Trends and Economic Impacts of Food & Beverage Manufacturing In NYS

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Agricultural and Food Business Outlook

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Outline

• Where are we now? Economic contribution analysis
• Where have we been? Trends and industry comparisons
• Backward linkages: economic multipliers
• Forward linkages: commodity destination, supply to demand ratios
Agriculture Contribution Analysis 2014

• How define “agriculture”? Focus on ag and food production.
• What’s there? What isn’t (data limitations)?
• NYS is a big economy (hint: NYC).
• Variation and importance across local regions
• Implications of marginal changes; i.e., next dollar of investment
The Agriculture Industry:
(i) On-farm agricultural production,
(ii) Agricultural support services, and
(iii) Agricultural processing industries

Contribution Analysis:
(i) Direct effects
(ii) Indirect effects (supply chain)
(iii) Induced effects (labor income spending)
(iv) Total effects, i+ii+iii
# Agriculture's Direct Effects Relative to the Total Economy

<table>
<thead>
<tr>
<th>Region</th>
<th>Employment</th>
<th>Output</th>
<th>Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York State</td>
<td>1.23%</td>
<td>2.09%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Capital District</td>
<td>1.49%</td>
<td>2.67%</td>
<td>1.49%</td>
</tr>
<tr>
<td>Central New York</td>
<td>2.19%</td>
<td>4.14%</td>
<td>2.62%</td>
</tr>
<tr>
<td>Finger Lakes</td>
<td>3.17%</td>
<td>7.90%</td>
<td>5.44%</td>
</tr>
<tr>
<td>Long Island</td>
<td>0.75%</td>
<td>1.23%</td>
<td>0.65%</td>
</tr>
<tr>
<td>Mid-Hudson</td>
<td>1.20%</td>
<td>2.35%</td>
<td>1.19%</td>
</tr>
<tr>
<td>Mohawk Valley</td>
<td>3.14%</td>
<td>6.42%</td>
<td>3.38%</td>
</tr>
<tr>
<td>New York City</td>
<td>0.53%</td>
<td>0.61%</td>
<td>0.27%</td>
</tr>
<tr>
<td>North Country</td>
<td>3.65%</td>
<td>6.47%</td>
<td>3.73%</td>
</tr>
<tr>
<td>Southern Tier</td>
<td>3.58%</td>
<td>6.78%</td>
<td>3.38%</td>
</tr>
<tr>
<td>Western New York</td>
<td>2.45%</td>
<td>5.61%</td>
<td>2.39%</td>
</tr>
</tbody>
</table>

Source: IMPLAN, LLC 2016
<table>
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<th>Region</th>
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</tr>
</thead>
<tbody>
<tr>
<td>New York State</td>
<td>2.13%</td>
<td>2.97%</td>
<td>1.89%</td>
</tr>
<tr>
<td>Capital District</td>
<td>2.59%</td>
<td>3.79%</td>
<td>2.82%</td>
</tr>
<tr>
<td>Central New York</td>
<td>3.78%</td>
<td>5.88%</td>
<td>4.95%</td>
</tr>
<tr>
<td>Finger Lakes</td>
<td>5.49%</td>
<td>11.21%</td>
<td>10.28%</td>
</tr>
<tr>
<td>Long Island</td>
<td>1.29%</td>
<td>1.75%</td>
<td>1.23%</td>
</tr>
<tr>
<td>Mid-Hudson</td>
<td>2.08%</td>
<td>3.33%</td>
<td>2.25%</td>
</tr>
<tr>
<td>Mohawk Valley</td>
<td>5.44%</td>
<td>9.12%</td>
<td>6.39%</td>
</tr>
<tr>
<td>New York City</td>
<td>0.91%</td>
<td>0.87%</td>
<td>0.51%</td>
</tr>
<tr>
<td>North Country</td>
<td>6.31%</td>
<td>9.19%</td>
<td>7.06%</td>
</tr>
<tr>
<td>Southern Tier</td>
<td>6.20%</td>
<td>9.63%</td>
<td>6.39%</td>
</tr>
<tr>
<td>Western New York</td>
<td>4.25%</td>
<td>7.97%</td>
<td>4.52%</td>
</tr>
</tbody>
</table>

Source: IMPLAN, LLC 2016; using state-level implied multipliers (Schmit 2016)
### Economic contribution of agriculture on the NYS economy, 2014.

