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WHAT DOES THE RTI STUDY SAY ABOUT CAPTIVE SUPPLIES IN THE CATTLE AND BEEF INDUSTRY?

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In 2003, Congress mandated a study of captive supplies in the livestock and meat industry. The previous study – the 1996 Concentration Study – looked only at the costs of captive supply use and the intent of this new study was to perform a comprehensive cost and benefit assessment of marketing arrangements used in place of the cash market. The result was the 2007 RTI Livestock and Meat Marketing Study. The work is available at the USDA GIPSA website.

This fact sheet will summarize the main findings as related to the cattle and beef industry. The study was of all the major meat species – cattle and beef, hogs and pork, sheep and lamb – and included some analysis of the downstream food service and retail industries. The research teams in the study were extensive. There were 30 personnel with several hundred years of total research experience. Researchers from RTI International, Wharton School of Business at the University of Pennsylvania, Econsult & AER Consulting, and Colorado State, Iowa State, Montana State, North Carolina State, and Kansas State Universities participated in the project. RTI also coordinated the competitive grant writing, the research projects, and reporting to GIPSA. The project report was peer reviewed and several pieces were presented at professional meetings and are published in peer-reviewed journals. This is scientific practice.

A variety of scientific methods were used in the study. Each and its main findings will be summarized next and the overall cost/benefit finding will complete this fact sheet.

Face-to-face interviews were conducted. Those interviewed included cow/calf producers, stocker and fed cattle producers, trade associations and groups, alliances, packers, wholesalers/ distributors, retailers, and food service. The interviews required focusing on representative and "interesting" players within each industry segment. Most were very cooperative. Those interviewed were asked about their company/ organization, to describe procurement and sales methods used, and provide characteristics of those methods. Each was also asked what the effect on the beef industry would be with restrictions on alternative marketing arrangements (AMAs).

In summary, AMAs helped them manage their business more efficiently, reduce risk, and improved beef quality.

- Cow/calf and stocker producers used AMAs primarily for risk management.
- Feedlots used AMAs to reduce costs by $1 to $17 per head through improved capacity utilization (>90% at formula yards versus <80% at non-formula), personnel use, feeding program

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standardization, and reduced financial requirements.

- Packers identified, for example, a cost savings of $0.40 per head in reduced procurement costs if a single cattle buyer could be reduced from a plant's payroll.

All agreed that without AMAs, higher returns would be needed to attract investment capital and that beef quality would suffer in an all-commodity marketplace.

Surveys were conducted. Surveys were sent to all segments of the cattle and beef industry – cow/calf producers, stocker producers, cattle feeders, packers, wholesalers/distributors/exports, retailers and food service. 10% of each industry segment was targeted with oversampling of smaller businesses. The response rate was 25-33% which was very good. Survey takers were asked – with respect to procurement and sales – what were they doing and why? They were asked perceived benefits and costs of their actions to themselves and to the industry.

Small business tended to use the cash market exclusively and larger businesses used the cash market and other marketing methods – alternative marketing arrangements. The cash market was important to both but more innovative activities were done through AMAs. Many AMAs involved grid marketing, premiums for different services, and were needed for branding and certification programs. Specifically, the top 3 reasons for AMA use were:

- Producers said: "The ability to buy/sell higher quality cattle," "Improve supply management," and "Obtain better prices."
- Packers said: "Improve week-to-week supply management," "Secure higher quality cattle," and "Allow for product branding in retail stores."

Specifically, the top 3 reasons respondents used only the cash market were:

- Producers said: "Independence and flexibility," "Quick response to changing market conditions," and "Ability to buy at lower prices and sell at higher prices."
- Packers said: "Independence and flexibility," "Quick response to changing market conditions," and "Securing higher quality cattle."

The survey results communicate the diversity in the cattle industry. Producers used different marketing methods to do the same thing. They communicated they were using the market method that worked best for them. They were also concerned about how their actions impacted the marketplace. Importantly, it is not a conclusion from the survey that producers were forced into using AMAs or that they did not have AMAs available if they wanted to use them.

Fed cattle transactions were examined. This portion of the study is most like the 1996 Competition Study. It is how to measure a cost to the industry of the market power in AMAs. The transaction data period was 2½ years – October 2002 to March 2005 – and was the longest allowable by law. The data contained over 590,000 transactions on over 58 million animals from the 29 largest plants in the U.S. It is essentially every transaction in the country for the sample period – it is very close to a census. Within the data:

- 61.7% were cash transactions
- 28.8% were marketing agreement transactions
- 4.5% were forward contracts, and
- 5.0% were packer-owned, other and missing information.

