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Generic Promotion and Demand for Non-Commodity Potato Varieties

Jennifer Keeling Bond, Colorado State University
and Timothy Richards, Arizona State University East

As consumer demand for fresh, quality, non-traditional foods continues to increase, the potato industry stands poised to take advantage of the changing market for fresh specialty potato varieties. Consumer acceptance of specialty potatoes has been increasing for several years, with heightened demand for yellow flesh, red or purple skin varieties or those with unusual shapes such as the "banana" fingerling (Olsen, et al.; Naegely). Trends towards increased consumption of gourmet and exotic foods as well as products that are innovative, high quality, healthful, and fun are likely to support continued demand into the future (Purcell).

The ability of producers to capitalize on these trends and set their targets beyond "early adopter" consumers in the case of the more exotic potato varieties depends partly on the efficacy of promotion programs. To date, specialty potato promotion efforts have been limited and primarily focused on public relations efforts such as trade articles and retailer education.[1] Industry organizations such as the United States Potato Board (USPB) and the Idaho Potato Commission (IPC) have traditionally funded generic promotion aimed at stimulating retail demand for fresh, commodity, Russet-type potatoes as opposed to any specialty varieties. IPC president Frank Muir recently stated that "past industry leaders refused to promote any other (non-Russet) variety (Koenig)."

The strategy of focusing marketing efforts solely on Russet varieties made good sense historically as volume and dollar sales of Russet potatoes exceeded those of other varieties in all potato markets, including the important fresh food/grocery marketplace. However, collectively, sales of non-Russet varieties are similar to Russet sales in several regions and represent a significant segment of the potato market (Table 1) across the U.S. In fact, consumers in the New England and South Atlantic regions exhibit strong demand for red, white, and yellow potatoes, driving the percentage of total non-Russet volume and dollar sales above those of the commodity potato. As such, it seems the time is ripe to re-examine and possibly refocus the promotion strategies of both the USPB and the IPC.

A limited number of studies have investigated relationships between generic promotion and products that are differentiated by variety. Kaiser and Reberte model the effects of commodity milk promotion on demand for whole, 2%, and skim milk in a region of New York State. Similarly, Richards, Van Ispelen, and Kagan, and Richards and Patterson investigate the distributional effects of variety-specific (Fuji) advertising on other varieties of apples. Other commodity promotion program studies have also investigated relationships between generic promotion campaigns (and products) and branded products (or brand advertising).

Data

Data for this research project came from a variety of sources. Potato data including prices, quantity sold, total sales, and units for two full years - January 2005 through December 2006 - were collected by Information Resources Inc. (IRI) and made available through the USPB. The IRI-compiled data set contains more than 100,000 observations, representing multiple stock-keeping units or SKU totals per week (in most but not all cases), broken down by region and potato variety for several different packaging options. Before basic analysis was performed, data were aggregated into weekly observations of volume sold and weekly average price per SKU. Additional sources of data included Lexis/Nexis, Academic Search Premier, Business Source databases for information on potatoes in the popular press, the Bureau of Labor and Statistics, and the Bureau of Economic Analysis. Weekly data is

pooled over nine regions and seven potato varieties to yield a total of 945 observations.

Methods

A two-stage model of demand that accounts for both category and variety demand was selected to calculate the effectiveness of the USPB's current promotion program activities. This method is similar to that used by Richards and Patterson and desirable because promotion may affect demand in two ways. First, primary promotion activities can change demand for the whole potato category or they may shift demand for individual potato varieties (Duffy). Second, generic promotion activities aimed at increasing potato demand generally, may affect varieties differently, with some types experiencing a greater relative increase in sales than others (Richards and Patterson). Results from the variety demand or second stage are presented here with results and discussion of the first stage available upon request from the authors.

Variables

Conversations with Colorado potato producers and one USPB staff member have suggested that national potato demand could be impacted by negative media attention stemming primarily from the popularity of fad diets such as the Atkins diet. To account for this effect, a media index variable was created to capture net negative impacts of media attention on potato sales. An average potato price variable is a corrected Stone's price index calculated over all potato varieties. Prices for hypothetically strong potato substitutes: rice and pasta, are collected from the Bureau of Labor and Statistics (BLS) *Consumer Price Index: Average Price* database. Regional CPI variables are sourced from the BLS *Consumer Price Index: State and Area* data for all goods less food expenditures. Measures of personal disposable income are taken from the Bureau of Economic Analysis *Regional Programs* database.

Discussion with program staff and simple observation suggest that potato consumption varies seasonally. Specifically, winter months, which include several holidays, tend to be a period of heightened demand for several potato varieties. As such, quarterly dummy variables are included in the demand system. Potato demand also tends to spike and fall during other holidays throughout the year. For instance, during the first week of July, sales of potatoes increase, only to fall the following week. To better reflect the weekly fluctuations in demand, holiday dummy variables are also included in the model. Other authors have used similar approaches to account for demand fluctuations (Alston et al.; Vickner et al.).

Results

The effect of category promotion on individual varieties of potatoes is captured in the second-stage LA/AIDS model. Elasticity results, showing the sensitivity of a variety of potatoes to prices of other potatoes, USPB promotion expenditures, and other expenditures are provided in Table 2. These values indicate the distribution of benefits from category promotion among varieties and offer a more accurate picture of the impacts of USPB efforts. Better-known and longer established varieties, including Russets, reds, and whites, are found to face inelastic demand while relatively newer varieties that may be more accurately identified as specialty potatoes such as creamers, Yukons, yellows, and organics, are shown to be price elastic.

All varieties appear to respond positively to category promotion, but the varieties most closely substitutable with Russets: Yukons and reds, tend to benefit the least. Traditionally, USPB promotion campaigns have focused on Russets; that generic promotion may equate to Russet promotion in consumers' minds or that so-called category promotion may actually (passively or actively) favor Russets, could result in smaller positive impacts on the variety's close substitutes. In fact, it would not be surprising if a cannibalization effect had been observed. Examples of cannibalization (vs. cooperative) effects are prevalent in the marketing literature but are mostly associated with persuasive secondary promotion. However, category promotion that purposely or unintentionally favors one variety or brand, and is thus functionally similar to variety-specific or secondary promotion, may have a similar impact. Russet sales are positively influenced by USPB promotion but, some what surprisingly, the economic effects are very small. Total Russet sales are very large relative to the amount of total USPB promotion expenditures; thus, even a small

effect on demand may result in a significant impact on producer returns.

Other varieties that are weaker substitutes for Russets appear to benefit relatively more from category promotion. These varieties also tend to be relatively newer, or specialty, varieties with which consumers and retailers are less likely to be familiar. That certain types of promotion can effect products differently, is not uncommon or unknown in the marketing literature (Grossman and Shapiro; von der Ferh and Stevik), however, most studies have focused on the spillover effects of brand promotion onto other branded and generic competitors (ex. Capps, Seo, and Nichols). While Capps, Seo, and Nichols find several instances in which spaghetti sauces with positive cross-price elasticities have negative cross-advertising elasticities, the effect of category promotion on differentiated products that may exhibit substitute and complement relationships, is less well understood.

Despite finding larger advertising elasticities associated with specialty potatoes, it is important to keep in mind that promotion expenditures relative to sales of these varieties are typically much greater than for more familiar, varieties. Furthermore, the USPB category promotion involves retailer and customer education and more closely resembles informational promotion. Products in the introduction and growth phase of the product life cycle, such as many of the specialty potato varieties, tend to benefit more from this type of exposure which induces trial and enhances consumer knowledge and experience (Kotler and Armstrong; Nelson). Products of which the consumer has experience and knowledge, typically items in the maturity phase of the product life cycle (ex. Russets and reds), can thus be expected to benefit relatively less from an informative promotion program than the newer specialty potatoes with which consumers are less familiar (Day).

Conclusions

This study highlights the importance of accounting for product heterogeneity in commodity promotion program evaluations and brings attention to the impact of stage in product life cycle, media mix, promotional message, and regional differences on the benefits stemming from promotion. A two-stage model of demand was estimated that incorporates a system of equations adapted from studies of meat demand and brand promotion on differentiated products. This system allowed for the calculation of category and variety-specific own and cross-price elasticities and total long-run promotion elasticities.

The USPB's primary promotion activities were found to benefit both fresh potatoes as a category and all seven potato varieties included in the system of equations. However, not all varieties benefit equally. Importantly, Russets were found to benefit the most, while close substitutes tended to benefit the least. Potato varieties that are in the introductory and growth phases were more responsive to promotion, partly due to the greater receptiveness of these products to informative advertising.

Marketing strategies can also be informed by the product life cycle theory. First, as products reach the maturity phase of the product lifecycle, they become less responsive to industry or individual promotion efforts (Day). On the other hand, products that are in the "birth" or introductory and growth phases tend to experience slower decay of promotion messages, greater carryover from informative advertising, and greater responsiveness to primary and secondary advertising (Erickson and Montgomery; Richards and Patterson). Therefore, to increase the sales-stimulating effects of promotion, industry promotion programs whose markets include products in early lifecycle phases, may do well to enhance the informative aspects of their market messages.

