COOL and Consumers’ Willingness to Pay in the Fresh Produce Industry – Some initial impressions from the field

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A Selected Paper for presentation at the Southern Ag. Econ. Association Meetings
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Abstract

The debate about Country-of-Origin labeling (COOL) has centered on the projected benefits and costs of its implementation. This study uses data from a Vickery auction (n=200) to estimate willingness to pay for COOL. Preliminary findings suggest, on average, consumers value COOL, are not homogenous, and prefer fresh produce grown in the U.S.
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Introduction

The 2002 Farm Bill includes provisions for Country of Origin Labeling (COOL), which will require retailers to inform consumers of the country of origin for several fresh commodities. The debate on these provisions has centered on the potential benefits as they relate to the anticipated costs of implementing this legislation. In order to help inform this debate, the authors of this paper initiated a research project on consumer preferences for COOL. More specifically, the research project’s primary objective is to measure the degree to which consumers are willing to pay for fresh produce with labeling that identifies products by their country of origin, and/or if this willingness is affected by the particular country of origin.

As this research is on-going, this paper offers very limited insights and no conclusive findings. However, an initial review of the data collected to date does suggest that there may be price differentials (i.e., differing levels of willingness to pay) based on information about the country of origin of fresh produce.

Background

With the public debate about the costs and benefits of COOL continuing both in the trade press and in the halls of the U.S. Congress, researchers are beginning to publish findings on consumer demand and willingness to pay for COOL products. However, to date, this literature is still rather limited, particularly for the fresh produce industry. There have been a number of symposia and sponsored workshops on topics closely related to COOL, for example, the
FAMPS-coordinated workshops in January 2002, *The Economics of Assurance and Traceability in the US Food System* and in March 2003, *Emerging Roles for Food Labels: Inform, Protect, Persuade*; and, the ERS/Farm Foundation sponsored conference in January 2003, *Product Differentiation and Market Segmentation in Grains and Oilseeds: Implications for an industry in transition*. Specific published studies that have researched COOL include a comprehensive background report by the General Accounting Office, a consumer survey that interviewed consumers at grocery stores in Colorado in order to assess preferences for COOL with beef products (Loureiro and Umberger), and a mail survey of Louisiana households that estimated consumers’ support for mandatory COOL (Schupp and Gillespie). Other studies have examined the potential structural and economic impacts of COOL (Carter and Zwane; Grier and Kohl).

Although all of this literature helps inform the debate about COOL, definitive conclusions about the full costs and benefits of COOL remain elusive. This paper and the research from which it is drawn are intended to contribute to this end goal.

**Data and methods**

This paper reports preliminary data from personal interviews and an experimental auction conducted in two different markets to estimate the willingness of consumers to pay for labeling for country of origin. The two markets were Gainesville, Florida and Lansing, Michigan. A total of 225 observations were collected, 148 in Gainesville and 77 in Lansing. Twenty-one observations from the Gainesville data and four from the Lansing data were deleted due to missing data or respondents not meeting the necessary conditions of age between 25 and 65 years and being the primary shopper. The total usable observations are 200. Table 1 shows the demographic profile of the 200 respondents and compares this to U.S. Census data. The participants were older, had higher incomes, lower minority representation and were more
educated than the average U.S. citizen. A high proportion of the sample was female (85.5%), which was expected as the research protocol requested that only primary shoppers be included in the sample population. Since there are clear discrepancies between the demographic profiles of the 200 respondents relative to the U.S. census profiles for all consumers, the observations reported in this paper must be treated with caution.

Table 1: Demographic summary of respondents

<table>
<thead>
<tr>
<th>Category</th>
<th>U.S. Census Average (%)</th>
<th>Sample Average (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>27</td>
<td>10.0</td>
</tr>
<tr>
<td>35-44</td>
<td>31</td>
<td>35.0</td>
</tr>
<tr>
<td>45-54</td>
<td>26</td>
<td>41.5</td>
</tr>
<tr>
<td>55-65</td>
<td>16</td>
<td>13.5</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>75</td>
<td>91.5</td>
</tr>
<tr>
<td>Black or African American</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>4.0</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>12</td>
<td>4.5</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$15,000</td>
<td>15.2</td>
<td>3.0</td>
</tr>
<tr>
<td>$15,000 - $24,999</td>
<td>13.2</td>
<td>6.5</td>
</tr>
<tr>
<td>$25,000 - $34,999</td>
<td>12.3</td>
<td>8.5</td>
</tr>
<tr>
<td>$35,000 - $49,999</td>
<td>15.1</td>
<td>14.0</td>
</tr>
<tr>
<td>$50,000 - $74,999</td>
<td>18.3</td>
<td>28.0</td>
</tr>
<tr>
<td>$75,000 - $99,999</td>
<td>11.0</td>
<td>18.0</td>
</tr>
<tr>
<td>$100,000 or above</td>
<td>14.1</td>
<td>20.0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors Degree or higher</td>
<td>24</td>
<td>70.5</td>
</tr>
<tr>
<td>Some College</td>
<td>27</td>
<td>23.5</td>
</tr>
<tr>
<td>High School Degree (or equivalent)</td>
<td>29</td>
<td>5.0</td>
</tr>
<tr>
<td>Less than High School</td>
<td>20</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The respondents were recruited through local civic organizations, and these organizations were compensated for these efforts and for supplying meeting facilities in which to conduct the
studies. During a two-hour session, each respondent participated in two auctions, and then completed a questionnaire about his/her produce buying habits and stated preferences for fresh produce and labeling.

