Cattle Outlook: What is on the horizon?

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2020

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https://nufoundation.org/fund/01150800/
(i.e. “Livestock Marketing”)
Supply and Demand Determine Price
Demand
Steak Shopping Example

• BOGO -> Always buy two steaks
• Money spent is the same
• "per capita consumption" increased

• Demand for steak DID NOT CHANGE
Demand

- Demand is NOT volume sold

- Per capita consumption is NOT demand
  - Per capita consumption = (Domestic Production + Imports – Exports + Cold Storage Adjustments) / Population
  - All quantity values; no prices in derivation!
Domestic Demand for Retail Meat Products

Domestic Demand Index (Q1:1988 = 100)

Retail Meat Product
- Beef (All Fresh)
- Beef (Choice)
- Chicken
- Pork

Year
Percent of Disposable Income Spent on Meat Products
Yearly, 2000–2018

Expenditure (% of Income)

Year

Meat Product
- Beef
- Chicken
- Pork
<table>
<thead>
<tr>
<th>Product</th>
<th>Exported Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walnuts</td>
<td>79%</td>
</tr>
<tr>
<td>Cotton</td>
<td>76%</td>
</tr>
<tr>
<td>Almonds</td>
<td>67%</td>
</tr>
<tr>
<td>Pistachios</td>
<td>62%</td>
</tr>
<tr>
<td>Sorghum</td>
<td>59%</td>
</tr>
<tr>
<td>Rice</td>
<td>55%</td>
</tr>
<tr>
<td>Soybeans</td>
<td>50%</td>
</tr>
<tr>
<td>Wheat</td>
<td>46%</td>
</tr>
<tr>
<td>Grapes</td>
<td>36%</td>
</tr>
<tr>
<td>Pork</td>
<td>21%</td>
</tr>
<tr>
<td>Corn*</td>
<td>21%</td>
</tr>
<tr>
<td>Cherries</td>
<td>19%</td>
</tr>
<tr>
<td>Apples</td>
<td>18%</td>
</tr>
<tr>
<td>Poultry</td>
<td>16%</td>
</tr>
<tr>
<td>Dairy</td>
<td>15%</td>
</tr>
<tr>
<td>Beef</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Including ethanol, DDGS, and HFCS exports
Source: USDA-Foreign Agricultural Service, Production, Supply and Distribution System
Reference years: Marketing Year 2015/16 - 2017/18

> 20%
Overall U.S. farmers export more than 20% of what they produce
# Export Importance in Nebraska

<table>
<thead>
<tr>
<th>Category</th>
<th>Value ($ millions)</th>
<th>State Ranking in 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2005</td>
</tr>
<tr>
<td>Total Ag Exports</td>
<td>2,298.6</td>
<td>2,429.0</td>
</tr>
<tr>
<td>Total Animal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef</td>
<td>437.9</td>
<td>183.1</td>
</tr>
<tr>
<td>Pork</td>
<td>78.1</td>
<td>134.4</td>
</tr>
<tr>
<td>Chicken</td>
<td>0.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Dairy</td>
<td>6.9</td>
<td>10.0</td>
</tr>
<tr>
<td>Other Poultry</td>
<td>11.8</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Spatial Global Population

Population density, people per km², 2017

Population density is defined as the number of people (population) divided by land area, measured in square kilometres (km²).

Source: World Bank

CC BY
Income growth will drive global demand

Households w/ Real PPP incomes greater than $20,000 (millions)

- China: 151
- India: 150
- Indonesia: 28
- Russia: 7
- Mexico: 6
- Brazil: 6
- Egypt: 7
- Turkey: 5
- South Korea: 2
- Thailand: 6
- Philippines: 7
- Taiwan: 1
- Malaysia: 2
- Vietnam: 4
- Colombia: 1

Data: Global Insight's Global Consumer Markets data.
Comparing Domestic vs. International Beef Demand

Domestic and Export Demand for Retail Meal Products
2000-2019, (Tons or 2019)

- Beef All Fresh (Domestic)
- Beef Choice (Domestic)
- Beef (Export)
- Chicken (Domestic)
- Chicken (Export)
- Pork (Domestic)
- Pork (Export)
Supply
Beef Supply

