Economic impacts of local food system initiatives

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Our Farms, Our Future Conference
April 3, 2018
Local Food

Est. $8.7B in local food sales in 2015 (USDA NASS 2016)
• 167,009 U.S. farms and ranches

Farms sell directly to:

 Consumers (35 percent of direct sales in 2015)
Includes sales through farmers markets, onsite farm stores, roadside stands, CSA (Community Supported Agriculture) arrangements, online sales, pick-your-own operations, mobile markets, and other means.

 Retailers (27 percent of direct sales in 2015)
Includes supermarkets, supercenters, restaurants, caterers, independent grocery stores, and food cooperatives.

 Institutions and Intermediary Businesses (39 percent of direct sales in 2015)
Includes institutions such as schools, colleges, universities, and hospitals as well as intermediary businesses such as wholesalers, distributors, processors, etc., that market locally or regionally branded products.
Local Food

Substantial investments made via Farm Bill to support local and regional food systems:
• >$1 Billion 2008-2014
• >40,000 local and regional food business infrastructure projects
• 2014 Farm Bill tripled funding for marketing and promotion of local foods
• >$500M in 2015
1. Farmers win.

In general, farmers and ranchers only receive $1.55 of $10 spent on food. The rest goes to marketers, processors, wholesalers, distributors and retailers.

For every $10 spent on local food, farmers get closer to $8-9.

2. Your community wins.

For every $10 spent at a farmers market, studies show that as much as $7.80 is re-spent in your community, supporting local jobs and businesses.
FARM/RANCH VIABILITY
Profit Margin Increases with Farm Size

Farms by operating profit margin (OPM) and farm type, 2015

<table>
<thead>
<tr>
<th>Farm Type</th>
<th>Small family farms</th>
<th>Midsize family farms</th>
<th>Large family farms</th>
<th>Very large family farms</th>
<th>Non-family farms</th>
<th>All farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirement occupation</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Off-farm occupation</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>14</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Low sales</td>
<td>14</td>
<td>27</td>
<td>14</td>
<td>5</td>
<td>37</td>
<td>74</td>
</tr>
<tr>
<td>Moderate sales</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>Farming-occupation</td>
<td>59</td>
<td>14</td>
<td>14</td>
<td>7</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>Midsize family farms</td>
<td></td>
<td>14</td>
<td>14</td>
<td>5</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Large family farms</td>
<td>59</td>
<td>59</td>
<td>59</td>
<td>59</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Very large family farms</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Non-family farms</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>All farms</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>69</td>
</tr>
</tbody>
</table>

Percent of farms in each group

Notes: Operating profit margin (OPM) = 100% x (net farm income + interest paid – charge for operator and unpaid labor – charge for management) / gross farm income. Small family farms have annual gross cash farm income (GCFI) < $350,000. Midsize family farms have GCFI of $350,000-$999,999. Large-scale family farms have GCFI of $1,000,000 or more. Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2015 Agricultural Resource Management Survey (data as of December 2016).
Documented consumer willingness to pay a premium for local food

Willingness to pay for local food (percent premium)

- Apples, Vermont
- Apples, Colorado
- Blueberries, Pittsburgh and Orlando
- Tomatoes, national study
- Blackberry jam, "Ohio River Valley" label
- Fresh produce, Vanderburgh County, Indiana
- Apples, national study
- Blackberry jam, "Ohio Proud" or "Kentucky Proud" label

Percent

Source: Willingness to pay as a percent of base price calculated from reported results from the following: Apples/Vermont from Wang et al., 2010, averaged over respondents that had and had not purchased organic food. Apples/Colorado from Costanigro et al., 2011. Blueberries from Shi et al., 2013. Tomatoes/national and Apples/national from Onozaka and Thillmany, 2012. Blackberry jam from Hu et al., 2012. Fresh produce/Vanderburgh County from Burnett et al., 2011.

