Factors Influencing the Price of Value-Added Calves at Superior Livestock Auctions

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Superior Livestock Auction
- Started in 1987 with satellite auction markets
- Largest livestock auction market in the U.S.
- Bi-weekly satellite, weekly Internet, and daily private treaty auctions
- Immediate to future delivery options
Why video auction markets?

*Bailey et al. 1991*

- Large numbers of cattle from many locations
- Various weight and lot characteristics
- More information about cattle, feed and vaccination history
- More buyers at auction

Video Auction Studies

- Blank et al. 2009
  - Regional price differences
  - 1997 to 2007 WVM sales
  - 4,116 lots, 571,000 steers 500-625 lbs.
  - 5,147 lots, 874,000 steers 750-925 lbs.
- Blank et al. 2006
  - 1997 to 2003 WVM sales
  - 1,979 lots, 280,000 steers 500-625 lbs.
Video Auction Studies (con’t)

• Bailey et al. 1995
  – Buyer concentration
  – 1987 to 1992 SLA sales
  – 3 million cattle
• Bailey et al. 1993
  – 1987-1989 SLA sales
  – 1988-1989 OKC Regional
  – Steers and heifers
• Bailey et al. 1991
  – Video vs. regional market prices
  – 1987 SLA sales
  – 75,855 lots, 600-800 lbs. steers
• Coatney et al. 1996
  – Feeder cattle price differentials
  – 1992 SLA sales
  – 2,441 lots

Superior Livestock Auction Database

In 1994, Pfizer Animal Health started collecting SLA sale information including …

– Price
– Sale date
– Delivery date
– Base weight
– Lot size
– Sex
– Weaning
– Vaccination program
– Breed
– Frame
– Flesh
– Origin
– Horned
– Implant
Additions to the SLA Database

As the auction grew, the analyzed traits increased ...

- Implant type, spayed, special breed stamp, bangs vaccinated (1996)
- % of black-hided cattle in the lot (2000)
- Natural-market eligible (2004)
- Age-and-source verification and program (2005 & 2006)
- Vaccinated for *Haemophilus somni* and *Moraxella bovis*, test negative for BVD-PI, NHTC-market eligible (2008)
- Superior Progressive Genetics (2009)

Research Objectives

- Quantify the effect of lot characteristics and value-added management on calf sale price
- Evaluate how outside market dynamics influence price
  - Futures prices
  - Export markets?
  - Choice/Select spread?
2008-2009 SLA Price Model

Price = \( \sum V_{ik} C_{ikt} + \sum R_{ht} M_{ht} \)

- Lot size
- Base weight
- Frame size
- Condition
- Weight variation
- Horns
- Implants
- NHTC-market eligibility
- Natural-market eligibility
- Vaccinations and weaning
- Breed influence
- Age-and-source verification
- Area of country
- Diff. b/w sale and delivery
- Nearby feeder calf futures

Formula source: Schroeder et al. 1988

2008-2009 SLA Price Models

1. 450 to 750 lbs. steers
   - 4,836 lots
   - 601,604 head
   - 583 lb. avg. weight
   - 124 head avg. lot size
   - 33.0% weaned calves
   - 0.7847 = R^2

Steer Weight Distribution

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2008-2009 SLA Price Models

2. 400 to 700 lbs. heifers
   - 3,045 lots
   - 353,235 head
   - 545 lb. avg. weight
   - 116 head avg. lot size
   - 34.0% weaned calves
   - \(0.7309 = R^2\)

Heifer Weight Distribution

Implants & Related Markets

Price per hundredweight relative to non-implanted

<table>
<thead>
<tr>
<th>Variable</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural-market eligible</td>
<td>$0.26</td>
<td>$0.50*</td>
</tr>
<tr>
<td>NHTC-market eligible</td>
<td>$1.51*</td>
<td>$1.54*</td>
</tr>
<tr>
<td>Unknown or some implants</td>
<td>($1.27)*</td>
<td>($0.92)*</td>
</tr>
<tr>
<td>Implanted</td>
<td>$0.24</td>
<td>$0.27</td>
</tr>
</tbody>
</table>

* Statistically different than zero at the 5% confidence level or better
## Vaccinations & Weaning

*Price per hundredweight relative to non-vaccinated and non-weaned calves*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Weaned</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAC 24</td>
<td>No</td>
<td>$1.71*</td>
<td>$1.31*</td>
</tr>
<tr>
<td>VAC 34</td>
<td>No</td>
<td>$3.63*</td>
<td>$2.45*</td>
</tr>
<tr>
<td>VAC 34+</td>
<td>No</td>
<td>$3.63*</td>
<td>$2.75*</td>
</tr>
<tr>
<td>VAC 45</td>
<td>Yes</td>
<td>$7.66*</td>
<td>$6.72*</td>
</tr>
<tr>
<td>VAC PreCon</td>
<td>Yes</td>
<td>$8.94*</td>
<td>$5.75*</td>
</tr>
<tr>
<td>One respiratory vaccination</td>
<td>No</td>
<td>$1.34*</td>
<td>$0.56</td>
</tr>
<tr>
<td>Multiple respiratory vaccinations</td>
<td>No</td>
<td>$2.20*</td>
<td>$1.84*</td>
</tr>
<tr>
<td>Weaning for non-program vaccination</td>
<td>Yes</td>
<td>$4.96*</td>
<td>$4.52*</td>
</tr>
</tbody>
</table>

