

ADVERTISING, PRODUCT DIFFERENTIATION, AND THE DEMAND PULL HYPOTHESIS IN THE FOOD MANUFACTURING AND RETAIL INDUSTRIES

by:

L. L. Mather,
J. T. Davis,
and
M. A. Reese
University of Kentucky
Lexington, Kentucky

The nature of competition between manufacturers and retailers of food and grocery store products has been well documented by agricultural economists and by this organization. Recent articles suggest the balance of power has been shifting away from the manufacturing industries and toward leading national retail firms (5). This paper analyzes one dimension of competitive behavior of manufacturers, namely product differentiation and advertising, especially as it relates to the "demand pull" hypothesis of manufacturer behavior. The possible effect of this behavior on competition is studied. Implications are drawn for retailers, consumers, and to other manufacturers.

Theoretical Basis

Economic theory suggests several reasons why a food manufacturer would choose product differentiation and advertising as part of their competitive strategies. First, in an imperfect market setting in which most manufacturers find themselves, advertising and product differentiation can help make the demand curve for the firm's products less elastic. This could provide the firm with some immunity from price competition and thus weaken the association between price levels and the volume of sales. This is also consistent with the suggestion that firms in an imperfect, oligopolistic

market will tend to move toward methods of competition other than price. Second, when products of various manufacturers differ primarily in image rather than any real differences, advertising can play a useful role for the firm in helping establish a brand or product image apart from that held by competing brands. Third, advertising and product differentiation can give the firm a longer run advantage over competitors than other methods of competition. For example, it takes considerable time to develop and implement an effective advertising program for a given product line. Consequently, it should also take a competitor a considerable amount of time to counter an effective advertising program. A price cut, on the other hand, can be matched by a competitor almost instantly. Fourth, advertising can aid the manufacturer in developing consumer "demand pull" for its products, thus increasing the likelihood that a retailer will provide shelf space for the product or products. A recent study suggests that manufacturer-retailer product promotions frequently include the understanding that the manufacturer will support the promotion with heavy network or spot television advertising (2).

Finally, real product differentiation may occur through actual differences in quality, ingredients, or degree of processing. Here again, once a new differentiated product has been successfully intro-

duced, it may be difficult to compete against due to the time involved in the design, production, testing, and promotion phases of new product. In addition, a manufacturer who contemplates countering the entry of a new, competing product must also consider the high risks and costs of new product development (6).

Several of these theoretical suggestions for advertising and product differentiation are intriguing, but of particular interest in this paper is the theory regarding "demand pull" since it carries implications for consumers, retailers, and also manufacturers. Several questions arise. Does "demand pull" competition actually exist? How important is advertising to the food system? To what extent is advertising and product differentiation, the manifestations of "demand pull" competition, influencing consumption patterns?

Importance of Advertising

Advertising serves as a major source of product differentiation in the food manufacturing industries. In 1979, firms spent nearly \$4 billion advertising food products in the measured media (Table 1). This represents a 335 percent increase over 1969 levels. Food advertising takes on even greater significance when compared to other consumer products. During the 1969 to 1979 period, food and related products increased their share of all measured media advertising from 18 percent to 24 percent. During the same period, a group of seven leading advertised consumer products decreased in share of total media advertising from 50 to 38 percent. Further, no single non-food consumer good rivals the 24 percent share held by food and related products.

The magnitude of advertising expenditures by leading food firms is also noteworthy. The four largest diversified food advertisers spend over 10 percent of all food and non-food media advertising (Table 2). The twenty and

fifty largest spend 24 and 33 percent, respectively. These high relative shares have been quite stable over time. Clearly, food firms and the food manufacturing industries are among the heaviest users of advertising in the U. S. economy.

Methodology

Food Group Classification

Three food product classes were established in the study to examine differences in levels of advertising, product differentiation, and consumption of various types of foods (4). These categories were: basic food commodities, slightly processed products, and highly processed or formulated food products. The products were classified primarily according to the level of processing. Level of processing is by no means the only factor involved in differentiation, but was held to be an important indicator, especially when used in conjunction with information on the extent to which other ingredients are added or how much additional preparation is needed prior to final consumption. Foods in the basic commodity foods class (Class 1) had a relatively low level of processing, usually only what was needed to package and preserve the product. Products included in this class were milk, eggs, flour, etc. Class 2 products were those where somewhat more processing was done and some additional ingredients added, but the product is still close to its original commodity food form. Examples include canned tuna and frozen vegetables. Class 3 products were those where considerably more processing was involved and/or several other ingredients had been added. Convenience of preparation by the final consumer was also a factor. This latter category of formulated foods contains products for which both image and real differentiation are likely to be found. These included bread, margarine, soft drinks, etc.

