Estimating Retail Organic Price Premiums for Snack Foods Using Scanner Data from 2013 to 2016

Andrea Carlson, Economist, ERS
Megan Waldrop, Research Fellow, Technische Universitat Munchen (Technical University of Munich)

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Introduction
Organic food sales continue to increase. The Nutrition Business Journal shows the growth in organic snack foods sales between 2013 and 2016 was 10 percent, one of the fastest growing organic food sectors.

- Organic food costs more to produce because
  o Organic agriculture has specific objectives related to protecting the environment.
  o Along the food supply chain, handlers must prevent organic and conventional products from co-mingling.
  o Increased demand also has led to an organic ingredient shortage, further escalating production costs.

- Organic price premiums cover the additional costs. Knowing the premiums:
  o Helps producers decide whether to enter or exit the market.
  o Inform investors on the size of the return on investment.
  o Inform consumers whether the extra they pay for organic products is because the product is organic, or some other attribute

Objectives:
1. Estimate retail organic price premiums for snack bars, tortilla chips, and rice cakes.
2. Determine whether differences in household level scanner data and retail scanner data matter in estimating organic price premiums.

Method and data:

Snack bars, tortilla chips, and rice cakes come in different styles, flavors and have a variety of additives. In some cases a particular attribute may be more common in the organic product than the non-organic product. The type of store, brand and geographic location also impacts the price. Most major retail chains have an organic private label line; private labels products generally cost less than their branded counterparts.

- Household data estimates for 2008-2016, both annual and monthly
- Retail data estimates for 2013-2016, monthly only
Two data sets are available; each has strengths and weaknesses:

<table>
<thead>
<tr>
<th></th>
<th>IRI Consumer Network (household)</th>
<th>IRI InfoScan (retail)</th>
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<tbody>
<tr>
<td>Sample Size</td>
<td>60,000 households</td>
<td>60,000 stores or groups of stores</td>
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<tr>
<td>Collection method</td>
<td>Consumers record purchases on handheld scanners</td>
<td>Stores submit weekly register scans directly to IRI</td>
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<tr>
<td>Private Label products</td>
<td>Included when consumers record purchases</td>
<td>Some major retailers do not release information on their products.</td>
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<tr>
<td>Stores</td>
<td>Included when consumers record purchases, but prices for stores outside of IRI’s census of stores are imputed.</td>
<td>Only stores in IRI’s census are included. This represents half of all retail food sales in the U.S.</td>
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<td>Organic products covered</td>
<td>Two groups of organic consumers under represented: households with children and Millennial household heads. While sample weights correct for this, purchases made by these groups are drawn from a small sample.</td>
<td>Some of the top organic retailers are not included in the IRI census of stores. Some other major organic retailers do not include their private label products.</td>
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<td>Sample weights</td>
<td>When applied, sample demographics are similar to the American Community Survey. However, not possible to include in a random effects regression.</td>
<td>Not available.</td>
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Source: Compiled by authors from (Muth et al. 2016, Sweitzer et al. 2017)
Figure 1: Market shares for organic Tortilla chips increased, snack bars and rice cakes held steady

Source: Author estimates using IRI Consumer Network (household) and Infoscan (retail). Consumer Network results use projection factors
Results:

1. Snack Bars: Annual estimates show a decrease between 2008-2014, while the monthly estimates show no change between 2013 and 2016

Source: Author estimates using IRI Consumer Network (household) and Infoscan (retail).
2. Tortilla chips. Each estimate produced different results: household annual (steady), household monthly (increase), retail monthly (decrease)

Source: Author estimates using IRI Consumer Network (household) and Infoscan (retail).
3. Rice cakes: Both the annual and monthly household estimates fluctuate, while the retail estimate increases over time.

Source: Author estimates using IRI Consumer Network and Infoscan (retail).

Conclusions:

1. Annual retail organic price premium estimates: From 2008 to 2014, the premium decreased for snack bars, and fluctuated for rice cakes and tortilla chips.
2. Estimates using retail and household scanner data show similar patterns, but not identical results. The retail estimate represent significantly more purchase UPCs, but the household panel may represent a wider selection of store chains, including some of the top sellers of organic foods.
3. Estimates using InfoScan take significantly longer to run than household estimates, but examining both may help overcome the gaps in both data sets.

Any opinions, findings, recommendations, or conclusions are those of the author and do not necessarily reflect the views of the Economic Research Service or the U.S. Department of Agriculture. The analysis, findings, and conclusions expressed in this paper also should not be attributed to Information Resources, Inc. (IRI).
References:


