Price Discovery Issues for Fed Cattle: 
What’s the Future of the Cash Market 
or How Thin Is Too Thin?

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STEERS/HEIFERS SOLD BY TRANSACTION

National Weekly

Percent

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
Definitions

• **Negotiated is the cash market** – there is bid and ask – may be live weight or carcass weight or grid – but there is price discovery.

• **Formula is the price paid** is discovered elsewhere – may be plant average price or a USDA AMS regional price or a downstream price or a futures price – but there is no price discovery. Now the terms of the formulas are negotiated but prices are not.

• **Forward contracts** are transactions with >14 days before delivery.

• **Packer owned** are 100% packer own cattle.
STEERS/HEIFERS SOLD BY TRANSACTION
Texas, Oklahoma & New Mexico
Weekly

Percent
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

7/21/08 10/20/08 1/19/09 4/20/09 7/20/09 10/19/09 1/18/10 4/19/10 7/19/10 10/18/10 1/17/11 4/16/11 7/16/11 10/15/11

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
STEERS/HEIFERS SOLD BY TRANSACTION

Kansas Weekly

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
STEERS/HEIFERS SOLD BY TRANSACTION

Nebraska
Weekly

Percent

90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
CATTLE SOLD ON A LIVE BASIS
Monthly

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
CATTLE SOLD ON A DRESSED BASIS

Monthly

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
CATTLE SOLD: LIVE vs DRESSED

Monthly

Mil. Head

Data Source: USDA-AMS
Compiled by: Livestock Marketing Information Center
Captive Supply Research

• Much concentration legislation is focused on prohibiting captive supplies.
• Very well studied: dozen published works.
• Very thoroughly studied:
  – 1996 Concentration Study (Red Books)
  – 2007 Livestock & Meat Marketing Study
    • 30-Month study period: 10/2002-3/2005 with transactions for every pen of animals traded in the country.
  – Both studies Congressionally mandated and funded.
• Strategic behavior by packers in the use of captive supplies was not found.
Incentives to be on a formula?

- Cattle management – pens are marketed when they need to be marketed.
- Feedlot management – personnel, mills, & systems.
- Capacity utilization – low-90s for formula enterprises & high-70s & low-80s for cash market enterprises.
- Financing, partial ownership, & profit-sharing.
- One of the most expensive people in the feedyard enterprise is figuring how to get cattle to make money and is not figuring out how to make money on the phone.

- Higher volumes, predictable volumes, & lower costs.
- Fewer personnel.
- Predictable program cattle volumes.
How do we know this?

Results from the USDA GIPSA (Congressionally Mandated and Funded) Livestock and Meat Marketing Study

Completed in 2007.

Beef, Pork, Lamb, and Downstream Projects.
What’s the “beef” with Captive Supplies?

• Packers get the formula cattle without bidding on them.
• For example,
  – Packers need: 20,000 head per week.
  – Half of supplies are formula – only need 10,000 head.
  – Therefore, AMA’s have to soften demand.
• But what’s the flaw in that argument?
  – I am sure that if the packers don’t have to buy them then feedlots don’t need to sell them.

• And lets call them Alternative Marketing Agreements.
A Correct Example of AMAs

<table>
<thead>
<tr>
<th></th>
<th>Low AMA</th>
<th>High AMA</th>
<th>Concern</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td><strong>Packer needs:</strong></td>
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<tr>
<td>Formula</td>
<td>20,000</td>
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<tr>
<td>Cash</td>
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<td>12,000</td>
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<td>15,000</td>
<td>4,000</td>
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<td><strong>Feedlot showlists:</strong></td>
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<tr>
<td>Formula</td>
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<td>15,000</td>
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<td>9,000</td>
<td>6,000</td>
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</tbody>
</table>

The number of formula cattle slaughtered by the packer has to be equal to the number of formula cattle moved by the feedlots.

The market is in balance with the first two examples – low numbers of AMA cattle and high numbers of AMA cattle.

