Discussion of Policies Needed to Meet the Food Needs of a Growing World

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March 5, 2014
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Key Trends

- Volatility
- Sustainability
- Trade
- Protein Consumption
- Population Growth
- Income Growth
- Biofuels
- Consumer Awareness
GLOBAL FOOD PRODUCTION VS. PRICE
(production of grain, rice, major oilseeds, PO, FSHM vs. corn/soybean/wheat futures price index)

Percentage change in production

Percentage change in price

Source: USDA
Long-term ag commodity price index (corn, soybeans, hard red winter wheat – U.S. nearby futures (1970-2005 avg.=100)

High prices and high volatility: WHY?
Global end of year food stocks
(Major crop materials – grains, rice, major oilseeds, palm oil, fish meal)
Supply, demand, stocks and price

Supply / Demand Surprises
shock = 2% stocks:use +/-

Potential price action

Tight begin stocks

Loose begin stocks

Scenario 2
Tight beginning stocks

Scenario 1
Loose beginning stocks

Stocks: Use %

Price

Supply, demand, stocks and price
world food flows
(grains, rice, oilseeds, meals, oils, feed equivalent of meat – net interregional in mmt)

sources: UN FAO, USDA, Cargill internal data

natural importers: more people than land
natural exporters: more land than people
Food consumption vs. income
(Animal products include meat, fish/seafood, eggs – no dairy)

Source: internal Cargill analysis
Global production and consumption of grain, rice, and major oilseeds

6 years of above trend record crop production and consumption

Source: USDA
The Effects of Higher Disposable Income
Example - Chinese Meat Consumption grew 6-fold in 30 years

Meat consumption – 1982
(Pork, Broiler, Beef)

- Rest of the World: 67%
- USA: 21%
- China: 12%

110 Mln Tons

Meat consumption – 2012
(Pork, Broiler, Beef)

- Rest of the World: 56%
- USA: 14%
- China: 30%

242 Mln Tons

Source: USDA
Biofuels Volumes – a Major Shift

• Grain to ethanol

Million Metric Tons

~9% of world grain market

• Vegoil to biodiesel

Million Metric Tons

~14% of world vegoil market
Populations are expanding where it is most difficult to grow food
Accelerating urbanization: top movers

Number of People in Millions Moving from Rural to Urban from 2013-2023

Source: IHS
Sustainability
Consumer Awareness

Recent Search Found that During Jan-Feb:

- 30,000 “traditional” news items mentioning GMOs
- Press releases, news stories (TV and print), blogs from media outlets
- 395,000 mentions of GMOs on Facebook/Twitter during same time period

- 5,000 “traditional” news items mentioning HFCS
- 28,000 Facebook/Twitter mentions during same period
INTERNATIONAL TRADE IN ACTION
Policy Opportunities and Challenges

- Honor Comparative Advantage
- Open Markets & Trade
- Infrastructure
- Agricultural Productivity
- Harmonization of Standards
- Property Rights
- Tax Policy
- Regulatory Burdens
The world will always raise the most food the most economically if every farmer plants the right crop for the soil and climate, and then trades with others.

DAVID RICARDO
Key driver of production growth: yield increase

Genetic improvements and fertilizer intensification drive supply expansion through yield -- acreage has not been a significant supply driver until recently

Source: USDA
## Export vs. Domestic Market

$60+$ advantage/head on 7 products

<table>
<thead>
<tr>
<th>Product</th>
<th>Value in Export Market</th>
<th>$ Value/#</th>
<th>Lb/Hd</th>
<th>$/HD/Export</th>
<th>Value in Domestic Market</th>
<th>$ Value</th>
<th>#/hd</th>
<th>$/HD/US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Ribs</td>
<td>Korea</td>
<td>$3.00</td>
<td>10</td>
<td>$30.00</td>
<td>US/Canada</td>
<td>$ 0.80</td>
<td>10</td>
<td>$ 8.00</td>
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<tr>
<td>Navels</td>
<td>Japan</td>
<td>$1.60</td>
<td>20</td>
<td>$32.00</td>
<td>US/Canada</td>
<td>$ 0.80</td>
<td>20</td>
<td>$16.00</td>
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<tr>
<td>Finger Meat</td>
<td>Korea</td>
<td>$2.50</td>
<td>1</td>
<td>$2.50</td>
<td>US/Canada</td>
<td>$ 0.80</td>
<td>1</td>
<td>$ 0.80</td>
</tr>
<tr>
<td>Digital Muscle</td>
<td>Taiwan</td>
<td>$2.25</td>
<td>1</td>
<td>$2.25</td>
<td>US/Canada</td>
<td>$ 1.50</td>
<td>1</td>
<td>$ 1.50</td>
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<tr>
<td>Liver</td>
<td>Russia/Egypt</td>
<td>$0.60</td>
<td>13</td>
<td>$7.80</td>
<td>US/Canada</td>
<td>$ 0.12</td>
<td>13</td>
<td>$ 1.56</td>
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<tr>
<td>Oxliips</td>
<td>Mexico</td>
<td>$1.40</td>
<td>1.5</td>
<td>$2.10</td>
<td>US/Canada</td>
<td>$ 0.15</td>
<td>1.5</td>
<td>$ 0.23</td>
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<tr>
<td>Tongue</td>
<td>Japan</td>
<td>$5.00</td>
<td>3</td>
<td>$15.00</td>
<td>US/Canada</td>
<td>$ 0.10</td>
<td>3</td>
<td>$ 0.30</td>
</tr>
</tbody>
</table>

Total: $91.65 | $28.39
Export Markets Beef Offals

Percent of Volume

- Oxlips: 100%
- Omasum: 100%
- Abomasum: 100%
- Lg. Intestines: 100%
- Livers: 95%
- Tripe: 95%
- Honeycomb Tripe: 95%
- Tongues: 80%
- Sweetbreads: 70%
## Export Value

<table>
<thead>
<tr>
<th>Beef Offals</th>
<th>Export Value</th>
<th>Rendering Value</th>
<th>Diff.</th>
<th>lbs/HD</th>
<th>$'s/HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxlips</td>
<td>$ 1.86</td>
<td>$ 0.30</td>
<td>$ 1.56</td>
<td>1.89</td>
<td>$ 2.95</td>
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<tr>
<td>Omasum</td>
<td>$ 4.10</td>
<td>$ 0.02</td>
<td>$ 4.08</td>
<td>0.79</td>
<td>$ 3.22</td>
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<tr>
<td>Abomasum</td>
<td>$ 0.95</td>
<td>$ 0.02</td>
<td>$ 0.93</td>
<td>1.05</td>
<td>$ 0.97</td>
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<tr>
<td>Lg. Intestines</td>
<td>$ 1.50</td>
<td>$ 0.04</td>
<td>$ 1.46</td>
<td>0.88</td>
<td>$ 1.28</td>
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<tr>
<td>Livers</td>
<td>$ 0.32</td>
<td>$ 0.09</td>
<td>$ 0.23</td>
<td>15.00</td>
<td>$ 3.45</td>
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<tr>
<td>Tripe</td>
<td>$ 0.82</td>
<td>$ 0.09</td>
<td>$ 0.73</td>
<td>10.00</td>
<td>$ 7.28</td>
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<tr>
<td>Honeycomb Tripe</td>
<td>$ 1.85</td>
<td>$ 0.03</td>
<td>$ 1.82</td>
<td>2.00</td>
<td>$ 3.65</td>
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<tr>
<td>Tongues</td>
<td>$ 4.10</td>
<td>$ 2.00</td>
<td>$ 2.10</td>
<td>3.00</td>
<td>$ 6.30</td>
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<tr>
<td>Sweetbreads</td>
<td>$ 1.66</td>
<td>$ 0.18</td>
<td>$ 1.48</td>
<td>0.50</td>
<td>$ 0.74</td>
</tr>
<tr>
<td><strong>Total Value:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 29.84</td>
</tr>
</tbody>
</table>
Export Markets Consumer Most of Pork Offals

Percent of Volume

- Lips: 100%
- Tongues: 100%
- Hearts: 96%
- Stomachs: 95%
- Snouts: 92%
- Rectum: 86%
- Ears: 86%
- Feet: 80%
- Salivary: 61%
- Neckbones: 24%