STATE ORIENTED SHELF LABELS: A PRELIMINARY ANALYSIS OF THEIR EFFECTS ON FOOD PURCHASES

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Many states are experimenting with marketing programs that promote foods processed within their borders. Research suggests that consumers have interest in knowing the origins of processed foods due to perceptions of higher quality and/or interest in helping local industry. A simple test is described to identify the impacts of shelf labels to identify a state's products. Scan data from supermarkets are used. Results indicate that the labels provide relevant consumer information.

The economics of information provides a consumer perspective for the analysis of marketing and promotion strategies (Eastwood). Theoretically, optimal consumer choice is based upon equating the ratios of the marginal utilities of goods to their prices. One situation in which suboptimal choices can occur is where a consumer is unable to assess marginal utility. An experience good (Nelson) is characterized by the need to consume the item before quality can be assessed, so a consumer has difficulty determining marginal utility prior to purchase. Advertising and other marketing strategies can be helpful in these situations if relevant information is provided.

Foods possess experience properties because consumers must typically eat them in order to assess quality. Traditionally, advertising, product promotions, and labeling provided relevant prepurchase information about ingredients, nutrition, preparation, etc. Recent consumer interest in health concerns and closely associated changes in diets have created opportunities for new types of relevant information to become part of marketing strategies. Success in promoting locally grown produce in supermarkets via freshness and quality has prompted many retailers and State Departments of Agriculture to expand their promotions to include processed foods. Surveys of consumers' perceptions of processed foods indicate preferences for own-state products because of higher quality or interest in helping local industry (e.g., Eastwood, Brooker, and Orr). Thus, easily recognized information about the origin of processed foods may be relevant for consumers in their decision making.

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This paper summarizes a preliminary analysis of the impacts of a state-oriented promotion of processed foods. Consideration is given to a point-of-purchase (POP) shelf label to identify selected foods processed within the sate. Reasons for choosing this marketing strategy are that POP materials have been found effective (e.g., Cotton and Babb, Curhan, Frank and Massy, Kumar and Leone, Moriarty), they are an inexpensive way to reach consumers where decisions are made, many states are developing logos for POP displays of processed foods, and it is relatively easy to set up test and control stores. The specific question addressed is does there appear to be an effect of a state's POP label on the sales of selected products promoted in this manner?

Procedure

This state's Department of Agriculture, like those in many other states, promotes foods grown and/or processed within its borders. During July the media and supermarkets are asked to participate in promotional activities. Public service announcements are distributed to radio and television stations. Food editors are encouraged to write about the foods grown or processed within the state. In-store materials are made available to supermarkets. One of these is a shelf label with the state's logo that can be used to identify state processed foods and fresh produce. Present interest focuses on the impacts of this shelf label on the sales of processed foods.

In the test a variety of processed foods was involved to allow for differences in purchase patterns among foods. Seven product groups were selected based upon the foods processed in the state: bacon, baked beans, corn meal, hot dogs, peanut butter, sausage, and shortening. For each group brand name foods processed by a manufacturer located in the state were identified. The state's standard shelf label was displayed beside the price label and directly below the respective product. Several bar codes read by the supermarket scanners were involved. There was one 16 ounce sliced bacon package, seven baked beans varieties and sizes, four corn meal packages, nine hot dog varieties in 16 ounce packages, six varieties and sizes of peanut butter, six 16 and 32 ounce sausage rolls, and four types of shortening.

Weekly scan data from five supermarkets in a metropolitan area within the state were used. All were part of the same chain but were in a variety of locations. The stores comprised a significant segment of the area's food sales. Since all the stores were in the same geographic area, customers shopping at these

supermarkets were exposed to the same newspaper, television, and radio promotions of the participating chain, other state promotions, and similar activities of competing stores. The unit of analysis was weekly item movement, or the number of times scanners recorded purchases of specific items. The five supermarkets were separated into three control and two test stores on the basis of whether the shelf labels were present for the selected products.

Scan data from the five stores have been collected since May, 1988. Thus, the weekly sales of each product could be analyzed for a period encompassing two July promotion months. Technical problems prevented the transfer of scan data from the stores to corporate headquarters for some weeks. Thus, there are some weeks with missing data. Rather than estimating the missing values and inserting incorrect values into the historical record, they remained missing values.