Low et al. 2015
Ground beef prices at farmers markets not impacted by commodity market prices

Non-significant, but negative relationship between USDA retail ground beef prices and Larimer (Old Town) market prices; $r (20) = -.415, p<.05$

Note: Weekly average retail ground beef prices from https://www.marketnews.usda.gov.

Sullins et al. 2016
In local food channels do farmers retain more of the food dollar? New pricing reports!

There is a likely tradeoff between volume of sales and two key management factors:

1) Managerial control retained by producers

2) Pricing power of producers

Is there an “optimal” place on continuum for an operation?
Mixed Evidence of Farm Performance:
Local food producers grew less between 2007 and 2012, but more likely to have ‘survived’

### Percent change in sales 2007-12 by initial farm size and marketing arrangement

<table>
<thead>
<tr>
<th>2007 sales category</th>
<th>All operations</th>
<th>Beginning farmer in 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No direct sales in 2007</td>
<td>Direct sales in 2007</td>
</tr>
<tr>
<td>$1-9,999</td>
<td>Arc percent change, 2007-12</td>
<td>36.9</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>225,862</td>
</tr>
<tr>
<td>$10,000-49,999</td>
<td>Arc percent change, 2007-12</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>158,367</td>
</tr>
<tr>
<td>$50,000-249,999</td>
<td>Arc percent change, 2007-12</td>
<td>12.1</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>128,175</td>
</tr>
<tr>
<td>$250,000+</td>
<td>Arc percent change, 2007-12</td>
<td>12.3</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>130,434</td>
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<tr>
<td>All</td>
<td>Arc percent change, 2007-12</td>
<td>19.3</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>642,838</td>
</tr>
</tbody>
</table>

Notes: Asterisks denote rejection of the null hypothesis that the difference in means is zero at the (*) 10%; (**) 1%; and (****) 0.1% statistical significance levels. Sample includes all operations with positive sales in 2007. The percent change for farm i is defined as: \(100 \left( \frac{Y_{2007} - \bar{Y}_{2007}}{\bar{Y}_{2007}} \right)\). \(Y\) is the sales in 2007 and \(\bar{Y}\) is the sales in 2012.


### Business survival rates 2007-12 by initial farm size and marketing arrangement

<table>
<thead>
<tr>
<th>2007 sales category</th>
<th>All operations</th>
<th>Beginning farmer in 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No direct sales in 2007</td>
<td>Direct sales in 2007</td>
</tr>
<tr>
<td>$1-9,999</td>
<td>Survival rate, 2007-12</td>
<td>0.453</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>484,211</td>
</tr>
<tr>
<td>$10,000-49,999</td>
<td>Survival rate, 2007-12</td>
<td>0.581</td>
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<tr>
<td></td>
<td>Observations</td>
<td>268,758</td>
</tr>
<tr>
<td>$50,000-249,999</td>
<td>Survival rate, 2007-12</td>
<td>0.656</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>194,563</td>
</tr>
<tr>
<td>$250,000+</td>
<td>Survival rate, 2007-12</td>
<td>0.728</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>178,515</td>
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<tr>
<td>All</td>
<td>Survival rate, 2007-12</td>
<td>0.553</td>
</tr>
<tr>
<td></td>
<td>Observations</td>
<td>1,126,047</td>
</tr>
</tbody>
</table>

Notes: Asterisks denote rejection of the null hypothesis that the difference in means is zero at the (*) 10%; (**) 1%; and (****) 0.1% statistical significance levels. Sample includes all operations with positive sales in 2007. The survival rate is defined as the share of 2007 Census respondents with positive sales who reported positive sales in the Census in 2012.

How do you evaluate a market opportunity?
Six interacting factors impact the “performance” of a marketing channel including:

- **Price & Profit**
  - You can sell $500 worth per hour!
  - It costs $300/day to sell there.
  - ...and it only takes 1 hour per week...
  - ...and it takes 12 hours to prepare...
  - ...and if it rains no customers come.