Table 1. Measured Media Advertising expenditures of Selected Consumer Product Groups; 1969, 1979¹

Product Group	--thousands of dollars--			
	Year			
	1969		1979	
	<u>Expenditures</u>	<u>Percent</u>	<u>Expenditures</u>	<u>Percent</u>
Food & Related Products				
Food Products	\$425,983	14.1	\$2,240,235	18.3
Alcoholic Beverages	<u>127,740</u>	<u>4.2</u>	<u>740,283</u>	<u>5.8</u>
Subtotal	\$556,723	18.3	\$2,944,518	24.1
Other Consumer Goods				
Smoking Materials	\$ 227,144	7.5	\$ 483,029	3.9
Toiletries	412,111	13.6	1,131,240	9.2
Automotive Vehicles & Accessories	253,301	8.3	1,155,872	9.4
Drugs & Remedies	252,515	8.3	638,507	5.2
Soaps & Cleansers	175,076	5.8	476,342	3.9
Household Equipment	97,251	3.2	408,477	3.3
Apparel, Footwear	<u>107,227</u>	<u>3.5</u>	<u>343,936</u>	<u>2.8</u>
Subtotal	\$1,524,625	50.2	\$4,637,404	37.9
All Measured Media Advertising	\$3,039,804	100	\$12,240,432	100

¹ Measured media include network and spot television, network radio, magazines, newspaper supplements, and outdoor advertising.

SOURCE: Leading National Advertisers.

Table 2. Total Media Advertising Expenditures for Food and Nonfood Products and Share of All Media Advertising of Leading Food Manufacturers, 1967, 1976¹

Advertiser Groups	1967		1976	
	Expenditures (thousands)	Share (percent)	Expenditures (thousands)	Share (percent)
All food and non- food advertisers	\$3,938,756	100.0	\$8,104,092	100.0
Four largest food advertisers	443,167	11.3	825,949	10.2
Twenty largest food advertisers	962,807	24.4	1,888,420	23.3
Fifty largest food advertisers	1,280,759	32.5	2,714,648	33.5

¹Measured media include network and spot television, network radio, magazines, newspaper supplements, and outdoor advertising. Advertising data include food and nonfood advertising of diversified food manufacturers.

SOURCE: Loys L. Mather, Advertising and Mergers in the Food Manufacturing Industries, Working Paper No. 36, NC Project 117, July 1979.

A sample of food products was selected and classified as discussed previously. The products were obtained from the food expenditure surveys of Supermarketing Magazine. The top ten products in each classification in terms of volume of consumer purchases, were selected as the sample of food items for each of the three food classes. Product and brand level advertising data were obtained from a variety of sources including Leading National Advertisers, Food Field Reporter, The Television Bureau of Advertising, Media Records, and Radio Expenditure Reports. The study years extended from 1958 through 1976 and was largely determined by the availability of data. Advertising and consumption data were collected on each food product in the three classes for the years indicated.

Advertising Expenditures Levels Among Classes

The level of advertising among the three product classes was analyzed. Actual advertising expenditures were obtained for each class and advertising/sales ratio were tabulated. The Duncan Multiple Range test was used to determine any significant differences in advertising levels among classes.

Advertising-Consumption Analysis

Regression analysis was used to test the hypothesis as to whether significantly higher advertising expenditures for differentiated, highly processed foods leads to greater consumption. The regression model was as follows:

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + E$$

Where

y = per capita expenditures for food (constant \$)

x₁ = constant advertising expenditures

x₂ = constant per capita income

x₃ = percentage of women employed outside the home

E = error term

Advertising expenditures were expected to have a positive effect on the consumption of food in each of the three classes. However, it was expected that a larger response would occur in the more highly processed group (Class 3). It was hypothesized that as per capita income increases the consumption of class three products would increase more rapidly than the less processed items. The percent of women employed outside the home was included to capture the convenience associated with the more highly processed items. It was hypothesized that as the percent of women employed outside the home increased the consumption of the more highly processed items would increase.

This model was fitted to the data for each of the product classes.