The auctions were modeled as random 5th price auctions (Vickery) such that each respondent bid on identical products that differed only in the information provided by labels on some of the available products. This type of experimental method for valuation of consumer demand is used because it provides robust measures of consumer willingness-to-pay in a non-hypothetical market. This method has advantages over typical survey methods (Fox et al.) when attempting to elicit willingness to pay measures. With experimental methods, as opposed to survey techniques, the incentive structure is designed such that participants will reveal their true valuation of a good (Shogren et al., 1994).

The first phase of the initial auction involved endowing the participants with one pound of either apples or tomatoes, and $10 cash and then having the participants bid on how much they would be willing to pay to exchange their unlabeled fresh produce (either apples or tomatoes) for an equal amount of apples or tomatoes labeled “Grown in the United States.” Considerable efforts were made to closely match all other visible attributes between the fruit that was endowed to the participants and the labeled fruit (e.g., size, degree of coloring and blemishes, variety).

Eighty participants were given one pound of apples and the average bid to exchange one pound of unlabeled apples for one pound of apples labeled “Grown in the United States” was $0.36. Eighteen, or 22.5%, of the respondents were not willing to pay anything to exchange their apples. Figure 1 shows the frequency of willingness to pay to exchange apples.
In the second phase of this auction, respondents were then informed where their pound of apples was grown and asked to bid again to trade their apples (location now known) for the pound of apples labeled “Grown in the U.S.” Participants were either told their apples were from Chile (42 participants, 21 each in Gainesville and Lansing), China (17 participants, Gainesville only), or New Zealand (21 participants in Gainesville only). Average willingness to pay declined in the cases of Chile ($0.35) and China ($0.20), but increased when the apples were from New Zealand ($0.63). However, when comparing the Gainesville respondents to the Lansing respondents for the apples identified as from Chile, the average willingness to pay to trade the Chilean apples for apples identified as Grown in the United States increased to $0.48 in Gainesville and decreased to $0.22 in Lansing. Frequency of willingness to pay to exchange apples when the source is known is shown in Figures 2, 3, and 4.

Figure 1

Percent of respondents willing to trade one pound of apples from unknown source for apples labeled Grown in the United States
Figure 2

Percent of respondents willing to trade one pound of apples from Chile for apples labeled Grown in the United States

Amount Willing to Pay

- $0.00
- $0.01 - $0.09
- $0.10 - $0.19
- $0.20 - $0.49
- $0.50 - $0.74
- $0.75 - $0.99
- $1.00 or greater

Percent

Figure 3

Percent of respondents willing to trade one pound of apples from China for apples labeled Grown in the United States

Amount Willing to Pay

- $0.00
- $0.01 - $0.09
- $0.10 - $0.19
- $0.20 - $0.49
- $0.50 - $0.74
- $0.75 - $0.99
- $1.00 or greater

Percent
Similarly, 120 participants were given one pound of tomatoes and the average bid to exchange one pound of unlabeled tomatoes for one pound of tomatoes labeled “Grown in the United States” was $0.46. Thirty-eight, or 31.7%, of the respondents were not willing to pay anything to exchange their tomatoes. Figure 5 shows the frequency of willingness to pay to exchange tomatoes.

Participants were then informed where their pound of tomatoes was grown and asked to bid again to trade their tomatoes (location now known) for the pound of tomatoes labeled “Grown in the U.S.” Participants either were told their tomatoes were from Mexico (72 participants, 47 in Gainesville and 25 in Lansing), or Canada (48 participants, 22 participants in Gainesville and 26 in Lansing).