- **Lifestyle Preferences**
- **Associated Costs**
- **Sales Volume**
- **Labor Requirements**
- **Risk**

Matt LeRoux, Cornell Cooperative Extension of Tompkins County
Preliminary CO case study evidence:
Marketing Profit Margin Percentiles, Direct Channels

Profit Margin (profit/gross sales)

<table>
<thead>
<tr>
<th>Channel</th>
<th>25th Percentile</th>
<th>Median</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>61.79%</td>
<td>6.43%</td>
<td>76.13%</td>
</tr>
<tr>
<td>CSA</td>
<td>64.04%</td>
<td>70.97%</td>
<td>79.75%</td>
</tr>
<tr>
<td>FM</td>
<td>37.71%</td>
<td>69.90%</td>
<td>76.92%</td>
</tr>
<tr>
<td>FS</td>
<td>12.96%</td>
<td>55.61%</td>
<td>76.22%</td>
</tr>
</tbody>
</table>
FINANCIAL PERFORMANCE IMPLICATIONS OF LOCAL FOOD ENTERPRISES

PROFITABILITY IMPLICATIONS OF LOCAL FOOD ENTERPRISES

FINANCIAL BENCHMARKS FOR LOCAL FOOD ENTERPRISES

THE ROLE OF LABOR AND OTHER VARIABLE EXPENSES ON LOCAL FOOD ENTERPRISES

EVALUATING THE FINANCIAL EFFICIENCY OF LOCAL FOOD ENTERPRISES
USDA AMS sample of Local Food Producers, Farmers and Ranchers, 2013

- 2013 Phase III ARMS data
- Nationally representative survey that targets about 30,000 farms, providing annual, national-level data on farm business

<table>
<thead>
<tr>
<th>Market Channel</th>
<th>No. of observations</th>
<th>Population size</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2C</td>
<td>664</td>
<td>124,186</td>
</tr>
<tr>
<td>Intermediated</td>
<td>136</td>
<td>11,703</td>
</tr>
<tr>
<td>D2CIntermediated</td>
<td>213</td>
<td>24,012</td>
</tr>
<tr>
<td>Allocalfood</td>
<td>1,013</td>
<td>159,901</td>
</tr>
<tr>
<td>Nonlocalfood</td>
<td>16,416</td>
<td>1,935,568</td>
</tr>
<tr>
<td><strong>Local food producers by farm scale (GCFI)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1kto75k</td>
<td>534</td>
<td>112,563</td>
</tr>
<tr>
<td>75kto350k</td>
<td>214</td>
<td>21,104</td>
</tr>
<tr>
<td>350kto1Million</td>
<td>104</td>
<td>3,922</td>
</tr>
<tr>
<td>Million and higher</td>
<td>107</td>
<td>3,607</td>
</tr>
</tbody>
</table>

NIFA
FOOD SYSTEMS
COLORADO STATE UNIVERSITY
The Role of Labor and Other Variable Expenses

Average Share of Variable Expenses for Local Producers by Scale, U.S.

Source: Bauman, Thilmany, Jablonski 2018
Methodology: Profitability implications of local food marketing strategies

• We divide the sample into quartiles, segmented by profitability
  • Profitability is defined as return on assets.
  • A % representing the net income made per dollar of assets invested in a farm, common competitive returns for industry are 10-15%
  • For segments: Quartile 4-best performers, Quartile 1-lowest performers

• Provides benchmark information for comparisons across groups and time (as more years become available)
Profitability by Scale and Channel

Return on Assets by Quartile (Quartile 4 is the most profitable)

By Sales Class

Return on Assets

-2 -1.5 -1 -0.5 0 0.5

$1,000 to $74,999 $75,000 to $349,999 $350,000 to $999,999 $1,000,000 and higher

Quartile 1 Quartile 2 Quartile 3 Quartile 4

Source: Bauman, Thilmany, Jablonski 2018
Profitability by Scale and Channel

Source: Bauman, Thilmany, Jablonski 2018
Regional Economic Development
Food Systems led economic development is an opportunity to strengthen rural-urban linkages.

