Hog Marketing Practices and Competition Questions

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Overview

• Recent history and trends
• Marketing methods and motivations
• Literature review
• Remaining questions
History

• In 1993, 87% of hogs were bought on the spot market.
• In 1994 there were approximately 200 buying stations and plants in Iowa.
• A representative producer had five or more different bids in a 50-mile radius.
• Avg. B&G slaughter was 1.65 M/week
• Carcass-merit pricing was new
• Backfat was 1.07” on a 179# carcass
Today

• Less than 10% of hogs are bought on the spot market
• There are fewer buying stations but independent buyers and commission firms still have a presence
• At least seven different packers buy hogs in Iowa each week
• Avg. B&G slaughter was 2.09 M/week
• Virtually all hogs are bought on merit
• Backfat is 0.75” on a 200# carcass
### Percent of U.S. Hogs Sold Through Various Pricing Arrangements, January 1999-2009*

<table>
<thead>
<tr>
<th>Year</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
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<tbody>
<tr>
<td>Hog or meat market formula</td>
<td>44.2</td>
<td>47.2</td>
<td>54</td>
<td>44.5</td>
<td>41.4</td>
<td>41.4</td>
<td>39.9</td>
<td>41.8</td>
<td>38.3</td>
<td>37.1</td>
<td>41.2</td>
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<tr>
<td>Other market formula</td>
<td>3.4</td>
<td>8.5</td>
<td>5.7</td>
<td>11.8</td>
<td>5.7</td>
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<td>10.3</td>
<td>8.8</td>
<td>8.5</td>
<td>11.0</td>
<td>7.9</td>
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<tr>
<td>Other purchase arrangement</td>
<td>14.4</td>
<td>16.9</td>
<td>22.8</td>
<td>8.6</td>
<td>19.2</td>
<td>20.6</td>
<td>15.4</td>
<td>16.6</td>
<td>15.2</td>
<td>13.4</td>
<td>11.6</td>
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<tr>
<td>Packer-sold</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>2.4</td>
<td>2.6</td>
<td>6.7</td>
<td>6.1</td>
<td>5.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packer-owned</td>
<td>16.4</td>
<td>18.1</td>
<td>17.1</td>
<td>21.4</td>
<td>20</td>
<td>22.7</td>
<td>23.1</td>
<td>25.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiated - spot</td>
<td>35.8</td>
<td>25.7</td>
<td>17.3</td>
<td>16.7</td>
<td>13.5</td>
<td>11.6</td>
<td>10.6</td>
<td>10.2</td>
<td>8.6</td>
<td>9.2</td>
<td>8.1</td>
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</tbody>
</table>

Source: Grimes and Plain, University of Missouri [http://agebb.missouri.edu/mkt/vertstud09.htm](http://agebb.missouri.edu/mkt/vertstud09.htm)
Mandatory Price Reporting Definitions

NEGOTIATED PURCHASES
Cash or spot market purchase of swine by a packer from a producer where there is an agreement on base price and a delivery day not more than 14 days after the date on which the livestock are committed to the packer.

OTHER MARKET FORMULA PURCHASES
The pricing mechanism is a formula price based on any market other than the market for swine, pork, or a pork product. It does include formulas based on futures or options contracts.

SWINE OR PORK MARKET FORMULA PURCHASES
The formula price based on a market for swine, pork, or a pork product, other than any formula purchase with a floor, window, or ceiling price, or a futures or options contract for swine, pork, or pork product.
Mandatory Price Reporting Definitions

OTHER PURCHASE ARRANGEMENTS
This would include long term contract agreements, fixed price contracts, cost of production formulas, formula purchases with a floor, window, or ceiling price.

PACKER OWNED
Swine that a packer, including a subsidiary or affiliate of the packer, owns for at least 14 days immediately before slaughter.

PACKER SOLD
Swine that are owned by a packer, including a subsidiary or affiliate of the packer, for more than 14 days immediately before sale for slaughter; and sold for slaughter to another packer.
Motivations for Alternatives to Spot Survey responses

• Producers
  – Receive higher prices
  – Access to markets
  – Price risk management
  – Access to capital

• Packers
  – Secure higher quality hogs consistently
  – Food safety
  – Supply management and operational efficiency
Table 16a. Advantages and disadvantages of marketing contracts reported by producers with marketing contracts (6=very important, 1= not important at all).