So AMAs – or captive supplies – in the cattle and beef industry are marketing agreements where the price is determined by formula. It is important to note this is a plant-by-plant analysis and the data are essentially that from the mandatory price reporting databases that the packers keep.

What does the data show? Transactions prices are well-explained by market-level supply and demand and characteristics associated with the cattle in the transaction. Supply, demand and pen quality are the most important things in determining price. Also,

- Cash, marketing agreement, and packer-owned cattle transaction prices were similar.
- Auction prices were higher and forward contracts were lower.
- Carcass prices were also lower and grid prices were lower yet.
- AMA cattle were of higher quality.
- Direct trade cash cattle were the lowest quality and auction cash cattle were the highest.
- AMA transactions had equal or less risk than cash cattle.

The results across the different marketing methods and pricing methods showed no finding not seen in other research. It is important to emphasize that marketing agreement cattle through the formula are priced very similar to the cash market – the base price for most formulas. Likewise, it is important to understand that formulas are negotiated and priced based on negotiated prices.

So what was the impact of AMAs on cash prices? The study found that:

- When AMA use increases cash prices decrease: A 10% increase in AMA use (as % of plant capacity) was associated with a $0.40/cwt of carcass weight. Or a 10% increase in AMA use was associated with a 0.3% decrease in cash price.
- Impacts were economically small but statistically significant. The average transaction price during the sample period was $138/cwt of carcass weight.
- AMA use was not strategic – more cattle were slaughtered from AMAs when more AMA cattle were available.

It is important to emphasize that the notion that marketing agreements are captive to the packer is not supported by the study. Cattle feeders decide the week of slaughter and the packer calls the day of the week. Finally, the research method can be asked: "If AMAs were eliminated then what would cattle prices have been?" The study finds without AMAs that cattle prices would have been higher by 0.5% or $0.68/cwt of carcass weight. This is consistent with all other published scientific studies on captive supplies and market power: market power measurements are statistically significant but modest.

Packer plant-level P&L data was examined. So if it's not market power that drives AMA use then what does? The reason that packers are thought to use AMAs is that it improves plant efficiency. A more efficiently run plant makes the packer more money and allows the packer to pay higher prices for cattle. If this argument is true then it should be observable in packer profit and loss data. Accounting P&L statements were obtained for the 4 largest packers for their 21 plants. The 2½ year period from October 2002 to March 2005 was the sample. The volume from these plants was 83% of FI steer and heifer slaughter. This part of the study is the most unique as packer P&L data have never been examined outside of a lawsuit.

What does it show? The monthly average gross margin for packers was $140.72 per head. (And ranged from $23 to $212.) The average total cost of slaughter and fabrication was $138.61 per head. (From $120 to $164.) The average profit was –$2.40 per head. (From –$137 to $73.) The profit figure is a loss even though the revenue is slightly higher than cost because there were more irregular expenses than irregular revenue that were not included in gross margin or cost but was included in the profit. Plant-level P&L statements show the industry was losing money for the sample period. And that the risk in profit drivers was large. Further, almost every packer has a problem plant or plants. And it appears the packing industry has 15-17% excess capacity.

What else does P&L data show? There are substantial economies of size. For all sized plants, costs of slaughter and fabrication decline over the whole range of volumes. The "representative plant" operating at 95% of maximum observed capacity is 5% more efficient than when operating in the middle of the observed range of volumes and 12% more efficient than when operating at the low end of observed volumes. Large plants have much lower costs than small plants and large plants have much lower costs when operating full capacity. This is not a surprise as much other research on packing costs economies shows this.

So what findings are new from this research? Plants that use AMAs were more efficient that plants that do not. Specifically, plants that used AMAs

- Had lower costs all else constant – 0.9% lower.
- Had lower costs because volumes processed were higher – 2.6% lower.
- Had lower costs because supplies were more stable – 1.2% lower.

All-in-all, plants that use AMAs realized a 4.7% cost savings and this was $6.50 per head at the industry level. If AMAs were eliminated then the $6.50 per savings would be lost and, given that profit per head was an average loss of $2.40 per head, then packers would have to pay that much less for fed cattle. AMAs benefited the cattle industry $6.50 per head.

So we have… 1) Interview results about benefits, costs, quality/demand, risk, etc – from producers, packers, and downstream. 2) Survey results about benefits, costs, quality/demand, risk, etc – producers, packers, and downstream. 3) Statistical results describing prices and quality – and market power impacts specific to AMAs. 4) Results describing packer cost changes – and specific to AMAs.

