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Economic Features of Canadian Organic Food at the Mass-market Retail Level

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The Issue

Over the past decade, Canada's organic food industry has focused on the production of organic grains, oilseeds, fruits and vegetables and a limited amount of organic dairy products. Canadian organic grains and oilseeds are mostly destined for export, whereas Canadian organic fruits and vegetables and dairy products are mostly consumed domestically. With the exception of dairy products and a few other products such as breakfast cereal and fruit juice, Canadian companies have been mostly absent from the rapidly growing markets for processed organic foods. The extent to which these markets are currently being penetrated by Canadian organic food manufacturers and the size of the price premiums earned by these companies are worthy of investigation.

Very little information exists about market structure and price premiums for processed organic foods sold in North American mass-market retail outlets. Market studies of Canada's organic food market typically use a previously determined 30 percent price premium estimate for organic foods as a whole, and most studies are silent about specific characteristics of organic food manufacturers. In order for Canadian firms to increase their presence in the market for processed organic foods, more detailed information about market structure and the distribution of price premiums is needed.

Implications and Conclusions

This article analyzes on-line product and price data from one moderate-sized (single-outlet) community grocery store in Vancouver on one particular day to provide general information about the suppliers of organic products and to investigate the size of the associated price premiums. The analysis demonstrates that price premium estimates are likely to vary widely across different data sets because there is high price premium variability across different product categories (for the case at hand, the average price premium is about 40 percent). Moreover, because of market thinness, price premiums do not seem to depend on key economic variables such as degree of processing, number of competing products and market share of foreign firms within a product category. The market is thin because most organic food manufacturers operate in only one product category and most product categories offer only one brand of an organic product. The analysis shows that mass-market organic foods are dominated by plant-based products with relatively little processing, followed by dairy products. Contrary to the common belief that foreign firms dominate the market for organic processed foods, this analysis reveals that local suppliers are doing quite well in terms of the number of alternative products they make available for purchase.

Literature on Market Structure and Price Premiums

Agriculture Canada (2001) indicates that the retail market for organic food in Canada is worth an estimated $300 to $750 million, represents about 1 percent of total retail grocery sales, is growing at slightly over 15 percent per year and is comprised of about 80 percent imported food items. Approximately half of organic food products are sold in mass-market outlets and the remaining half are sold through specialty stores and suppliers (3 percent of sales take place in farmers' markets). In a recent U.S. study, Lohr (2001) argues that consumers of organic foods are increasingly demanding the type of product diversity that is currently available for conventional foods, and this evolution in demand is resulting in rapidly expanding production and trade of organic food products as well as an ongoing segmentation of market share into product categories.

Lohr (2001) indicates that the top three organic product categories in retail sales in the United States (comprising about half of the total market) are fresh produce, packaged grocery items (cereals, sauces, etc.) and bulk/packaged products such as pasta, grains and beans. Growth rates are expected to be highest for grain snacks and candy, cereals, dairy and frozen foods. Comparable data for Canada are not available. According to Thompson (1998), high growth rates in a growing array of product categories have been partly caused by a consolidation of natural food retail outlets and the competitive response of supermarkets to this consolidation. This observation is highly relevant for Canada given that two large U.S.-based natural food specialty stores (Whole Foods Market Inc. and Wild Oats Markets Inc.) have recently begun penetrating the Canadian retail market. In

terms of mass-market outlets, Loblaws (Great Canadian Superstore in Western Canada) has made the most progress in organic food retailing by offering its own line of products in a reasonably diverse array of product categories.

Price premium information for organic food products is available at the individual product level for a few U.S. commodities, but general information about price premiums is virtually non-existent. Using U.S. scanner data, Glaser (1998) and Glaser and Thompson (2000) show that retail price premiums for selected frozen vegetables averaged about 175 percent and that retail price premiums for milk are highly variable across product size, fat content and brand, ranging between zero percent and 100 percent. Thompson and Glaser (2001) discovered that market shares for organic baby food are above average for all baby food categories. Lohr (1998) reports aggregate price premium estimates for select countries. The average Canadian price premium of 30 percent is above the international average, but is low when compared to Europe: 35 percent in Denmark, 43 percent in Austria, 53 percent in France, 54 percent in the United Kingdom, 64 percent in Italy and 67 percent in Germany. This outcome appears to be at odds with the findings of Michelsen et al. (1999), who claim that organic price premiums are likely to be lowest in countries with the highest retail share held by organic food products and with the highest percentage of organic foods sold through mass-market outlets.