<table>
<thead>
<tr>
<th>Size class</th>
<th>Access to capital</th>
<th>Increased price</th>
<th>Allowed for expansion</th>
<th>Allow to be in hog business</th>
<th>Locked out of higher prices</th>
<th>Reduced price risk</th>
<th>Not treated fairly by packer</th>
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</thead>
<tbody>
<tr>
<td>1-2</td>
<td>2.25</td>
<td>3.75</td>
<td>2.14</td>
<td>2.91</td>
<td>2.19</td>
<td>3.14</td>
<td>1.84</td>
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<td>2-3</td>
<td>2.85</td>
<td>3.71</td>
<td>2.18</td>
<td>2.90</td>
<td>2.30</td>
<td>3.67</td>
<td>1.77</td>
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<td>3-5</td>
<td>2.76</td>
<td>3.89</td>
<td>2.11</td>
<td>2.95</td>
<td>2.53</td>
<td>3.61</td>
<td>2.18</td>
</tr>
<tr>
<td>5-10</td>
<td>3.46</td>
<td>4.13</td>
<td>2.96</td>
<td>3.47</td>
<td>2.57</td>
<td>4.29</td>
<td>2.20</td>
</tr>
<tr>
<td>10-50</td>
<td>3.35</td>
<td>3.85</td>
<td>2.73</td>
<td>3.55</td>
<td>2.51</td>
<td>3.50</td>
<td>2.06</td>
</tr>
<tr>
<td>1-50</td>
<td>3.00</td>
<td>3.90</td>
<td>2.47</td>
<td>3.18</td>
<td>2.45</td>
<td>3.73</td>
<td>2.04</td>
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</table>

Table 2. Packer motivation for increased pork and beef marketing contracts, 1999.\textsuperscript{a}

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Pork</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce plant operating costs by improving plant scheduling</td>
<td>3.5</td>
</tr>
<tr>
<td>Secure higher quality animals</td>
<td>4.0</td>
</tr>
<tr>
<td>Secure more consistent quality of animals</td>
<td>4.3</td>
</tr>
<tr>
<td>Assure food safety</td>
<td>3.8</td>
</tr>
<tr>
<td>Long run price risk management</td>
<td>3.0</td>
</tr>
<tr>
<td>Week-to-week supply/price management</td>
<td>3.5</td>
</tr>
<tr>
<td>Reduce costs of searching for animals to procure</td>
<td>3.5</td>
</tr>
<tr>
<td>Able to purchase animals for lower price</td>
<td>2.3</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Scale of 1 to 5, 1=not important to 5=very important

Weekly Hogs Prices, Cost of Production and Contract

![Graph showing weekly hogs prices, cost of production, and contract from 1/6/90 to 1/6/99. The graph depicts the fluctuation of prices and cost, with a clear trend over the years.]
Hogs and Prices Differ

• USDA-AMS MPR reports volumes, carcass characteristics and prices by purchase method on prior day’s slaughter

• http://www.ams.usda.gov/mnreports/lm_hg201.txt
### NATIONAL DAILY DIRECT HOG PRIOR DAY REPORT - SLAUGHTERED SWINE

Slaughter Data for Thursday, December 3, 2009

<table>
<thead>
<tr>
<th>Producer Sold:</th>
<th>NEGOTIATED</th>
<th>OTHER MARKET FORMULA</th>
<th>SWINE OR PORK MARKET FORMULA</th>
<th>OTHER PURCHASE ARRAGMENT</th>
<th>TOTALS/WTD AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD COUNT</td>
<td>22,845</td>
<td>37,195</td>
<td>168,988</td>
<td>46,275</td>
<td>275,303</td>
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<tr>
<td>CARCASS BASE PRICE</td>
<td>57.06</td>
<td>51.70</td>
<td>57.61</td>
<td>61.86</td>
<td>57.50</td>
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<tr>
<td>AVERAGE NET PRICE</td>
<td>58.57</td>
<td>54.35</td>
<td>59.62</td>
<td>63.56</td>
<td>59.48</td>
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<tr>
<td>LOWEST NET LOT</td>
<td>35.19</td>
<td>39.54</td>
<td>43.48</td>
<td>53.65</td>
<td>46.11</td>
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<tr>
<td>HIGHEST NET LOT</td>
<td>63.05</td>
<td>71.06</td>
<td>64.50</td>
<td>73.55</td>
<td>67.95</td>
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<tr>
<td>AVERAGE LIVE WT</td>
<td>258.67</td>
<td>272</td>
<td>271.16</td>
<td>266.2</td>
<td>269.6</td>
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<tr>
<td>AVERAGE CARCASS WT</td>
<td>195.03</td>
<td>204.01</td>
<td>204.09</td>
<td>201.43</td>
<td>202.9</td>
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<tr>
<td>AVERAGE SORT LOSS</td>
<td>-1.13</td>
<td>-1.38</td>
<td>-1.22</td>
<td>-0.88</td>
<td>-1.18</td>
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<tr>
<td>AVERAGE BACKFAT</td>
<td>0.74</td>
<td>0.72</td>
<td>0.75</td>
<td>0.74</td>
<td>0.74</td>
</tr>
<tr>
<td>AVERAGE LOIN DEPTH</td>
<td>2.30</td>
<td>2.49</td>
<td>2.51</td>
<td>2.30</td>
<td>2.45</td>
</tr>
<tr>
<td>LOINEYE AREA</td>
<td>6.91</td>
<td>7.48</td>
<td>7.55</td>
<td>6.91</td>
<td>7.38</td>
</tr>
<tr>
<td>AVERAGE LEAN %</td>
<td>53.83</td>
<td>54.52</td>
<td>54.60</td>
<td>54.18</td>
<td>54.45</td>
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</tbody>
</table>
Percent Lean of Pork Carcass by Purchase Method and Quarter