So we have many of the pieces needed for a cost and benefit analysis of AMAs. The final thing needed is a method to put them all together: 5) We also have an economic model of the whole cattle and beef marketing system. We can ask that economic model to measure the impacts on the entire cattle and beef system segment by segment.

Cost/Benefit measurements of eliminating AMAs. If AMAs were eliminated then there would be less market power exercised on cattle prices. But there would be higher costs for packers and cattle feeders. And there would be reduced beef demand from quality impacts. There would also be impacts on the cattle and beef traded and impacts on pork and poultry consumption and hog and chicken production. All of these impacts are considered.

What do we find? The benefits of efficiency and quality improvements outweigh the costs associated with market power in AMAs. The net effect of eliminating AMAs would be increased retail prices, decreased farm-level prices, decreased quantities produced and consumed, and economic losses in producer and consumer surplus in all segments of the industry. This says that eliminating AMA use would result in economic losses for beef consumers, beef marketers, and the cattle producing industry. In other words, we find what was discussed in the face-to-face interviews. Without AMAs, higher returns would be required in the cattle and beef industry and beef quality would suffer. However, higher returns come about through reducing cattle numbers and beef supplies. And suffering beef quality reduces demand.

It is worth a detailed review of the net impacts from the cost and benefit analysis. They are summarized in the table below which is from the RTI Study report. Segments of the cattle and beef industry are listed in the first column – consumers are also considered. The short-run impacts are one year impacts – or the year that the cost increases and demand changes are all incorporated into the market – and long-run impacts are cumulative over 10 years. We see that consumers are negatively impacted $1.9 billion in the short run and a cumulative $10.5 billion after 10 years. What does this mean? Higher marketing costs and reduced quality are going to impact beef production. It will decrease and consumers are not better off by this. Higher beef prices and poorer beef quality impact them – but only modestly. The 4.4% is the amount of the reduction in total consumer surplus. After all, there are other meats to consume. But they would rather have the beef from the system with AMAs. How about retailers? The impacts are a negative $0.5 and $6.1 billion – or 1.9% of their producer surplus. Retailers will sell less beef because of higher retail prices but that portion of the meat case will not go empty. Other proteins will go there. But they would rather sell beef from the system with AMAs.

As we move upstream in production, from retailers to wholesalers to producers, we see the percentage loss impacts increase. That is because retailers have a lot of choices, packer has less, but the cow-calf producer has the fewest. Let's jump to feeder cattle producers. The short-run impact is a loss of $5.4 billion and the long-run impact is a loss of $21.1 billion. Producer surplus measures are tricky as they are a combination of price and quantity – or are somewhat like a revenue measure. The short-run is largely a price impact. Increased marketing costs and decreased demand result in lower feeder cattle prices. (A similar situation occurred in the feeder cattle market through 2008-09. Corn costs were high, demand was weak from the recession, and calf prices took a beating.) But lower feeder cattle prices this year will cause cow-calf producers to liquidate cows and reduce the size of the cow herd for later years. (Think about 2010.) So the long-run impact is mainly due to a shrinking industry. Higher marketing costs and reduced demand from eliminating AMAs can shrink the cattle herd 8-10% and reduce its wealth 14%.

We see similar impacts at the fed cattle producer level and at the packer/wholesaler level. Not as dramatic as with feeder cattle but more so than retailers as cattle feeders and packers are specialized industries. Higher

Net Impacts from Eliminating AMAs in the Cattle and Beef Industry

Impact (Billion $2003)	Short-Run	Long-Run
Consumers	–$1.9	–$10.5 (4.4%)
Retailers	–$0.5	–$6.1 (1.9%)
Wholesalers	–$0.8	–$7.0 (5.0%)
Fed Cattle Producer	–$2.8	–$15.3 (6.8%)
Feeder Cattle Producer	–$5.4	–$21.2 (13.8%)
Total of All Producers	–$9.5	–$49.5 (5.9%)

costs and reduced cattle numbers negatively impact those industries. But the capital can and will move to more profitable industries. The total economic impact on all cattle producers is about $10 billion in the short-run and $50 after 10 years.

The comprehensive cost/benefit analysis of AMA use is clear. It is also good research by scientific standards. It is not opinion. The costs associated with AMA use – to the cattle and beef industry – are substantially less than the benefits. Thus, the industry secures a net benefit from alternative marketing arrangements such as marketing agreements, forward contracts, and packer-own cattle. Eliminating them will hurt the entire cattle and beef industry and consumers.