Results

Advertising Findings

Advertising expenditures and advertising/sales ratios were tabulated for each class (Table 3). Slight to moderate differences were observed between Classes 1 and 2. Class 3, however, showed substantially higher advertising expenditures and higher advertising/sales ratios than the other two. Analysis of variance on the advertising expenditures indicated there was a significant difference in

advertising expenditures between classes. The Duncan Multiple Range Test determined that Class 3 products, with a mean advertising level of \$42,074 were significantly higher than Class 1 and Class 2 products with means of \$6,203 and \$5,507 respectively (Table 4). Further, the tests showed no significant differences between Class 1 and Class 2. Clearly manufacturers put significantly more advertising dollars in promoting those products which have a higher degree of real differentiation. This leads to the next question as to whether the significantly greater amount of advertising spent on the differentiated products in Class 3 led to greater consumption (or a "demand pull") of these products.

Advertising-Consumption Findings

The advertising variable was not significant in any of the regression equations for the three classes (Table 5). On the other hand, as the percentage of women working away from home increased, so did their consumption of the more highly processed products. A test for equality of slopes of food product classes in the regression equation did, however, provide some significant results. In this test, the only significant relationship was shown for Class 3 products, indicating that advertising and consumption were related more for Class 3 products than they were in the other two classes. This suggests that higher advertising expenditures for the differentiated Class 3 products lead to increased consumption.

One reason for the rather modest results could well be due to the fact that product class advertising data and product class consumption data are being used. It is conceivable that a given firm could increase its advertising substantially and realize increased consumption of its branded product--yet have little or no effect on consumption for the product class as a whole. As an additional line of inquiry, advertising

Table 3. Product Class Advertising (constant dollars) and Advertising/Sales Ratios, 1958-1976

Year	Class I		Class II		Class III	
	Advertising (\$000)	Ad/Sales Ratio	Advertising (\$000)	Ad/Sales Ratio	Advertising (\$000)	Ad/Sales Ratio
1958	49174.2	.009	21856.9	.005	263651.6	.038
1959	37714.4	.008	35281.3	.008	242991.9	.030
1960	57188.1	.011	40697.9	.009	294519.9	.036
1961	60772.7	.009	42167.7	.010	286855.2	.035
1962	67776.4	.014	58714.0	.013	387328.2	.043
1963	70340.0	.013	57038.4	.013	447374.6	.047
1964	62293.8	.014	56437.0	.013	492717.9	.048
1965	64662.0	.012	72044.5	.015	534427.7	.051
1966	68108.1	.013	59963.3	.015	530592.0	.054
1967	64358.6	.012	65296.3	.016	537196.7	.057
1968	54281.3	.009	58571.7	.015	462896.6	.045
1969	44277.0	.008	50560.1	.013	437720.8	.045
1970	51172.7	.008	56960.4	.014	443402.1	.046
1971	54536.6	.009	56299.4	.013	467992.7	.048
1972	68995.6	.009	56975.1	.013	441533.3	.040
1973	68536.2	.008	58597.2	.014	413664.0	.038
1974	69537.8	.009	62263.1	.015	380959.3	.038
1975	57279.0	.008	59336.4	.014	449553.2	.047
1976	59072.9	.008	77445.3	.017	478709.8	.045

Table 4. Duncan's Multiple Range Test Results for Advertising Expenditures by Class

Class	Mean	Observations	Grouping ¹
1	6205.425	182	B
2	5507.926	190	B
3	42074.145	190	A

¹Means with same letter indicate no significant differences

and consumption by brand were collected for four leading brewers. This industry was selected because of the availability of both consumption and advertising data for the leading brands. Regression analysis (Table 6) of these data showed highly significant relationships between brand advertising and consumption in three of the four leading brands (4). This provided additional support for the hypothesis that producer advertising can indeed influence the buying habits of consumers.

Conclusions and Implications

This study gives some support to the hypothesis that food manufacturers were at least partially successful in creating some "demand pull" for their products. Thus, if consumers were demanding certain products of a manufacturer, that manufacturer most likely held some measure of market power over the food retailer regarding the availability of shelf space. A major source of this market power was due to the sizeable advertising budgets of the leading manufacturers.

The study also suggests that there may well be a trend by consumers, and perhaps instigated or encouraged by manufacturer advertising, to consume more of the heavily advertised products. A study is currently underway to determine

whether nutritional differences exist between the highly advertised formulated foods as compared to the commodity foods.

To the extent that consumers may be changing their purchase patterns in response to manufacturer advertising, then it raises a question regarding consumer sovereignty. Theory presumes the consumer is sovereign. Galbraith has suggested that producers (manufacturers) are sovereign in an industrialized market setting (1). This point deserves further study.