• Commercial Slaughter (head) Up
• Dressed Weights (lbs.) Down
• Commercial Beef Production (lbs.) Up

Herd expansion slowing; beef production peaking
CATTLE DRESSED WEIGHT
Federally Inspected, Weekly

Pounds

JAN   APR   JUL   OCT

Avg. 2013-17   2018   2019
ESTIMATED AVERAGE COW CALF COSTS
Total Cash Cost Plus Pasture Rent, Annual

$ Per Cow


$ Per Cow

y = 20.603x + 220.64
R² = 0.856
MED. & LRG. #1 STEER CALF PRICES
500-600 Pounds, Nebraska, Weekly

$ Per Cwt.
Value of Gain Analysis

Wintering Situation

• Ogallala, NE

• Buy/retain 650 lb. steer on 01/06/2019
• Sell 775 lb. steer on 04/15/2020
  • 125 lbs., 100 days, 1.25 ADG

• VOG ~ $135.41/cwt
  • Good? Depends on COG & “risk preference”
Current Issues Impacting Livestock Supply & Demand into 2020
Emerging Role of Alternative Proteins

Crowding at Grocery Stores

• Beyond Meat (Whole Foods, Kroger, Albertsons)
• Impossible Foods (July 31st FDA approval to sell in grocery stores)
• Nestle (Awesome Burger in Germany, US plans for fall 2019)
• Tyson Foods (Vegetarian-Mixed Protein lines; nuggets in already)
• Smithfield Foods (Plant-based burgers – Kroger, Sprouts, Target)
How Do the New Plant-Based Burgers Stack Up? We Taste-Tested Them

New York Times (Oct 2019)

<table>
<thead>
<tr>
<th>Burger</th>
<th>Price ($/lb)</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impossible</td>
<td>11.99</td>
<td>4.5</td>
</tr>
<tr>
<td>Beyond</td>
<td>11.98</td>
<td>4</td>
</tr>
<tr>
<td>Lightlife</td>
<td>11.98</td>
<td>3</td>
</tr>
<tr>
<td>Uncut</td>
<td>10.98</td>
<td>3</td>
</tr>
<tr>
<td>Field</td>
<td>7.38</td>
<td>2.5</td>
</tr>
<tr>
<td>Sweet Earth Fresh Veggie</td>
<td>8.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Alternative Protein...Will it displace beef?

Changing Consumer Preferences (Van Loo, Caputo, and Luks 2019)
Will it displace beef?....Not entirely

Changing Consumer Preferences

- $5/lb.
- 4% Lab-grown (Memphis)
- 14% Pea (Beyond Meat)
- 7% Yeast (Impossible)
- 63% Farm Beef (CAB)
- 12% None
Demand Growth in Alternative Proteins

- Vegetarians, younger, & more educated
- Higher income populations
- Flexitarians
- Primary growth is domestic market
- Will substitute for lean beef products changing import demand
Shifting Consumer and Government Sentiment Around Animal Health

- Antimicrobial resistance and residuals
- Consumer concern
- Medical and professional concern
Approaching Policy Battles

The misuse of important antibiotics in food animals must end, in order to protect human health (Pew Trusts, 2011, p. 3).

Options should be reviewed to phase out most preventive use of antimicrobials and to reduce and refine metaphylaxis by applying recognized alternative measures (EMA & EU, 2017).

WHO strongly recommends an overall reduction in the use of all classes of medically important antibiotics in food-producing animals, including complete restriction of these antibiotics for growth promotion and disease prevention without diagnosis (WHO, Nov. 7, 2017).
VFD and Antibiotic Use by Route

Sales and Distribution of All Antimicrobial Drugs

Over Time and by Route

Percentage of Domestic Sales (%)

Year

Route (Importance)
- All Routes (NMI)
- Feed and Water (MI)
- Injection (MI)
- All Other Routes (MI)
## Producer Decision of Metaphylaxis

(Dennis et al. 2019)