Initial interest centered on the patterns of sales for the products over the entire time period. Inspection of the data led to several insights beyond those just mentioned. First, levels of item movement varied by product group. These were caused by differences in the number of products (e.g., only one bar code for bacon and nine codes for hot dogs) and the frequency with which consumers replenish stocks (e.g., corn meal is a product that is used in the home in relatively small amounts so replenishment takes place less frequently leading to lower item movement). Second, the historic record revealed different trends by product group. Third, the timing of peaks and troughs did not correspond across products. Fourth, the timing of cycles for a given product was different for the same month in two years. Fifth, average customer counts in the test stores were always less than those for the control stores. Sixth, the number of state brands relative to close substitutes varied by product. Therefore, the impact of the shelf labels was examined for each product separately.

Item movements for all the bar codes of the shelf labeled products within each group were calculated. These were then averaged across the five stores to obtain data on the seven state products for May 14, 1988 to July 29, 1989. Appendix figures 1-7 are graphs of these average item movements by product. Each is seen to have its own long-run and cyclical behavior. For example, baked beans has a U-shaped pattern. The bottom occurs during the winter months. The two July months are of particular interest because the state promotions occurred during these times. The figures clearly show that item movements for the same product for the two months should not be compared directly. Average levels of item movement are different, as are the timing of the cycles.

A straightforward way to accommodate the trends and cycles was to consider only July for the two years. The ratio of average weekly item movement in the test to control stores was calculated for each POP labeled product. This avoided the influences of the other weeks and allowed an examination of sales during the promotion months for successive years. It also adjusted for the differences in customer counts and time periods. Attention could then focus on the crucial comparisons of item movements in the test stores relative to control stores in July, 1989 versus July, 1988. There was no reason to consider close substitutes because relative prices and other aspects of the competitive environment were identical between the test and control stores. Differences in sales between the two types of stores, then, would be due to differences in customers and the presence/absence of the shelf label. However, there is no evidence that the distribution of customers among supermarkets in the area, let alone in the five stores, changed between years. This suggests that observed differences in item movements are likely due to the shelf label.

Results

If the shelf label had an impact, then July, 1989 relative to July, 1988 item movements ought to be higher in the test stores. This condition turned out to be generally true for the products considered. Appendix figures 8-14 display the July data. The ratios of average test store to average control store item movements in July, 1989 compared to July, 1988 were higher for bacon, baked beans, hot dogs, peanut butter, and sausage. The limited number of observations prevented testing for significant differences. An implication is that this form of POP promotion provides relevant information to food shoppers about the origin of processed foods.

The two exceptions are corn meal and shortening. In these two instances the weekly July ratios for the two years cross. Consequently, there is no clear-cut indication that the shelf label was or was not effective. These products tend to be purchased less frequently than the other five foods, so there are longer consumer stock adjustment periods. Furthermore, corn meal and shortening may have less state recognition by consumers than the other products. An implication is that the length of time required to have an impact varies by product. Foods that have longer stock adjustment periods and less state recognition may need longer promotion periods for the origin message to reach food shoppers.

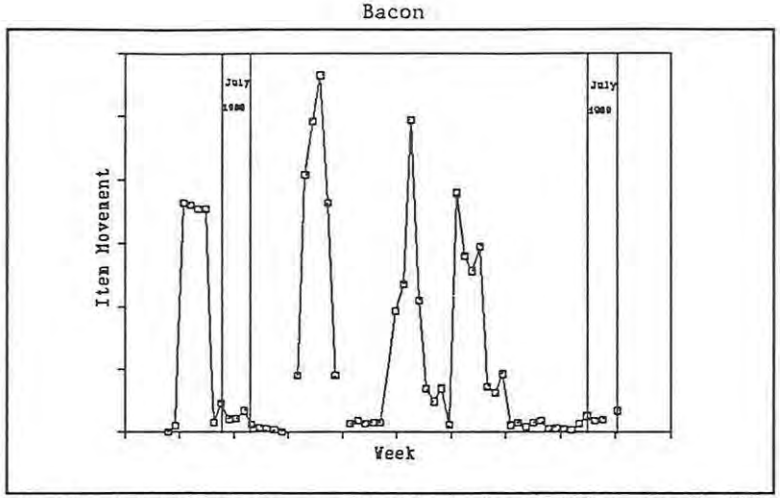

Figure 1. Average weekly item movement of bacon, May 14, 1988 to July 31, 1989.
Note: spaces between points denote missing or very erratic data.