Manufacturer "demand pull" has largely been accomplished through enormous advertising expenditures, especially on network and spot television. Rates for such media advertising have increased rapidly in recent years and may have caused some manufacturer reassessment of their promotion strategies by manufacturers. Will this encourage modification of promotion plans by concentrating their advertising budgets on those products which can easily be differentiated (like the formulated foods in Class 3)? Further, it seems possible that in the long run, manufacturers could eventually move away from advertising the more basic commodity foods (where image differentiation is more difficult or expensive to develop) and concentrate more on formulated food advertising. If so, would this essentially leave the field open in the commodity

Table 5. Regression Results for Consumption of Food Items by Product Class

Class	F Value	Pr F	Variable	B Value	T Value	Prob T
1	9.860	.0008**	X ₁	-0.00001330	-0.312	.7597
			X ₂	0.00047795	4.636	.0003**
			X ₃	-0.13060947	-5.294	.0001**
2	2.965	.0658	X ₁	0.00002132	1.581	.3148
			X ₂	-0.00010426	-2.198	.0441*
			X ₃	0.0268492	1.613	.1276
3	4.985	.0135*	X ₁	0.00001780	1.438	.1710
			X ₂	-0.00016846	-0.379	.7101
			X ₃	0.13374928	0.848	.4098

X₁ = Advertising

X₂ = Per capita income

X₃ = Percent of women employed

* Indicates significance at .05 level

** Indicates significance at .01 level

Table 6. Regression Results for Consumption of Beer by Brands

Brand	F Value	Prob > F	Variable	B Value	T Value	Prob >
Busch	93.141	0.0001**	X ₁	-0.3282164	- 1.41675	0.1770
			X ₂	6.58607632	4.63976	0.0003**
			X ₃	0.27209317	2.24046	0.0406*
Schlitz	500.120	0.0001**	X ₁	-0.23942745	- 3.91076	0.0014**
			X ₂	5.62222085	12.78053	0.0001**
			X ₃	0.11709110	3.19981	0.0060**
Miller	120.973	0.0001**	X ₁	0.49032530	5.57384	0.0001**
			X ₂	2.00537873	2.71369	0.0160*
			X ₃	-0.14624005	- 3.39350	0.0019**
Pabst	539.75	0.0001**	X ₁	0.17240171	2.86261	0.0119**
			X ₂	1.41317731	5.89582	0.0001**
			X ₃	0.18118252	7.74334	0.0001**

X₁ = Advertising

X₂ = Per Capita Income

X₃ = Percent of women employed

* = Significant at .05 level

** = Significant at .01 level

area (e.g. canned fruits and vegetables, flour, etc.) for further private label activity (2)?

If, as the previous discussion implies, manufacturers "give up" (or "lose") some bargaining territory, then it appears that those most able to fill (or create) the void are the large, national chains. This could be in terms of their involvement in increased levels of vertical integration, and increased market power vis a'vis both manufacturers and smaller retailer groups.

There are also implications regarding the type of competition observed in this study to other manufacturers. Whether or not advertising by the large manufacturers continue "across the board" or trends to concentrate in the more differentiated formulated foods, the costs will be high, especially the costs of gaining access to both network and spot television. Studies show that advertising is highly concentrated among a few leading manufacturers especially in network television and to a lesser extent in spot television (3). Thus advertising is not only expensive for the small to medium sized manufacturers, but these firms are likely to continue having difficulty gaining the desired access to television. The structure of food manufacturing industries will most likely undergo dramatic change in the 1980's as the medium and small manufacturers can ill afford the promotional game currently underway by the large conglomerate manufacturers. This has already been observed in the brewing industry--and will likely spread to a number of other industries in the years ahead.

REFERENCES

1. Galbraith, J. K., "Economics as a System of Belief," AMERICAN ECONOMIC REVIEW, May 1970.
2. Hamm, L. G., "Food Distributor Procurement Practices: Some Implications for Food Price Policy," paper delivered at the annual meeting of the American Agricultural Economics Association, July 1980.
3. Mather, L. L., "Advertising and Mergers in the Food Manufacturing Industries," Working Paper No. 36, July 1979.
4. Reese, M. A., "The Influence of Advertising on Consumption of Selected Food Products," Unpublished M.S. Thesis, Department of Agricultural Economics, University of Kentucky, 1979.
5. The Wall Street Journal, "Food Chains Pressure Suppliers, Altering Industry Power Balance," August 21, 1980.
6. The Wall Street Journal, "Study of New-Product Failures Refutes Basic Premise of Growth," June 26, 1980.

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