<table>
<thead>
<tr>
<th>Net Return Range ($/head)</th>
<th>600 lb. Placement Weight</th>
<th>800 lb. Placement Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upper Tier</td>
<td>Lower Tier</td>
</tr>
<tr>
<td>Metaphylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&lt;-251)</td>
<td>0.00</td>
<td>0.68</td>
</tr>
<tr>
<td>[-251, -51)</td>
<td>0.02</td>
<td>16.88</td>
</tr>
<tr>
<td>[-50, 0)</td>
<td>1.62</td>
<td>21.08</td>
</tr>
<tr>
<td>[0, 50)</td>
<td>42.20</td>
<td>39.46</td>
</tr>
<tr>
<td>(&gt;51)</td>
<td>56.16</td>
<td>21.90</td>
</tr>
<tr>
<td>No Metaphylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&lt;-251)</td>
<td>4.62</td>
<td>4.62</td>
</tr>
<tr>
<td>[-251, -51)</td>
<td>22.42</td>
<td>22.42</td>
</tr>
<tr>
<td>[-50, 0)</td>
<td>15.38</td>
<td>15.38</td>
</tr>
<tr>
<td>[0, 50)</td>
<td>25.04</td>
<td>25.04</td>
</tr>
<tr>
<td>(&gt;51)</td>
<td>32.54</td>
<td>32.54</td>
</tr>
</tbody>
</table>
Packers are Willing to Pay Premiums

Monthly Harvest Premiums and Discounts
2010-2019 (USDA-AMS:LM_CT169)
Adapting Production Moving Forward

• Public is vested in how cattle are raised

• Industry response determines viability
  1) Recognize the issue
  2) Develop solutions
  3) Let markets function
Health Issues not “Critically” Affecting Demand

Food Demand Survey (2013-2017)
Vote/Buy Gap Exists

- Policies will not always align with “best science”
- Consumers desire but are unwilling to pay in SR

<table>
<thead>
<tr>
<th>Production Practice</th>
<th>Vote to Ban/Limit</th>
<th>Pay a Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit antibiotic use for cattle to only disease treatment</td>
<td>70.9%</td>
<td>48.0%</td>
</tr>
<tr>
<td>Ban cattle castration without use of pain control</td>
<td>66.1%</td>
<td>35.9%</td>
</tr>
<tr>
<td>Ban use of sow gestation stalls in the swine industry</td>
<td>51.3%</td>
<td>34.9%</td>
</tr>
<tr>
<td>Ban use of laying hen cages in the egg industry</td>
<td>49.7%</td>
<td>40.5%</td>
</tr>
</tbody>
</table>
Disease Traceability….back to stay?

• New regulations...2023 implementation?
  • Current federal animal disease traceability (ADT) regulations apply mainly to interstate travel of animals over 18 months of age.
  • Only enhances (not expands) restrictions

• Lawsuit againstAPHIS
  • Cost of RFID tags and readers
  • Cost sharing
  • Concerns about imported cattle
Why traceability?

• "Ordinance amending the Environment Code to require certain retailers of raw meat and poultry to report the use of antibiotics in such products to the Department of the Environment, and require City departments to report the use of antibiotics in raw meat and poultry purchased by the City to the Department of the Environment."

• Globalization and Exports
  • “9 billion people in 2050”
  • Grain finished beef advantage

• Trade expands volume and potential for adverse events (i.e. FMD in Beef)
Impacts of Traceability

Pendell et al. (2013)

• Small (+) in exports (~S. Korea) offsets costs of ASV
• Segment of producers would be better w/o ASV & losing market access

• What is socially optimal is not necessarily optimal for every individual!
Willingness to Supply vs. Willingness to Demand

Mitchell, Tonsor, and Lee (2019)

<table>
<thead>
<tr>
<th>Information Shared with Cattle Buyers</th>
<th>Visual Traceability</th>
<th>Electronic Traceability</th>
<th>No. Traceability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Origin</td>
<td>Source of Origin</td>
<td>Health Certification and Vaccination Records</td>
<td>None</td>
</tr>
</tbody>
</table>

| Implementation Cost ($/head)         | $9.00               | $1.00                   | $0.00            |
| Managing Entity                      | Private-Industry    | Government & Private-Industry Partnership | None |
| Sales Price Premium/Discount ($/head) | $0.00               | $15.00                  | $-7.50           |

I choose ...

Figure 1. Example of stated choice question in the cow-calf producer survey.
Everyone wants it but is unwilling to pay/accept
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(i.e. “Livestock Marketing”)