Methods of Data Analysis

This article provides information about organic food market structure and price premiums at the mass-market retail level by analyzing product and price data collected on a single day from Stong's, which is a "representative" grocery store in Vancouver, Canada.[2] Because of the highly specific nature of these data, it is not possible to use the results to make general statements about organic food at the mass-market retail level. Nevertheless, because of the overall lack of micro-level data describing the supply side of this market, there should still be considerable value in the results presented here. Products within the constructed database receive the "organic" designation only if the word "organic" or "org" appears in Stong's product description. Because the word "organic" legally can only be used to describe foods that qualify for organic certification, presumably only certified organic foods are included in the analysis (e.g., "natural food" products are excluded). A small percentage of organic foods do not have the word "organic" in their product description and thus will be wrongfully excluded from the analysis.

Stong's is a moderate-sized (single-outlet) community grocery store in the Dunbar region of Vancouver. A crude estimate (by the author) of Stong's market share in the Dunbar region is 30 percent. Stong's does not claim to specialize in natural foods, nor does it have a separate natural food section within its store; however, it does carry a relatively high percentage of organic food items. Indeed, it is estimated that Stong's covers off at least half as many product subcategories as does Choices, which is a neighboring natural food specialty store. Although no specific profile of Stong's

customers is available, anecdotal evidence suggests that Stong's appeals to relatively high-income consumers who are willing to pay price premiums across most food categories because of shopping convenience, atmosphere and product selection.

In addition to operating a standard retail outlet, Stong's offers all of its products to consumers via on-line shopping and home delivery. The on-line data set was downloaded on April 15, 2003 and queried in Microsoft Access to generate the results for this analysis. Information about supplier location and specialization was obtained by searching individual company websites. For processed foods, the on-line data consist of product and supplier name, container size/weight, and price, grouped into various categories (more on this below). A typical product/company name is "Hunts Tomato Paste–Garlic". As indicated above, most organic products are readily identifiable because they have the word "organic" or "org" inserted into the product name (e.g.,"Avalon Org Homogenized Milk"). For about 15 percent of the organic products it was not possible to identify the specific product type from the description; these items were excluded from the data set. Because there are no organic versions of bottled water, soda pop and confectionery items such as chocolate bars, these particular products were also excluded from the analysis. In the course of presenting the results, the analysis below jumps back and forth between including and excluding fresh produce because supplier information is not available for fresh produce and there is insufficient product standardization to compute accurate price premiums for fresh produce.

With the exception of the above-mentioned excluded items, there are 7,837 distinct products within the store (sometimes the only distinguishing feature is size or flavour). These products are contained within 15 major categories and 397 subcategories. There are 230 products listed as "organic" (including fresh produce), which implies an organic penetration rate (with respect to product coverage) of almost 3 percent. These products are contained within all 15 major categories and 75 out of the 397 subcategories (i.e., about 19 percent of the subcategories contain at least one organic product).

Suppliers of Organic Products

There are a total of 110 suppliers of processed organic food products in the original data set, but after excluding the non-usable products, the list shortens to 77 (see table A.1 in the appendix for a complete listing). As table 1 shows, British Columbia leads the pack in terms of having the highest fraction of supplying firms. Moreover, the Canadian share is slightly over 40 percent (32/77). This Canadian product share estimate is considerably higher than the 20 percent domestic market share estimate that is typically quoted at the national level. Notice that table 1 shows an exact balance between firms that specialize in organic foods and firms that produce both organic and conventional foods. Firms that supply both organic and conventional foods are predominantly regional. Table A.1 in the appendix reveals that the majority of organic food suppliers are niche firms rather than easily recognizable national brands. Two firms have products in 4 separate subcategories,