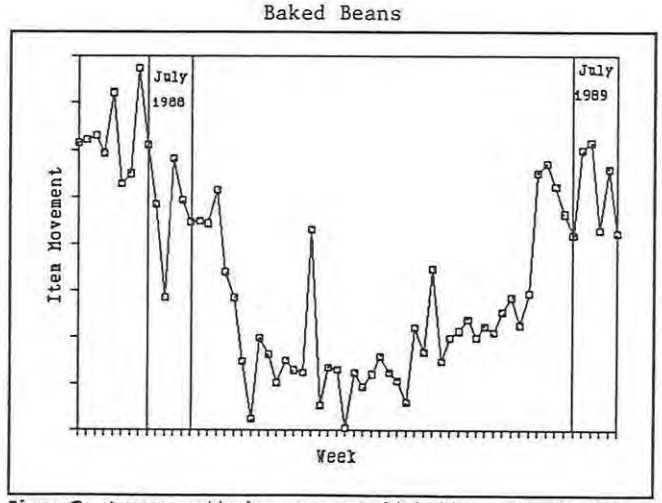

Figure 2. Average weekly item movement of baked beans, May 14, 1988 to July 31, 1989.

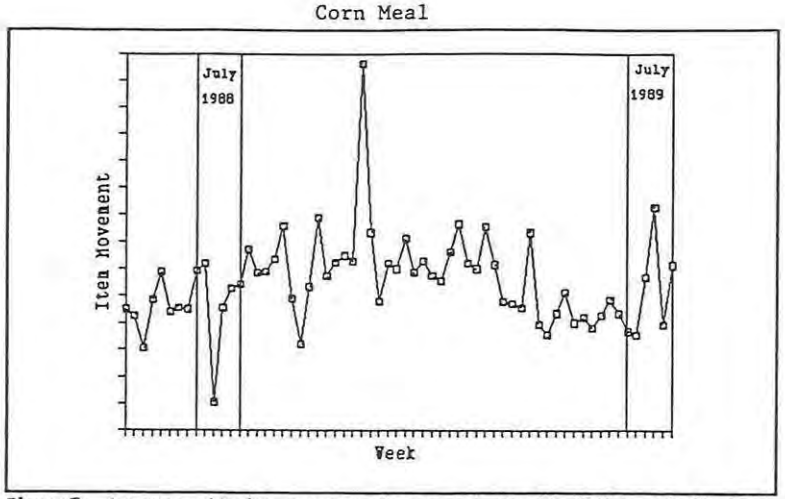

Figure 3. Average weekly item movement of corn meal, May 14, 1988 to July 31, 1989.

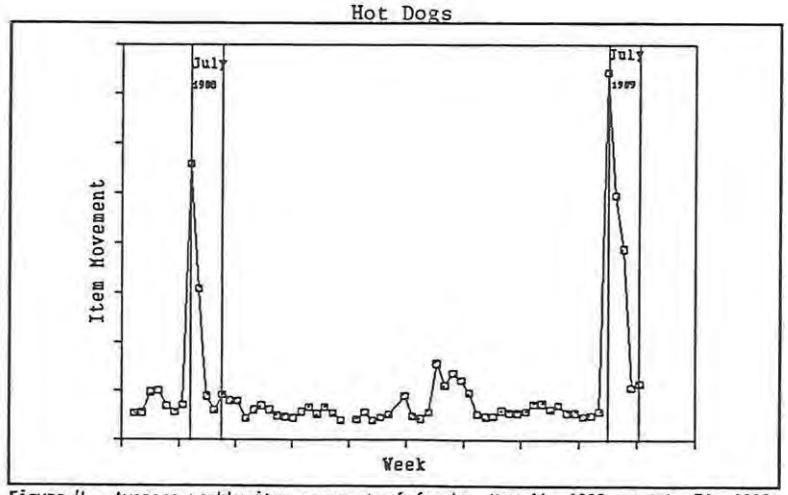

Figure 4. Average weekly item movement of franks, May 14, 1988 to July 31, 1989.
Note: spaces between points denote missing or very erratic data.

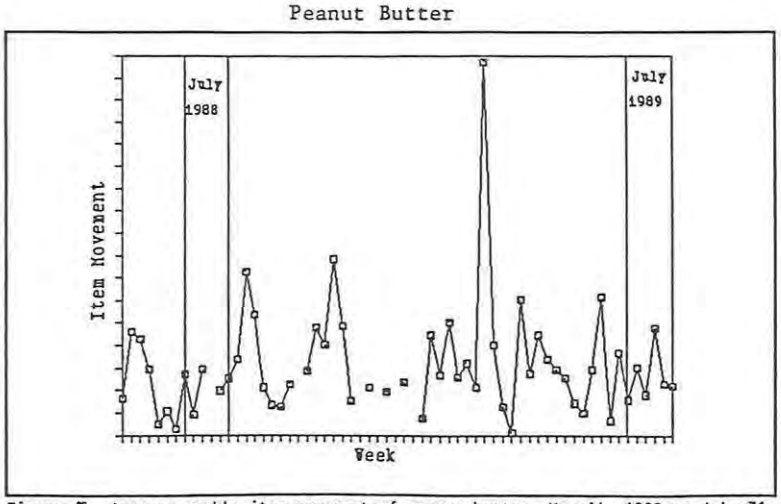

Figure 5 Average weekly item movement of peanut butter, May 14, 1988 to July 31, 1989. Note: spaces between points denote missing or very erratic data.

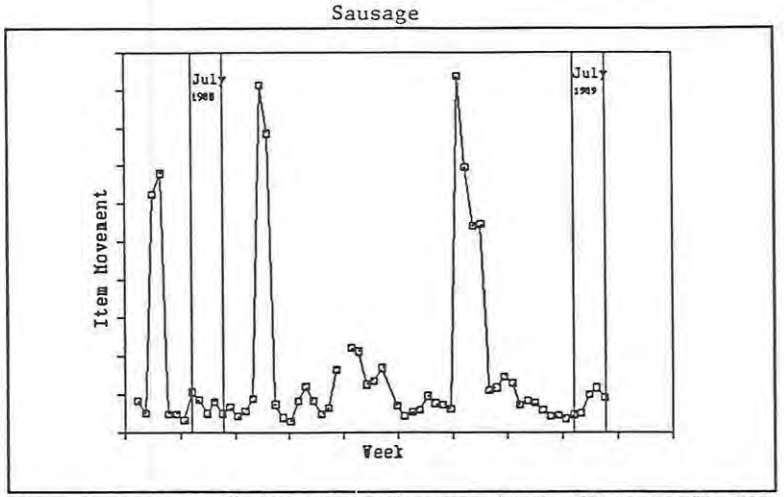

Figure 6 Average weekly item movement of sausage, May 14, 1988 to July 31, 1989. Note: spaces between points denote missing or very erratic data.

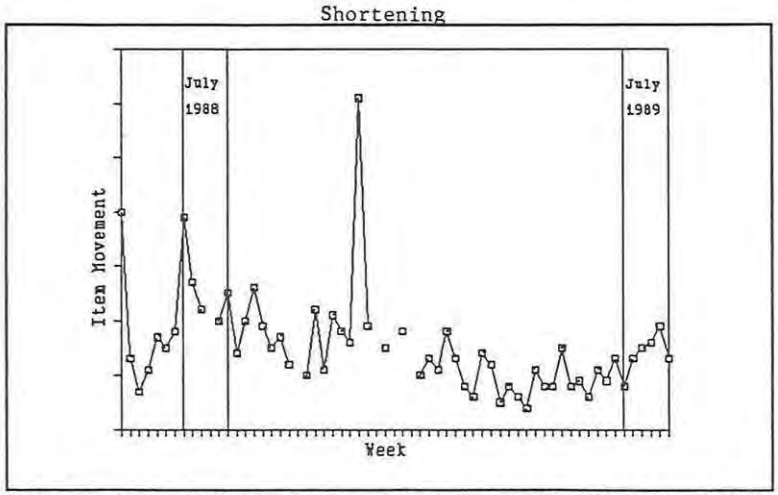

Figure 7. Average weekly item movement of shortening, May 14, 1988 to July 31, 1989. Note: spaces between points denote missing or very erratic data.

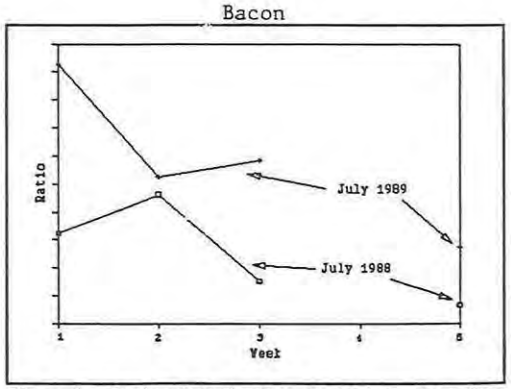

Figure 8. Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

Baked Beans

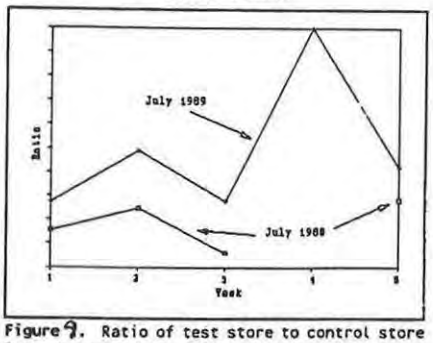

Figure 9. Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

Peanut Butter

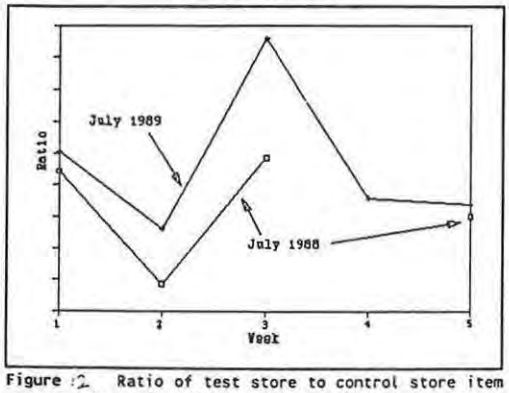

Figure 12. Ratio of test store to control store item movement for July, 1988 and July 1989. Note: spaces between points denote missing data.

Corn Meal

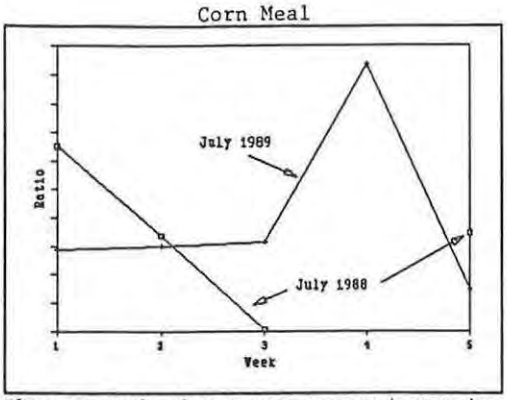

Figure 10 Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

Sausage

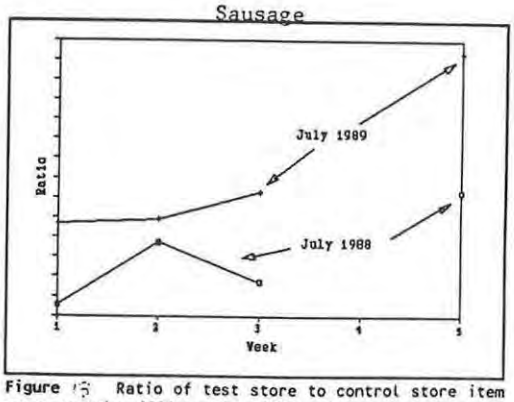

Figure 13 Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

Hot Dogs

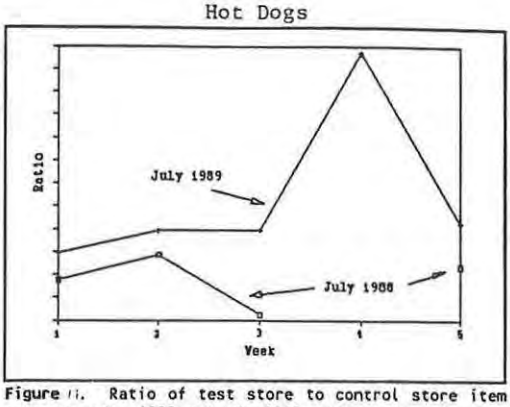

Figure 11. Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

Shortening

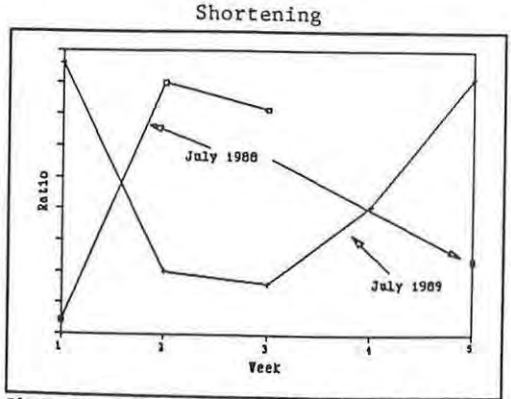

Figure 14. Ratio of test store to control store item movement July, 1988 and July 1989. Note: spaces between points denote missing data.

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