Denver Mayor Michael Hancock set the city’s 2020 sustainability goals:

Acquiring at least 25 percent of food purchases through Denver’s municipal government supply chain from sources produced entirely within Colorado.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2007</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Farms</strong></td>
<td>10</td>
<td>24</td>
<td>-58</td>
</tr>
<tr>
<td><strong>Land in Farms</strong></td>
<td>143 acres</td>
<td>609 acres</td>
<td>-77</td>
</tr>
<tr>
<td><strong>Average Size of Farm</strong></td>
<td>14 acres</td>
<td>25 acres</td>
<td>-44</td>
</tr>
<tr>
<td><strong>Market Value of Products Sold</strong></td>
<td>(D)</td>
<td>$561,000</td>
<td></td>
</tr>
<tr>
<td>Crop Sales (D)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock Sales (D)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Per Farm</strong></td>
<td>(D)</td>
<td>$23,356</td>
<td></td>
</tr>
</tbody>
</table>
Key takeaways

- Average wages are slightly higher in metro areas ($26 vs. $23 and $21 in metro-adjacent and nonmetro, respectively), there are no significant differences.

- Given the substantial literature that focuses on persistent wage gaps between rural and urban places (e.g., Marré 2017; Young 2013), this finding is unexpected.

- Shows potential for those who see local food systems as one strategy for rural economic development.

Source: Jablonski, Bauman, and Thilmany under review
Regional Economic Impacts of Local Food System Investments Generally Demonstrate Relatively Small, Short-Term Gains

- Impacts on employment, output, labor income

- Spatial econometric models
  - Deller et al. 2014; Brown et al. 2014
Words of caution in thinking about economic impacts

• Finite resources (e.g., land, consumers dollars, public dollars) so every decision involves a choice.

• Incorporated into economic impact assessments by estimating the net rather than the gross impact of changes in a local/regional food system.

• Can be on supply (production) or demand (consumer) side, or both.
Competition for Vendors at Farmers Markets

Source: Lohr and Diamond 2011
Arable land is likely already in production!

Study from Midwest estimates county-level fresh fruit and vegetable production potentials and expected sales based on current population.

– Corn and soybean are the dominant crops in these states, and net impacts would occur from shifts to fruit and vegetable.

– Land needed to satisfy regional fruit and vegetable demand is small, production consequences would be nominal.

Example Economic Impact Assessment Food Hub

• Surveyed 305 of Regional Access’ customers
  – 49% purchased less from other sources due to purchases from RA
  – Average reduction >23%

• Opportunity Cost associated with $1 increase in final demand for food hub sector ~ $0.11

• Reduced Total Output Multiplier from 1.82 to 1.63 (>10%)

Source: Jablonski, Schmit, and Kay 2016
Other Economic Impacts

- Businesses near farmers’ markets reported higher sales on market days
  - Additional sales found to directly support the businesses themselves, but also generated extra tax revenue for the communities in which the markets were located.
- Farmers’ markets increase property values in the market district
Evaluating long-term economic impacts more difficult, but potentially where more important impacts lie!

- Farmers’ markets as **business incubators** by providing the infrastructure necessary to build skills and gain business experience.

- Regular interactions can generate and circulate **knowledge** that vendors might use to develop new products and creative ways of marketing them.

- Sales income may be less important than the **skills and business experience** developed through participation in farmers’ markets.
Example: Human Capital

• 75% of farms made (or intend to make) changes to their farm business (ideas for a new product and/or marketing technique) based on these ideas.

• 45% of farms made these changes to product sold in both rural and urban markets.

• 82% reported that they shared ideas (or intend to) that they got through Greenmarkets with farmers in their home communities.

Source: Schmit, Jablonski, Christensen, Kay, and Minner 2017
localfoodeconomics.com