<table>
<thead>
<tr>
<th>Aggregate Sector</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
<th>Implicit Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industry Output ($ million)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural Production</td>
<td>6,665</td>
<td>1,310</td>
<td>1,660</td>
<td>9,635</td>
<td>1.45</td>
</tr>
<tr>
<td>Agricultural Support Services</td>
<td>304</td>
<td>41</td>
<td>148</td>
<td>493</td>
<td>1.62</td>
</tr>
<tr>
<td>Agricultural Manufacturing</td>
<td>37,844</td>
<td>15,080</td>
<td>6,697</td>
<td>59,621</td>
<td>1.58</td>
</tr>
<tr>
<td>All Agriculture</td>
<td>44,813</td>
<td>11,499</td>
<td>7,536</td>
<td>63,849</td>
<td>1.42</td>
</tr>
</tbody>
</table>

|                                  | Employment (jobs) |         |         |         |                    |
| Agricultural Production           | 54,484   | 8,898    | 11,294  | 74,675  | 1.37               |
| Agricultural Support Services     | 7,088    | 181      | 1,009   | 8,278   | 1.17               |
| Agricultural Manufacturing        | 83,757   | 77,718   | 45,963  | 207,437 | 2.48               |
| All Agriculture                   | 145,328  | 54,458   | 51,683  | 251,469 | 1.73               |

|                                  | Total Value Added ($ million) |         |         |         |                    |
| Agricultural Production           | 3,941    | 748      | 1,102   | 5,791   | 1.47               |
| Agricultural Support Services     | 221      | 23       | 98      | 342     | 1.55               |
| Agricultural Manufacturing        | 9,606    | 9,240    | 4,481   | 23,327  | 2.43               |
| All Agriculture                   | 13,768   | 7,270    | 5,042   | 26,081  | 1.89               |

Source: IMPLAN, LLC (2016)
Industry Trends in Food and Agriculture
Employment Originating in Food and Agriculture
New York State, 2001-2015

Industry Trends – Employment

• Ag employment since 2010:
  – Farm: Up 9% farm
  – Farm Services: Up 10%
  – Ag and Food Manufacturing: Up 19%

• Comparison with other sectors:
  – All NYS industries: Up 11%
  – Durable goods manufacturing: Up only 0.3%
  – Nondurable goods manufacturing (excl. food): Down 2%
Earnings Originating in Food and Agriculture
New York State, 2001-2015

Industry Trends - Earnings

• Ag earnings since 2010:
  – Farm: Down 9% (Proprietor income down 36%, Wages up 26%)
  – Farm services: Up 5%
  – Ag and Food Manufacturing: up 21%

• Comparison with other sectors:
  – Nonfarm earnings: Up 19%
  – Durable goods manufacturing: Up 13%
  – Nondurable goods manufacturing (excl. food): Up 6%
Gross State Product Originating in Food & Beverage Manufacturing, New York State, 2001-2014


Current Dollars ($Million)

$0 $2,000 $4,000 $6,000 $8,000 $10,000 $12,000


Food, beverage, & tobacco manufacturing
Industry Trends – Gross State Product (Value Added)

• Ag GSP since 2010 to 2014:
  – Farm: Up 23% (will be lower in 2015)
  – Ag and Food Manufacturing: Down 0.5%
    • But strong rebound since 2011
    • Will be higher in 2015 with strong earnings growth (prior slide)

• Comparison with other sectors:
  – All industries: Up 15%
  – Durable goods manufacturing: Up 11%
  – Nondurable goods manufacturing (without food): Down 15%
# Manufacturing in New York State, 2014

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment</th>
<th>Output ($M)</th>
<th>Labor Income ($M)</th>
<th>TVA ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>491,939</td>
<td>$211,624</td>
<td>$33,094</td>
<td>$55,759</td>
</tr>
<tr>
<td>F&amp;B</td>
<td>82,031</td>
<td>$36,466</td>
<td>$4,361</td>
<td>$9,286</td>
</tr>
<tr>
<td>F&amp;B Share</td>
<td>17%</td>
<td>17%</td>
<td>12%</td>
<td>14%</td>
</tr>
</tbody>
</table>

%ChNonF&B*  -4%  -3%  -1%  -9%

%ChF&B*  +44%  +29%  +43%  +55%

*Percentage change in the last five years (2009), Food & Bev versus all other manufacturing