Table 1 Location and Organic Specialization Status of Stong's Organic Food Suppliers

Supplier location	Organic only	Organic & conventional	Uncertain	Total
		number of firms		
British Columbia	8	11	0	19
Other Canada	4	9	0	13
California	7	4	0	11
Other U.S.	12	5	0	17
Europe	2	4	0	6
Other world	1	1	0	2
Uncertain	0	0	9	9
Total	34	34	9	77

Table 2 Distribution of Subcategories by Designation and Organic Status

Product type	Organic	Non-organic	Total
P	35 (29.4%) (46.7%)	84 (70.6%) (26.1%)	119 (30.0%)
D	7 (25%) (9.3%)	21 (75%) (6.5%)	28 (7.0%)
O	33 (13.2%) (44.0%)	217 (86.8%) (67.4%)	250 (63%)
Total	75 (18.9%)	322 (81.1%)	397

1 firm has products in 3 subcategories, 13 firms have products in 2 subcategories and the remaining 62 firms sell products in only a single product subcategory.

In general, there are few firms competing within each product subcategory. For 67 out of the 75 organic subcategories, the number of competing firms can be clearly identified. As table A.2 in the appendix shows, 46 out of these 67 subcategories contain only a single supplier of the organic product. The most competitive subcategory is orange juice, in which case 6 different firms offer products. Olive oil is supplied by 4 suppliers. There are 5 subcategories with 3 suppliers (artesian breads, dried fruit, fruit spread, packaged salad and specialty flour) and 14 subcategories with 2 suppliers.

A crude index was constructed to identify plant-based organic products with a maximum of one level of processing (P), dairy-based organic products (D) and all other organic products (O). Examples of P products include fresh produce, fruit juices, flour, vegetable oil and coffee beans. D products include the usual dairy products along with eggs and honey. As table 2 shows, 30 percent of all products are designated P and

7 percent are designated D. Nearly 47 percent of the organic subcategories (i.e., subcategories that contain at least one organic product) have the P designation. Nearly 30 percent of P-designated subcategories contain at least one organic product. Less than 10 percent of organic subcategories have the D designation, and 25 percent of D-designated subcategories contain at least one organic product.

Price Premiums

The calculation of accurate price premiums for organic food is relatively straightforward when working with homogeneous products such as milk, but can be tricky when working with heterogeneous products such as crackers. The approach taken here is first to find, for each subcategory, a set of organic and conventional food items that are similar in terms of product identification, size and weight and then to separately calculate the average price per 100 grams of the product for the organic group and for the conventional group. The percentage difference between these two calculated averages is used as an estimate of the price premium. No attempt is made to adjust for differences in product quality or for national brand versus store brand. In a subcategory that contains several organic and conventional products within the two comparison groups it is hoped that quality biases will tend to be offsetting, but there is no guarantee this will be the case. A similar situation holds for quality biases associated with single-item subcategories, which it is hoped also will tend to offset when averaged across all subcategories.

Table 3 shows the price premiums for the 45 available product comparisons. What is striking about these data is the level of variation in the estimated price premiums across the various subcategories. This level of variation implies a relatively small degree of confidence in the estimate of the average price premium across all 45 product comparisons, which works out to be slightly over 40 percent. This 40 percent mean value is significantly higher than the 30 percent value that has been commonly cited for Canadian organic products at the retail level. Nevertheless, the null hypothesis of a 30 percent price premium could certainly not be rejected using this data set.

Of particular interest is the extent to which the price premiums can be predicted using key economic variables. A regression model with 47 observations was developed with the price premium serving as the dependent variable and three structural variables serving as the independent variables: a product-type dummy variable (i.e., P, D or O), a competition variable (i.e., number of competing firms within the subcategory containing the product in question) and a foreign-firm supply variable (i.e., fraction of total products in the organic food comparison group that are imported). This regression had no predictive power whatsoever. The results presented in table 4 also reveal that there is no apparent relationship between price premiums and the economic variables discussed above. This lack of a relationship is most likely due to market thinness.