National Institute for Commodity Promotion Research and Evaluation

DIRECTOR
Harry M. Kaiser, Professor
Phone: 607-255-1598
e-mail: hmk2@cornell.edu

Yuqing Zheng
Phone: 607-255-1620
e-mail: yz248@cornell.edu
RESEARCH ASSOCIATE

Lan Li
Phone: 607-255-1620
e-mail: LL469@cornell.edu
RESEARCH ASSOCIATE

ADMINISTRATIVE ASSISTANT
Anita S. Vogel
Phone: 607-255-1620
e-mail: av69@cornell.edu

(Footnotes)

[1] Retailer education activities have included the USPB's "Best Practices" program aimed at assisting retailers in building more attractive and profitable in-store potato displays.

Table 1: Variety Sales by Region

Region	Creamers	Fingerling	Organic	Purple	Red	White	Yellow	Yukon	Russet	**All Non-Russet**
South Atlantic	0.02%	0.04%	0.39%	0.22%	28.25%	32.57%	5.06%	5.42%	28.03%	**71.97**
North England	0.20%	0.13%	5.20%	0.04%	14.07%	32.73%	5.31%	3.34%	38.99%	**61.0%**
Mid Atlantic	0.09%	0.21%	0.62%	0.02%	16.99%	29.00%	4.94%	2.49%	45.64%	**54.3%**
E. North Central	0.05%	0.03%	0.20%	0.00%	13.39%	10.16%	2.48%	2.55%	71.13%	**28.8%**
W. North Central	0.04%	0.04%	0.44%	0.02%	19.67%	1.31%	3.24%	2.47%	72.77%	**27.2%**
W. South Central	0.01%	0.12%	0.20%	0.03%	13.51%	6.57%	2.99%	1.48%	75.09%	**24.9%**
Pacific Coast	0.21%	0.05%	0.40%	0.03%	11.67%	8.82%	1.75%	1.11%	75.96%	**24.0%**
E. South Central	0.04%	0.03%	0.31%	0.00%	13.34%	6.47%	1.87%	1.94%	76.03%	**23.9%**
Mountain	0.04%	0.06%	0.35%	0.01%	11.74%	7.52%	1.69%	2.06%	76.53%	**23.5%**

Source: Information Resources Incorporated (IRI), 2007.

Table 2: Total Elasticities of Demand: All Potato Varieties*

	P_{Russet}	P_{Red}	$P_{Creamer}$	$P_{Organic}$	P_{Yukon}	P_{Yellow}	P_{White}	Promo USPB	Exp.	Cumul. Consum.	R_2	DW
Russet	-0.226*	0.442*	-0.452	-0.506*	0.114*	0.875*	-0.108*	0.057*	0.468*	-0.059	0.93	2.16
	(0.093)	(0.21)	(0.96)	(0.204)	(0.024)	(0.038)	(0.038)	(0.002)	(0.126)	(0.269)		
Red	0.274*	-0.35*	0.701*	0.277	-0.474	-0.11	1.33	0.006*	0.461	0.933	0.77	2.05
	(0.103)	(0.132)	(0.379)	(0.769)	(1.218)	(0.248)	(2.302)	(0.001)	(0.214)	(1.876)		
Creamer	-0.411*	0.610*	-1.15*	0.126	0.54	0.622	0.015*	0.044*	0.983	-0.787	0.51	1.94
	(0.091)	(0.105)	(0.428)	(0.463)	(1.896)	(1.92)	(0.003)	(0.007)	(0.019)	(1.862)		
Organic	-0.463*	0.279	0.129	-1.266*	0.117	0.426	-0.322	0.028*	1.059*	-0.429	0.66	2.03
	(0.151)	(0.259)	(0.658)	(0.517)	(0.473)	(1.363)	(0.771)	(0.001)	(0.279)	(1.326)		
Yukon	0.468*	0.062	0.459*	0.113	-1.34*	-1.500*	1.236*	0.003*	0.884*	-0.243	0.79	2.12
	(0.025)	(0.599)	(0.188)	(0.409)	(0.586)	(4.438)	(0.715)	(0.001)	(0.204)	(0.610)		
Yellow	0.461*	0.204	0.304*	0.286*	-0.661*	-1.06*	-0.727*	0.014*	0.019*	0.209	0.81	2.18
	(0.597)	(3.671)	(2.442)	(1.717)	(4.103)	(0.448)	(2.796)	(0.005)	(0.07)	(0.953)		
White	-0.483*	0.278	0.054	-0.004	0.203*	-0.283*	-0.523*	0.013*	0.025*	0.178	0.91	1.87
	(0.1737)	(1.014)	(0.668)	(0.045)	(2.112)	(0.079)	(0.128)	(0.005)	(0.050)	(0.809)		

*Indicates significance at the 5% or higher level.

Standard errors in parentheses

***References available online at: http://commodity.aem.cornell.edu/nicpre/nicpre.htm**