Effects of the Food Safety Modernization Act on the North American fresh tomato trade

John Bovay  
Ph.D. candidate  
Department of Agricultural and Resource Economics  
University of California, Davis  
Graduate student researcher  
University of California Agricultural Issues Center  
bovay@primal.ucdavis.edu

Daniel A. Sumner  
Director  
University of California Agricultural Issues Center  
Frank H. Buck, Jr., Professor  
Department of Agricultural and Resource Economics  
University of California, Davis  
dasumner@ucdavis.edu


Copyright 2013 by John Bovay and Daniel A. Sumner. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
Effects of the Food Safety Modernization Act on the North American fresh tomato trade

John Bovay* and Daniel A. Sumner
University of California Agricultural Issues Center and Department of Agricultural and Resource Economics, University of California, Davis

---

The FSMA Produce Safety Rule

The Food Safety Modernization Act (FSMA), the regulations authorized by which are still pending, will increase the regulatory burden facing producers of fresh fruits and vegetables. Farmers and marketers already have incentives, both individually and collectively, to sell safe food in order to reduce the risk of a recall or lawsuits and to protect farm and industry reputation. On January 4, 2013, the U.S. Food and Drug Administration (FDA) proposed the first two of five rules mandated by the FSMA.

The Produce Safety Rule mandates on-farm practices, and focuses on:
- Clean irrigation water
- Sanitation (bathrooms, hand washing, and cleaning equipment and buildings)
- Preventing accidental contamination with animal feces

The FDA Regulatory Impact Analysis estimates for annualized cost of compliance:
- $460 million for domestic firms
- $171 million for foreign firms

The FDA assumes that the aggregate effects of increases in costs for domestic and foreign firms will not affect the share of imported produce in the U.S. market. We find that, even for an industry in which the bulk of U.S. growers are already engaging in specified food-safety practices, the balance of trade will change insignificantly after the implementation of FSMA.

The North American fresh tomato industry

Nearly all fresh tomatoes sold in the United States are produced in the United States, Mexico, or Canada. Over the last decade, California and particularly Florida lost production share, while the import share expanded significantly, as seen in Figure 1. Although tomatoes were traditionally a seasonal commodity, the expansion of the greenhouse industry means that tomatoes are now shipped and consumed all year.

Figure 1: Fresh tomatoes, U.S. market shares, by region of origin

Food safety is a big deal for the tomato business. From 1990 to 2005, public health authorities identified at least twelve outbreaks of foodborne illness associated with fresh tomatoes (Powell, 2011). Several years ago, just before the FSMA was passed, the FDA-encouraged industry organizations in Florida and California (the main producing states) to develop and implement new Good Agricultural Practices (GAPs). The main California producer cooperative adopted these GAPs, and Florida law requires it for most growers of any significant size. The proposed Produce Safety Rule is similar to these GAPs that have already been in place for years in the bulk of the U.S. tomato industry. The FDA Regulatory Impact Analysis provides specific estimates of the cost of compliance for growers that have already implemented the GAPs, and indicates that relatively because of paperwork and administrative costs. Florida and California tomato growers will still incur between 66–88 of the costs incurred by growers who have not implemented GAPs.

Test 1: Does knowledge about on-farm food-safety programs increase demand for fresh produce? No.

We do not find evidence that the implementation of food-safety programs in California and Florida beginning in 2007 shifted demand for tomatoes. Figure 2 shows two main trends: that the real prices of California and Florida tomatoes was generally similar, and that both prices tended to spike at the beginning and end of one of these season’s states. The spikes at the beginning of the 2007 shipping seasons were brief, and similar to those seen the next year.

Figure 2: Real prices of California and Florida tomatoes, June 2006 to October 2008

Test 2: Has the implementation of food-safety programs reduced the risk of contamination? Not substantially.

The recent history of food safety in the tomato industry suggests how food safety outcomes will change after FSMA is implemented. Table 2 shows FDA data on recalls, withdrawals, and safety alerts since 2004, in addition to shipment volumes over that period. The data imply that tomatoes have become less safe over the period, especially since 2011. However, outbreaks are rare events, and the apparent increase in food-safety events associated with tomatoes may be due simply to increased monitoring or scrutiny of the tomato industry. We conclude that the implementation of food-safety programs did little to improve the safety of tomatoes.

Table 2: Number of recalls and withdrawals

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Florida</th>
<th>California</th>
<th>Mexico</th>
<th>Other U.S. states</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2005</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2006</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Test 3: Did the implementation of food-safety practices in Florida and California increase those growers’ net revenues? No.

Was the adoption of GAPs by leading members of the U.S. tomato industry an example of regulatory capture, in which these members attempted to influence the provisions of the FSMA regulations and by doing so raise rivals’ costs? Or was it an effort to improve the safety reputation of the entire industry? The Florida tomato producer association issued a statement of support for FSMA in 2008, but with the caveat that the required small farms be eliminated. This statement of support lends credence to both of these hypotheses.

We simulate changes in output and revenue from the adoption of GAPs and from the pending implementation of the FSMA.

GAPs and other measures already comply—we simulate changes in output and revenue from adoption of GAPs and the California Tomato Farmers cooperative to account for the extent to which those growers will not affect the share of imported produce in the U.S. market. We find that, even for an industry in which the bulk of U.S. growers are already engaging in specified food-safety practices, the balance of trade will change insignificantly after the implementation of FSMA.

Table 3: Number of outbreaks and tomato shipment volumes by region of origin

<table>
<thead>
<tr>
<th>Region</th>
<th>California</th>
<th>Florida</th>
<th>Mexico</th>
<th>Other U.S. states</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>2000</td>
<td>1000</td>
<td>500</td>
<td>500</td>
<td>4000</td>
</tr>
<tr>
<td>2005</td>
<td>3000</td>
<td>2000</td>
<td>1500</td>
<td>500</td>
<td>6000</td>
</tr>
<tr>
<td>2006</td>
<td>4000</td>
<td>3000</td>
<td>2500</td>
<td>500</td>
<td>9000</td>
</tr>
</tbody>
</table>

GAPs. The main California producer cooperative adopted these GAPs, and Florida law requires it for most growers of any significant size. The proposed Produce Safety Rule is similar to these GAPs that have already been in place for years in the bulk of the U.S. tomato industry. The FDA Regulatory Impact Analysis provides specific estimates of the cost of compliance for growers that have already implemented the GAPs, and indicates that relatively because of paperwork and administrative costs. Florida and California tomato growers will still incur between 66–88 of the costs incurred by growers who have not implemented GAPs.

Test 1: Does knowledge about on-farm food-safety programs increase demand for fresh produce? No.

We do not find evidence that the implementation of food-safety programs in California and Florida beginning in 2007 shifted demand for tomatoes. Figure 2 shows two main trends: that the real prices of California and Florida tomatoes was generally similar, and that both prices tended to spike at the beginning and end of one of these season’s states. The spikes at the beginning of the 2007 shipping seasons were brief, and similar to those seen the next year.

Figure 2: Real prices of California and Florida tomatoes, June 2006 to October 2008

Estimated effects of implementation of GAPs by Florida and California growers (about 1/3 of the industry):
- Average farm price increase of about 0.2% (across all growers)
- For growers outside of Florida and California, the increase in equilibrium price resulted in a 0.3% increase in output and a 0.5% increase in revenue.
- For Florida and California growers, the increase in farm costs resulted in a 0.8% decrease in output and a 4.6% decrease in revenue.

Figure 3: (a) Estimated effects of GAP implementation on tomato supply and demand (b) Simulated effects of FSMA implementation on tomato supply and demand

Test 4: Will implementation of FSMA increase net revenues or market share for U.S. growers? No.

Simulated effects of implementation of FSMA:
- All growers will face some increase in costs because of FSMA.
- Only the small growers that qualify for a partial exemption will see increased output (0.5%) or revenue (1.1%) after FSMA is fully implemented.
- Large growers in all regions have some economies in meeting the requirements of FSMA and will increase market share because of these economies.
- Among large growers, the advantage for those that have already implemented GAPs is minimal: their market share will increase by about 1%, while other large growers’ market share will increase by 0.3%.
- For large growers that have implemented GAPs, output will decrease by less than 0.1%. For small growers that have not, output will decrease by up to 5%.
- Medium and small growers in Florida will lose market share when FSMA is implemented. Assuming (as FDA does) that the total burden of FSMA compliance costs is equal for growers in each country, we simulate that the import share will decrease by less than 0.1%.
- While domestic growers may have some cost advantages in terms of legal familiarity, foreign growers may have cheaper labor. We do not know which effect is most important.

References


Table 3: Number of outbreaks and tomato shipment volumes by region of origin

<table>
<thead>
<tr>
<th>Region</th>
<th>California</th>
<th>Florida</th>
<th>Mexico</th>
<th>Other U.S. states</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>2000</td>
<td>1000</td>
<td>500</td>
<td>500</td>
<td>4000</td>
</tr>
<tr>
<td>2005</td>
<td>3000</td>
<td>2000</td>
<td>1500</td>
<td>500</td>
<td>6000</td>
</tr>
<tr>
<td>2006</td>
<td>4000</td>
<td>3000</td>
<td>2500</td>
<td>500</td>
<td>9000</td>
</tr>
</tbody>
</table>

Acknowledgements

Research funding was provided by USDA-ERS Cooperative Agreement Number 58-4000-0-0047, Fred Kacher, Juliana Alston, and Rich Sexton have been involved at various stages in this project.