Table 3 Price Premiums for Selected Processed Organic Food Products

Subcategory	**Premium (%)**	*[continued]*	
Canola oil	454	Yogurt	23
Cookies	140	Chilies	23
Pancake mix	102	Nut butter	18
Baked beans	100	Oats and bran	15
Olive oil (small)	94	Honey	14
Potato chips	80	Milk	12
Pasta mixes	80	Ice cream	9
Ice cream	74	Fruit juices	4
Canned soup	70	Canned beans	4
Eggs	70	Deli – pita	4
Sugar	66	Artesian breads	3
Butter	64	Carton soup	2
Packaged salads	59	Fruit juices	0
Salad dressings	58	Oats and bran	-4
Eggs	57	Deli – dips	-7
Olive oil (regular)	51	Fruit spread	-7
Dried fruit	48	Bean coffee	-8
Carrots	47	Cold cereals	-10
Canned tomatoes	47	Soya beverage	-15
Frozen vegetables	42	Fresh herbs sprouts	-16
Sour creams	36	Dry pasta	-19
Broth	35	Rice cakes	-36
Meal replacement bars	30	Average	42.50
		Std. dev.	73.77%

Table 4 Average Price Premium by Organic Penetration and Foreign Penetration

Organic product penetration[a]	Foreign organic manufacturer penetration[b]			
	Low	Medium	High	Total
Low	39.9%	-18.9%	54.9%	44.2%
Medium	28.1%	65.8%	119.1%	69.8%
High	-3.2%	17.5%	17.0%	10.8%
Total	26.5%	21.5%	58.5%	42.5%

[a] Defined as the number of organic products relative to total products within a subcategory. Shares between 0.0 and 0.075 are deemed “low”, between 0.075 and 0.15 are deemed “medium” and greater than 0.15 are deemed “high”.

[b] Defined as the number of organic products supplied by foreign manufacturers relative to total number of organic products within a subcategory. Shares between 0.0 and 0.33 are deemed “low”, between 0.33 and 0.66 are deemed “medium” and greater than 0.66 are deemed “high”.

Conclusions

Because the results reported in this article are based on product and price data for a single store at a single point in time, it is not possible to draw general conclusions about market structure and price premiums for organic food products at the mass-market retail level. Nevertheless, the following results are likely to be reasonably general:

- In the Lower Mainland of British Columbia, Canadian organic food manufacturers have a product placement share in mass-market retail outlets that is significantly higher than the often-cited 20 percent market share estimate.
- The majority of the available organic food products are plant-based with minimal processing.
- The organic food market is dominated by comparatively small-scale firms, half of which specialize in the manufacture of organic food products.
- With the exception of a small number of products, there are only a small number of organic food manufacturers competing in most product subcategories.
- Price premiums are highly variable across product categories, which implies that a single-point estimate of the price premium for all organic food is of limited use.

It is important to keep in mind that the results here reflect a mass-market outlet that is probably positioned about halfway between a conventional supermarket such as Safeway and a natural food specialty store such as Choices. Moreover, Vancouver does not yet have large foreign-based natural-food specialty stores of the type that are now appearing in central Canada. Market structure and price premiums for organic food obviously can change quickly. Larger-scale studies of the organic food market are needed in order to help induce Canadian organic food manufacturers to enter this interesting and potentially lucrative market.