Source: IMPLAN, LLC 2016
Industry Trends – Manufacturing in NYS

• If look at disaggregate categories (~ 3 digit NAICS), growth metrics in last five years (2009-2014) are impressive:
  – 2nd in employment growth (39%)
    • To small tobacco manufacturing sector (84%)
  – 3rd in output growth (29%)
    • Close behind wood products (36%) & plastics/rubber (31%), both much smaller industries
  – 1st in earnings growth (43%
  – 2nd in GSP growth (55%)
    • To textiles and apparel (98%), a MUCH smaller industry
Subsector Trends in Food and Beverage Manufacturing
Total Value of Output by Food Manufacturing Sector
New York State, 2014

Output (Million)

- Animal food
- Grain and oilseed
- Sugar and confectionary
- Fruit and veg, specialty
- Dairy
- Meat and seafood
- Bakery and tortilla
- Other food
- Beverages

Source: IMPLAN LLC, 2016
Percentage Change in Output by Food Manufacturing Sector
New York State, 2009-2014

Source: IMPLAN LLC, 2016
Employment and Labor Income by Food Manufacturing Sector
New York State, 2014

Source: IMPLAN LLC, 2016
Percentage Change in Employment and Labor Income by Food Manufacturing Sector, New York State, 2009-2014

Source: IMPLAN LLC, 2016
Economic Multipliers in Food and Beverage Manufacturing
### Economic Multipliers – Food Manufacturing Sectors, New York State, 2014

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment</th>
<th>Output</th>
<th>Labor Income</th>
<th>TVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Food</td>
<td>4.33</td>
<td>1.54</td>
<td>4.19</td>
<td>3.47</td>
</tr>
<tr>
<td>Grain/Oilseed</td>
<td>5.40</td>
<td>1.58</td>
<td>4.48</td>
<td>3.77</td>
</tr>
<tr>
<td>Sugar/Confect</td>
<td>2.29</td>
<td>1.62</td>
<td>2.72</td>
<td>2.88</td>
</tr>
<tr>
<td>Fruit/Vege/Spec</td>
<td>2.43</td>
<td>1.63</td>
<td>2.67</td>
<td>3.13</td>
</tr>
<tr>
<td>Dairy</td>
<td>4.85</td>
<td>2.01</td>
<td>4.48</td>
<td>5.66</td>
</tr>
<tr>
<td>Meat/seafood</td>
<td>2.81</td>
<td>1.51</td>
<td>2.22</td>
<td>2.68</td>
</tr>
<tr>
<td>Bakery/Tortilla</td>
<td>1.47</td>
<td>1.64</td>
<td>1.94</td>
<td>1.94</td>
</tr>
<tr>
<td>Bev - NonAlc</td>
<td>3.14</td>
<td>1.60</td>
<td>2.73</td>
<td>2.73</td>
</tr>
<tr>
<td>Bev - Alc</td>
<td>2.87</td>
<td>1.40</td>
<td>2.48</td>
<td>1.41</td>
</tr>
</tbody>
</table>

Source: IMPLAN LLC, 2016, Type SAM multipliers
Forward Linkages:
Farm and Food Manufacturing
Estimated destination of New York State Crop Supply, 2014

Source: Implan LLC, 2016
Estimated destination of New York State Livestock Supply, 2014

- **Beef cattle**
  - In-State: 90%
  - Foreign exports: 10%
- **Dairy cattle and milk products**
  - In-State: 85%
  - Foreign exports: 5%
- **Poultry and egg products**
  - In-State: 70%
  - Foreign exports: 30%
- **Other animal products**
  - In-State: 95%
  - Foreign exports: 5%

Source: Implan LLC, 2016
Estimated destination of selected processed food and beverage products, New York State, 2014

Source: Implan LLC, 2016
Commodity Production to Demand Ratio (all users) of farm products, New York State, 2014

Source: Implan LLC, 2016
Commodity Production to Demand Ratio (all users) of processed food and beverage products, New York State, 2014

Source: Iman LLC, 2016
Conclusions

• Food & beverage manufacturing has been a leading manufacturing industry in NYS
  – Economic multipliers are relatively strong, particularly for industries with strong backward linkages to primary farm production sectors.
  – Comparing product trade flows and supply-to-demand ratios within the state is useful in identifying sectors for export enhancement (supply) and import substitution (demand).
  – The real question is how to sustain growth moving forward
    • In-state source utilization/supply
    • Improve business-to-business linkages, upstate-downstate
    • Alignment of strategy with producers and processors
    • Adaptability of products for changing consumer & retailer preferences
Thank You!

For more information:
*The Economic Contribution of Agriculture in NYS (2014)*
http://publications.dyson.cornell.edu/outreach/extensionpdf/2016/Cornell-Dyson-eb1609.pdf

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