The market is out of balance in the “Concern” scenario – 2012.

The “Actual” scenario is what we saw in 2010-11 & may see in 2013.
A Correct Example of AMAs
What do we know from AMA Research?

• AMAs are not used to manipulate the cash market price.
• AMAs appear to be demand enhancing.
• AMAs are cost reducing. Packers are more efficient and feeding enterprises are more efficient.
  – No sweet-deals & no coercion.
• AMAs benefit consumers (& all downstream firms), cow-calf producers (& all upstream firms), and feeding enterprises that use them. ($9.5 billion in $2003 or 13.8% of a measure of producer economic wellbeing.)

• Just because AMAs are beneficial does not mean that the cash market should be displaced.
Proposals so far…

• Johnson Amendment to 2002 Farm Bill and all the other, annually introduced, “Livestock Market Fairness” Bills to prohibit or limit packer ownership…

• GIPSA Proposed Rules which said explicitly that it did not prohibit AMAs but which would have very effectively prohibited AMAs.

• None of which address the real problem of effective price discovery.
Example of Public Good

- Suppose a group of cow-calf producers do not have enough of their own land to graze all their animals but have access to common land.
- What happens to that common land?
  - It will be over-grazed.
  - Same outcome for all open-access fisheries.
- Public goods are overused because each individual does not pay their specific full cost.
- There is no market solution to the problem.
- Solution to problem is to form a government or association of producers with authority to say who uses the public good when and for how long.
Price Discovery is a Public Good

- Cash market participants invest resources to negotiate and discover cash market prices.
- Formula operations save that investment and make use of the prices discovered by the cash market participants.
- It is exactly like the grazing example. Formula operations use the outcome of the investment by cash market operations without paying for it.

- And there might be a market solution…

- But there might not be… (My sort-of evidence is hogs…)
Proposals

• Form a working group within this association reporting to the Marketing Committee with authority to do something.
  – Organized discussions between packers, formula enterprises, and cash market enterprises.
  – Report on the process & decisions: what prices are used, benchmarking, & changes.

• Research is needed.
  – This is not an “it depends” economist answer. We don’t know.
  – Objective information is needed to support the making of good decisions.
  – Formula operations should fund the research.
Two years of explanation and education efforts.

And let's not forget the Competition Workshops and if you only went to the one in DC you missed the fun.

But I do appreciate the OCE' contribution to the Final Rules...
What about the GIPSA Proposed Rules?

- The P&S Act has two sections different from antitrust legislation which are used in legal challenges
  - “unfair and unjustly discriminatory”
  - “undue and unreasonable preference”
- The 2008 Farm Bill required GIPSA to more clearly define “undue or unreasonable preference” with respect to poultry and pork production contracts.
- However, GIPSA proposed Rule changes to both sections and with respect to all livestock and poultry contracts – poultry, pork, and beef – and production and marketing contracts. And addressed competitive injury.
GIPSA Proposed Rules

• “Paying a premium or applying a discount… without documenting reasons and substantiating the revenue and costs justification…” is unfair. (Doesn’t say contract when talking about cattle.)

• Not offering the same contract terms to all producers that can provide the required livestock is undue or unreasonable. But doesn’t require purchases if needs are met. Does require “legitimate business reasons” and “to maintain records that justify” differential treatment.

• Dismissed judicial “competitive injury” standards.
Concerns within the GIPSA Proposed Rules

- No economics clarifying “unfair, unjustly discriminatory,” and “undue or unreasonable preference.”
- “Paying a premium or applying a discount… without documenting reasons and substantiating the revenue and costs justification…” is unfair. (Doesn’t say contract when talking about cattle.)
- Not offering the same contract terms to all producers that can provide the required livestock is undue or unreasonable. But doesn’t require purchases if needs are met. Does require “legitimate business reasons” and “to maintain records that justify” differential treatment.
- Remember, within P&S Actions the burden of proof can be on the packer and the standard can be vague.
Competitive Injury

- I think it’s hard to argue it’s not or more than.
- Therefore, courts want to see some market impact that injures competition.
- The GIPSA Proposed Rules says injury to the marketplace is not required.
- I guess that’s why we have checks-&-balances...
Competitive Injury

• “Competitive injury occurs when an act or practice distorts competition.”

