hog producers marketing a half million hogs or more annually. Those largest producers can account for a substantial percentage of daily slaughter for many packing plants. Long-term contracts also reduce transactions costs for producers and packers and aid quality improvement over time.

In summary, larger hog producers expect to continue their rapid growth rate in the next five years. They expect closer relationships with packers and less reliance on cash market prices. Price discovery concerns which have plagued the beef industry the past couple years may simply be preceding similar price discovery concerns in the hog industry. Contracting has advantages for both buyers and sellers, from financing hog production to guaranteeing supplies to operating larger slaughter plants more efficiently. Reasons for using marketing contracts in hogs parallel those found for fed cattle.

## Assessing Competition in Meatpacking: Economic History, Theory, and Evidence

All projects of the GIPSA study contribute to future research regarding issues related to packer competition and pricing. This project (Azzam and Anderson) was specifically intended to review an extensive literature pertaining to the meatpacking industry and its relative competitiveness. The historical development of the packing industry is discussed prior to reviewing the economic theories and methods related to assessing the competitiveness or noncompetitiveness of the industry.

Ultimately, the report attempts to determine whether the empirical evidence is persuasive enough to conclude that competition in the packing industry is deficient. Limitations with each of the two major approaches to studying industry competition are reviewed. The structure-conduct performance (SCP) approach attempts to link industry structure, such as number, size, location, and concentration of firms, with industry performance, such as prices paid and received, innovativeness, and profitability. The new empirical industrial organization (NEIO) approach attempts to focus more on conduct of firms in the industry. A major limitation of the SCP approach often relates to alternative interpretations or explanations of empirical results. Major limitations of the NEIO approach often pertain to inadequate data; thus they rely more on aggregated data over time and/or space.

While each approach has limitations, numerous studies undertaken to date make a contribution. In total, the authors conclude that the body of empirical evidence is not persuasive enough to conclude the industry is noncompetitive. However, failure to prove the industry is noncompetitive is also not persuasive enough to conclude the industry is competitive.

In summary, empirical research to date fails to show conclusively that the packing industry is noncompetitive. A pattern of growth and innovation in the packing industry is evident. In the lone study attempting to measure cost efficiency gains in meatpacking vs. market power losses, results suggest cost efficiency gains from economies of size outweighed market power losses from the decline in competitiveness. The question is raised whether or not the static, textbook theory of perfect competition is really the appropriate benchmark in a dynamic real-world market. Textbook theories clearly show misallocation of resources in static, imperfectly competitive markets. However, there is evidence that imperfectly competitive markets may achieve greater efficiencies over time through growth and innovation. Therefore, the authors conclude that policies steering the packing industry toward rivalrous behavior are preferable to policies that attempt to ensure a specific market structure, i.e., number, size, and location of firms or level of concentration. As with the conclusion from the concentration project, future research should focus on meatpacker behavior.

## Conclusions

A number of findings from the six projects of this study were consistent. A few major cattle feeding states, primarily Nebraska, Kansas, and Texas represent the core geographic market for fed cattle and the center of price discovery. All other cattle feeding areas are linked to this market center, but the strength of the linkage diminishes as plants are located farther from the core. Highest prices for fed cattle are paid in the core geographic area.

Larger and more efficient packers appeared to be passing back some of their efficiency gains to feeders. Higher prices were paid for larger sale lots of fed cattle and to the largest feedlots. Higher prices were paid by larger packers which had larger slaughter capacities and higher rates of plant utilization. Higher prices were paid for cattle purchased closer to their plants. Higher prices were paid for marketing agreement cattle but lower prices were paid for contract cattle, both relative to cash market cattle.

Larger plants made greater use of captive supply procurement methods to keep plant utilization high. Larger plants tended to use captive supplies more when cash market prices were increasing or when price variability increased. Decisions to deliver cattle from an inventory of purchased cattle by captive supply methods and decisions to purchase cash market cattle were interrelated for marketing agreement and forward contract cattle. Price impacts from captive supplies were small, though often negative. A large price difference was found between forward contracted cattle and cash market purchases.

The hog industry appears to be following some of the trends of the past several years in the fed cattle industry. For example, larger hog producers expect to continue their rapid growth rate. Closer ties with packers and less reliance on cash market prices are expected, which can be interpreted as more captive supplies in the hog industry and more concerns about price discovery in the next few years. But as with fed cattle, hog contracting has advantages for both buyers and sellers, from financing hog production to guaranteeing supplies to operating larger slaughter plants more efficiently.

Empirical research in this study coincides with the assessment of previous empirical research. Research fails to show conclusively that the packing industry is noncompetitive, and there is evidence of efficiency gains through growth and innovation in the packing industry.

Did this study find negative effects from concentration? No. Did this study exonerate packers from questions about

use and abuse of market power? No. Questions remain. Should the static, textbook theory of perfect competition be the benchmark for assessing competitiveness in a dynamic real-world market? How many resources should be devoted to further understanding the conduct or behavior of large firms in a concentrated, imperfectly competitive market? How many resources should be devoted by regulatory agencies to monitoring market performance? These and other questions were not and could not be answered by the GIPSA study. In this author's opinion, contributing to a growing body of knowledge regarding competitiveness in the packing industry is important, and the GIPSA study contributed importantly both to the research literature and policy making process.

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