- Spot
- Other Mkt
- Swine Formula
- Other Purchase
- Packer Owned

Recent Research

- Relatively little addressing issues of competition
- GIPSA Livestock and Meat Marketing Study
  - Volume 4
- Impact of contracts on cash
  - Wang and Jaenicke
  - Roberts and Key
  - Carstensen
- Contract preferences and motivation
  - Roe, Sporleder and Belleville
  - Lawrence, Schroeder and Hayenga
- Contracting and agriculture
  - MacDonald, Key and others
Wang and Jaenicke

- Simulating the Impacts of Contract Supplies in a Spot Market–Contract Market Equilibrium Setting
- Acknowledge limitations of their model
- Results are inconclusive
  - For formula-price contracts increased contract supplies are **negatively** related to the expected spot market price when participating producers contract high proportions (greater than 0.8) of their hogs, but are **positively** related when producers contract lower proportions (between 0.6 and 0.8).
  - Moreover, increased contract supplies reduce the variance of spot market price under formula-price contracts.
Wang and Jaenicke

• Formula-price contract offers the highest expected profit to processors and highest expected utility to producers
• Because of uncertainty on processing demand, the cash market remains valuable to processors
• Important linkage between the contract market and the cash market could, of course, disappear if real-world cash markets become too thin and disappear altogether.
• A few highlights
  – Substantial differences in daily hog prices paid by packers on a carcass weight basis.
  – On average plants that use a combination of marketing arrangements pay lower prices than plants that use the cash/spot market only.
  – Found a *statistically significant presence of market power* in live hog procurement. However, the results regarding the significance of AMA use for procurement of live hogs in explaining the sources of that market power are inconclusive.
• A clarification: they report
  – a 1% increase in contract hog quantities causes the spot market price to decrease by 0.88%
  – a 1% increase in packer-owned hog quantities causes the spot market price to decrease by 0.28%.
• What is missed is that
  – a 1% increase in the supply of spot market hogs is associated with a 0.27% decrease in cash market price
• Watch the math! Consider 100 million hogs
  – 61 contract, 31 packer-owned and 8 spot-market
  – 1% contract or PO is 7.6% and 3.9% of spot market
Percentage changes in hog prices from a complete ban on packer owned hog production

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prices</th>
<th>Quantities</th>
</tr>
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<tbody>
<tr>
<td><strong>Short-Run</strong></td>
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<tr>
<td>Negotiated</td>
<td>-6.64</td>
<td>133.1</td>
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<tr>
<td>Contract</td>
<td>-2.41</td>
<td>-1.1</td>
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<tr>
<td>Packer owned</td>
<td>-4.76</td>
<td>-100</td>
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<tr>
<td><strong>Long-Run</strong></td>
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</tr>
<tr>
<td>Negotiated</td>
<td>-3.70</td>
<td>125.1</td>
</tr>
<tr>
<td>Contract</td>
<td>-0.75</td>
<td>-1.8</td>
</tr>
<tr>
<td>Packer owned</td>
<td>-2.82</td>
<td>-100.0</td>
</tr>
</tbody>
</table>

Source: LMMS Volume 4 Tables 6-10 and 6-12
Bottom line

In analyzing the economic effects of hypothetical restrictions on the use of AMAs in the hog and pork industries, we found that hog producers would lose because of the offsetting effects of hogs diverted from AMAs to the spot market, consumers would lose as wholesale and retail pork prices rise, and packers would gain in the short run but neither gain nor lose in the long run.
Summary

• Spot market has declined
  – 87% in 1993, 36% in 1999, 8% in 2009
• Over 50% of hogs priced off of spot market
• Packer ownership has grown to over 30%
• Limited economic research on hogs
• Results are inconclusive to positive for use of alternative marketing arrangements
Remaining Questions

• What are the necessary conditions for a viable spot market?
• Do lessons learned in cattle apply to hogs?
• What trade-offs are necessary or acceptable?
  – Quality? Efficiency?
• What is the source of market power and what is the cost of controlling it?
• What is the risk?
  – Niche markets and branded products
  – Asset values and loans contingent on contracts