• “Likelihood of competitive injury occurs when an act or practice raises rivals’ costs, improperly forecloses competitive through exclusive dealing, restrains competition, or otherwise represents misuse of market power to distort competition.”

• “To show competitive injury or likelihood of, it is not necessary to show the act or practice effected price levels.

• No cost/benefit analysis, no rule of reason, & not even an impact on prices.
Unfair, Unjustly Discriminatory & Deceptive Practices

- “Eight specific examples of conduct deemed unfair.” So unfair is defined by some examples.
- “Paying a premium or applying a discount… without documenting reasons and substantiating the revenue and costs justification…” is unfair.
- The proposed rule does not say “contract” when talking about cattle so I assume that means any transaction.
- Packer-to-packer trades are unfair.
Undue or Unreasonable Preference or Advantage

• “Not offering the same **contract terms** to all producers that can provide the required livestock is **undue or unreasonable**. But doesn’t require purchases if needs are met. Does require “legitimate business reasons” and “to maintain records that justify” differential treatment.

• **Prohibits packer buyers from buying for more than one packer**. (Small auction market impact.)

• **Requires sample contracts to be submitted to GIPSA for public posting.**
So How Thin Is Too Thin?

- **Confidence & Pricing Error**
  - More transactions are needed for better price discovery – high probability of less pricing error.
  - Trade-off between number and confidence/error.
    - If you want to be 99% sure then it’s a lot more than if 95% is acceptable.
    - If you want to have <$0.25 error then it’s a lot more than if $1 is acceptable.

- **Impact on price levels?**
  - Do formula volumes weaken cash prices?

- **Impact on price volatility?**
  - Do formula volumes increase volatility in the cash market?
So How Thin Is Too Thin?

Make use of a statistical tool: Chebychev’s Inequality

\[ \text{Prob}\{-c \leq (X_n - \mu) \leq c\} \geq 1 - \left(\frac{\sigma^2}{nc^2}\right) \]

Prob is the probability (we need to choose)
c is the error in price (we need to choose)
\(X_n\) is the mean reported price (measured)
\(\mu\) is the underlying market price (unknown)
\(\sigma^2\) is the variance of reported price (measured)
n is the number of trades

Solve for \(n = \left(\frac{\sigma^2}{1 - \text{Prob}}c^2\right)\) so given \(X_n\), \(\sigma^2\), \(c\) and \(\text{Prob}\)...
Transactions: to achieve <$1/cwt pricing error with 95% certainty
Pricing Error at 95% & 99% Needed Confidence
Transactions: to achieve <$1/cwt pricing error with 95% certainty
Pricing Error at 95% & 99% Needed Confidence

Cash Price ($/cwt live weight)

- 95% Pricing Error
- 99% Pricing Error
So How Thin Is Too Thin?

- For Nebraska:
  - Will suspect impacts on price at the negotiated volume being 5-10% of total.
  - Currently, at 20-50% or 30-40%.

- All other southern & western regions will see problems beforehand.
  - Texas/Oklahoma/New Mexico – there now
  - Kansas
  - Colorado

- Midwest regions are thickest – and will be center of negotiated cash market price discovery?
  - Iowa/Southern Minnesota
So How Thin Is Too Thin?

• **Mean price impacts**
  – Preliminary evidence of small negative impacts from AMA volumes.
  – Not worsening with very high AMA volumes.

• **Volatility price impacts**
  – Preliminary evidence of fairly big volatility impacts.
  – Worsening with very high AMA volumes.
  – But it takes very small cash volumes and something else to produce the volatility.

• **Proposal with National Cattlemen’s Beef Association to examine USDA AMS data to find ways to thicken reporting and also interview formula enterprises.**
Contact and Link Information

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