Appendix

Table A.1 Product Characteristics of Suppliers of Organic Products

Company	No. of products	No. of sub-categories	*[continued]*		
Dan-D-Pak	5	4	Lingon	1	1
Shariann's	16	4	Martins	1	1
Earthbound	8	3	Mastro Donato	1	1
Annies	4	2	Mestemacher	1	1
Avalon	5	2	Natural Beauty	1	1
Country Choice	2	2	North Meadows	1	1
Happy Planet	3	2	Nuts to You	1	1
Imagine	3	2	Oetker	1	1
Liberte	14	2	Olerafarms	1	1
Muir Glen	2	2	Olympic	1	1
Natures Path	12	2	Oregon	8	1
Robin Hood	2	2	Pacific	1	1
Santa Cruz	6	2	Pauher	1	1
Silken	2	2	Pioneer	1	1
Spectrum	2	2	Pita Plus	1	1
V.Pride	6	2	Plumm	1	1
Apple Valley	1	1	Prairie Harvest	6	1
Artisan	2	1	Pzazz	1	1
Barona	1	1	Que Pasa	1	1
Bavarian	3	1	Rainbow	1	1
Be Wise	1	1	Rogers	2	1
Big Root	1	1	Romanico	1	1
Camp Pure	1	1	San Giuliano	1	1
Can/Her	4	1	San Souci	1	1
Cascadian	1	1	San-J	1	1
Cascadian Farm	2	1	Silk	1	1
Choice	1	1	Skeet/Ikes	1	1
Cuppa Joe	1	1	Special Harvest	7	1
Earth Greens	5	1	Stong's	1	1
Ecco Il Pane	2	1	Sun-Rype	1	1
Eden	1	1	Terra	1	1
Enchanted Grdn.	2	1	Organ Coffee Co.	2	1
Fantastic	1	1	Traditional	1	1
Five Roses	1	1	Transition	1	1
Healthy Times	1	1	Uprising	8	1
Honey Bar	4	1	Voila	1	1
Ht	1	1	Walkers	1	1
Kettle	1	1	Wholesome	1	1
Knudsen	2	1			

Table A.2 Characteristics of Product Subcategories with at Least One Organic Item

Sub-category	No. of products		No. of organic firms	*[continued]*			
	Organic	Non-organic					
Fruit juices	11	42	6	Frozen juice	1	38	1
Olive oil	4	28	4	Frozen pizza	1	22	1
Artesian breads	6	73	3	Frozen vegetables	1	33	1
Dried fruit	9	58	3	Garlic, ginger, shallots	1	5	1
Fruit spread	5	31	3	Herbal tea	1	97	1
Packaged salads	14	21	3	Honey	1	29	1
Specialty flour	3	13	3	Ice cream	8	134	1
Bread	4	180	2	Indian and Thai curries	1	29	1
Canned beans	7	15	2	Instant breakfast	2	22	1
Cookies	2	197	2	Juice less 1 L	1	44	1
Dry pasta	2	116	2	Lemon lime concnrt.	1	4	1
Eggs	2	17	2	Loaf mixes	1	10	1
Milk	8	35	2	Meal replacement bars	4	60	1
Whl. grn. cereal	10	21	2	Meatless entrees	1	11	1
Nut butter	3	8	2	Mexican kits	1	34	1
Oats and bran	3	12	2	Misc. oils	1	8	1
Pasta mixes	2	29	2	Pancake mix	1	13	1
Salad dressings	2	120	2	Potato chips	1	124	1
Sugar	2	20	2	Rice cakes	6	29	1
Tea	2	83	2	Sour creams	1	15	1
Yogurt	22	237	2	Soya beverage	2	32	1
Baked beans	1	11	1	Specialty coffee	1	23	1
Bake fruit/nuts	1	47	1	Syrup	2	22	1
Bean coffee	1	12	1	Syrup and molasses	1	26	1
Butter	1	55	1	Tofu and soy products	1	9	1
Canned misc.	1	6	1	Tomatoes cucumbers	1	9	1
Canned soup	8	115	1	Broth	3	10	1
Can tomatoes	1	36	1	Carton soup	1	5	1
Canola oil	1	7	1	Misc.	1	31	1
Chilled juices	2	67	1	Apples	9	11	na
Chilies	1	9	1	Berries and grapes	2	4	na
Cold cereals	3	95	1	Carrots	3	6	na
Cream butt milk	2	15	1	Citrus	6	12	na
Deli – dips	1	28	1	Fresh herbs sprouts	4	21	na
Deli – pita	1	6	1	Potatoes	2	11	na
Deli salad	1	20	1	Root vegetables	2	10	na
Dry legumes	1	20	1	Spinach radish	2	5	na
Dry soup mix	1	75	1				

na indicates that information is not available.

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Endnotes

[1] Valuable research assistance was provided by Mario Anda.

[2] See Jamieson (2001) for a detailed description of organic food production, wholesaling and marketing by specialized suppliers of organic food in the Lower Mainland of British Columbia.