Average willingness to pay increased in the case of Mexico ($0.86) and decreased in the case of Canada ($0.35). When comparing the Gainesville respondents to the Lansing respondents
for the tomatoes identified as from Mexico, the average willingness to pay to trade the Mexican
tomatoes for tomatoes identified as Grown in the United States increased to $1.09 in Gainesville
and $0.51 in Lansing. For the tomatoes identified as Grown in Canada, average willingness to
pay to trade the Canadian tomatoes for the tomatoes labeled Grown in the U.S. increased to
$0.51 in Gainesville and decreased to $0.21 in Lansing. Frequency of willingness to pay to
exchange tomatoes when the source is known is shown in Figures 6 and 7.

Figure 5

<table>
<thead>
<tr>
<th>Amount Willing to Pay</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td></td>
</tr>
<tr>
<td>$0.01 - $0.09</td>
<td></td>
</tr>
<tr>
<td>$0.10 - $0.19</td>
<td></td>
</tr>
<tr>
<td>$0.20 - $0.49</td>
<td></td>
</tr>
<tr>
<td>$0.50 - $0.74</td>
<td></td>
</tr>
<tr>
<td>$0.75 - $0.99</td>
<td></td>
</tr>
<tr>
<td>$1.00 or greater</td>
<td></td>
</tr>
</tbody>
</table>
Figure 6

Percent of respondents willing to trade one pound of tomatoes from Mexico for tomatoes labeled Grown in the United States

Amount Willing to Pay

Figure 7

Percent of respondents willing to trade one pound of tomatoes from Canada for tomatoes labeled Grown in the United States

Amount Willing to Pay
After completing the first auction, participants were then introduced to a second auction. In this second auction, participants were shown one-pound sets of apples or tomatoes, with each pound from a different country. In the case of apples, participants were shown five one-pound sets of apples, one pound each from the United States, Chile, China, New Zealand, and Canada. In the case of tomatoes, participants were shown four one-pound sets of tomatoes, one each from the United States, Mexico, Canada, and the Netherlands. Participants were then asked to bid how much they would be willing to pay for each individual pound of apples (or tomatoes) as if they were in the grocery store and that was the pound of apples (or tomatoes) that was available for purchase. It should be noted that participants who bid on apples in the first auction, were presented with choices for tomatoes in the second auction, while those who bid on tomatoes in the first auction were presented with choices for apples in the second auction.

Under this auction setting, average willingness to pay for a pound of apples was highest for U.S. apples ($0.97/pound) compared to $0.95 from New Zealand, $0.89 from Chile, $0.58 from Canada, and $0.54 from China. Willingness to pay did differ between Gainesville participants (n=67) and Lansing (n=46) participants as shown in Figure 8.

When given a choice of tomatoes from four different countries, average willingness to pay for a pound of tomatoes was highest for U.S. tomatoes ($1.45/pound) compared to $1.11 from the Netherlands, $1.05 from Canada, and $0.96 from Mexico. Willingness to pay did differ between Gainesville participants (n=54) and Lansing (n=19) participants as shown in Figure 9.
Figure 8:

Willingness to Pay for Apples from Various Countries, by City of Respondent

Country of Origin of Apples

Willingness to Pay

$0.00   $0.20   $0.40   $0.60   $0.80   $1.00   $1.20   $1.40

Canada  Chile  New Zealand  China  United States

Gainesville  Lansing

Figure 9:

Willingness to Pay for Tomatoes from Various Countries, by City of Respondent

Country of Origin

Willingness to Pay

$0.00   $0.50   $1.00   $1.50   $2.00

Canada  Mexico  Netherland  United States

Gainesville  Lansing
Impressions and Observations to Guide Further Research

As has been noted already, these data are preliminary and possibly non-representative of all U.S. consumers. Once the research is complete, a more comprehensive set of conclusions will be drawn. But from this initial research, several impressions and observations are,

- Consumers appear to respond to more information, but there appears to be heterogeneous preferences among consumers, and hence, not all consumers react to the same information in the same manner.
- Consumer perceptions about fresh produce from different countries of origin may vary by U.S. geographic regions.
- Consumer perceptions about fresh produce from different countries of origin may vary by type of produce (e.g., a tomato from a particular country may merit a price premium while an apple from the same country may be penalized in terms of the price a consumer is willing to pay for it).
- Previous exposure to COOL may increase consumer willingness to pay for US fresh produce (i.e., the respondents in Gainesville, as compared to the Lansing respondents, generally were willing to pay more for U.S. grown produce, which may be a result of Florida’s already well-established state-mandated COOL program and the absence of such a state-level program in Michigan).
- On average, U.S. consumers likely favor U.S. grown fresh produce, and may even be willing to pay a price premium for it, although this conclusion is still very preliminary!
References