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## Steer Vaccination and Weaning Program Value

<table>
<thead>
<tr>
<th>Vaccination and Weaning Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premium over no vac or wean ($/cwt)</td>
</tr>
<tr>
<td>One Vac</td>
</tr>
<tr>
<td>Multi Vac</td>
</tr>
<tr>
<td>VAC 34</td>
</tr>
<tr>
<td>VAC 34+</td>
</tr>
<tr>
<td>VAC 45</td>
</tr>
<tr>
<td>VAC PreCon</td>
</tr>
</tbody>
</table>

*Weaned Programs* | *Non-Weaned Programs*

* Weaning Value
* Program Value

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**Kansas State University**

**AAEA Organized Symposium, Denver, CO, July 28, 2010**
### Specialty Vaccinations & Programs

*Price per hundredweight*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinkeye vaccinated</td>
<td>$1.16*</td>
<td>$1.03*</td>
</tr>
<tr>
<td><em>Haemophilus somnii</em> vaccinated</td>
<td>$0.36*</td>
<td>$0.13</td>
</tr>
<tr>
<td>Bangs vaccinated</td>
<td>N/A</td>
<td>($0.47)*</td>
</tr>
<tr>
<td>Tested BVD-PI Negative</td>
<td>($0.12)</td>
<td>$0.10</td>
</tr>
<tr>
<td>Age-and-Source Verification</td>
<td>$1.60*</td>
<td>$1.65*</td>
</tr>
</tbody>
</table>

* Statistically different than zero at the 5% confidence level or better

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### Aggregate Breed Influence

*Price per hundredweight relative to “Cattle w/ Ear”* *

<table>
<thead>
<tr>
<th>Variable</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>English &amp; English-Cross</td>
<td>$3.49*</td>
<td>$3.25*</td>
</tr>
<tr>
<td>Continental &amp; Continental-Cross</td>
<td>$4.05*</td>
<td>$2.73*</td>
</tr>
<tr>
<td>English-Continental-Cross</td>
<td>$4.09*</td>
<td>$3.90*</td>
</tr>
<tr>
<td>Black &amp; Black-White-Faced</td>
<td>$5.80*</td>
<td>$5.37*</td>
</tr>
<tr>
<td>Predominantly Angus</td>
<td>$6.51*</td>
<td>$5.97*</td>
</tr>
<tr>
<td>Predominantly Red Angus</td>
<td>$6.61*</td>
<td>$13.02*</td>
</tr>
</tbody>
</table>

* Statistically different than zero at the 5% confidence level or better

* Mexican, Longhorn, Dairy, and Corriente cattle were eliminated from dataset

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# Region of Sale Lot

Price per hundredweight relative to “South Central” *

<table>
<thead>
<tr>
<th>Variable</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>($3.98)**</td>
<td>($3.31)**</td>
</tr>
<tr>
<td>Rocky Mountain / North Central</td>
<td>$0.87**</td>
<td>$0.86**</td>
</tr>
<tr>
<td>Southeast</td>
<td>($8.45)**</td>
<td>($7.98)**</td>
</tr>
</tbody>
</table>

** Statistically different than zero at the 1% confidence level or better
* Statistically different than zero at the 5% confidence level or better

* “South Central” includes cattle from Arizona, Kansas, Missouri, New Mexico, Oklahoma, Texas. “Northeast” cattle were eliminated from dataset.

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# Market Characteristics

Price per hundredweight

<table>
<thead>
<tr>
<th>Variable</th>
<th>Steers</th>
<th>Heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference between sale and delivery date</td>
<td>($0.02)**</td>
<td>($0.03)**</td>
</tr>
<tr>
<td>Feeder calf futures contract*</td>
<td>$0.80**</td>
<td>$0.77**</td>
</tr>
</tbody>
</table>

** Statistically different than zero at the 1% confidence level or better
* Statistically different than zero at the 5% confidence level or better

* The contract on sale day that was nearest to, but not preceding the delivery date.
Marketing the Details
125 heifers, 550 lbs., Medium frame and flesh, uneven weight variation, Kansas ranch

Lot #1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value ($/cwt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural-eligible</td>
<td>$0.47</td>
</tr>
<tr>
<td>VAC 45</td>
<td>$6.71</td>
</tr>
<tr>
<td>Predominantly Angus</td>
<td>$5.97</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$13.15</td>
</tr>
</tbody>
</table>

Lot #2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value ($/cwt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not implanted</td>
<td>$0</td>
</tr>
<tr>
<td>Complete vaccination</td>
<td>$1.92</td>
</tr>
<tr>
<td>Weaned</td>
<td>$4.40</td>
</tr>
<tr>
<td>Black &amp; Black-White Faced</td>
<td>$5.37</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$11.69</td>
</tr>
</tbody>
</table>

The value difference b/w Lots #1 and #2
$1.46 per cwt.
$8.03 per head
$1003.75 per lot
What do we know?

- Age and weight distinctions are blurred
- Value-added practices are bundled in nature
  - Weaned vs. VAC Program
- Details make a significant price difference
  - Blacks vs. Angus
  - Not implanted vs. Natural

Questions?

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