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The Economics of Advertising: Where's the Data?

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Abstract. Economists accept the importance of advertising to firm rivalry and economic performance, but data limitations have frustrated empirical research. This paper addresses that frustration and compares sources of advertising data. The paper concludes that data provided by a private vendor on measured-media consumer advertising represents the best choice, but involves substantial effort to link it to the Census industrial classification system. The authors do this for 284 manufacturing industries for Census years 1967 and 1982. Comparisons of industry advertising levels and advertising-to-sales ratios are given. Relative advertising levels and intensities have remained remarkably stable over the 15 year period.

Key words: Advertising, product differentiation, manufacturing industries.

I. Introduction

Advertising is a major firm strategy in much of our modern economy. In many consumer markets with oligopoly structures, advertising provides an important nonprice competitive weapon. Economists interested in market behavior and performance have come to recognize that they cannot ignore advertising's effects on firm rivalry or consumer preferences. Dorfman and Steiner nearly 40 years ago drew attention to the importance of advertising in their seminal article on optimal advertising intensities. Telser followed a decade later with one of the first empirical works examining advertising and competition. The past three decades have produced numerous studies establishing advertising's importance in studies relating market power and performance.

It is surprising that so much empirical work was eventually done, given the limited data available on advertising. Most of the empirical work involved cross-sectional studies of manufacturing industries, usually at the four-digit Standard Industrial Classification (SIC) level. Although Census of Manufactures provided most of the needed data on such commonly used economic variables as concentration, size, capital-output ratios, minimum efficient size, value-added, and price-cost margins, the Census does not publish any data on advertising expenditures. In fact, the way Census price-cost margins are calculated advertising remains in the margin, a substantial weakness of the proxy measure. Some authors used subjective binary variables to classify industries into consumer-producer categories. Others began to

use discrete product differentiation classifications based often on the advertising expenditures of the leading companies that were in an industry.

The reason for these approaches was the unavailability of advertising data by industries. A researcher could obtain some advertising data for entire companies but the growing diversification of firms limited the usefulness of such data for industry studies. The first data source for advertising data by industry groups (roughly a three-digit SIC level) came from the Internal Revenue Service (IRS). Telser's seminal article on advertising and concentration used this source.

II. The Search for Industry Level Advertising Data

Although the IRS data are helpful in providing total advertising data for large sectors of the economy, the data have several disadvantages that render them nearly useless to a researcher interested in narrower product categories, such as the four-digit SIC industry. The IRS data are limited to corporations and rely on what corporations report as advertising expenditures to the IRS. Although advertising is treated as a current expense subtracted from taxable income, what is reported to the IRS as advertising may vary from company to company, making the data less consistent than the category implies. Of even greater significance, a corporation is assigned to a single IRS category unless the corporation reports to the IRS by divisions or subsidiaries. As companies have become increasingly diversified, the IRS data have become less useful. Thus, the IRS data are best used in the most aggregated form possible.

Another choice of advertising data is that compiled by private firms or public researchers based on information found in company annual reports and financial reports (e.g., 10k forms). However, these data suffer for many of the same reasons found with the IRS data. Without line of business reporting, the diversification of the modern firm prevents the use of any data reported at the company level for calculating industry level data.

A promising new source of economic data that contained information on advertising expenditures by industries was the Department of Commerce's Input-Output (IO) Analysis for the United States economy. These data were embraced as the major contribution to the study of advertising at the industry level. For example, Ornstein and Lustgarten expressed the delight of many economists over the IO data by writing:

In order to eliminate incompatibility in industry aggregation between advertising data and concentration ratios (a problem in studies using IRS data), advertising figures for four-digit industries were drawn from the U.S. Input-Output Tables...

They are available for most four-digit industries and cover most forms of advertising and promotional expenses. Ornstein (1977) has published these advertising data for the years 1947, 1963 and 1967 as a service to other researchers, as they do not have to repeat the extraction of the data, the transfer to four-digit SICs, and

TABLE I. A comparison of two alternative advertising data sources for selected U.S. food industries, 1972

SIC code and industry	Data Source							
	Input-Output				LNA-Rogers			
	Total ^a	Network	Spot	Magazines	Total ^b	Network	Spot	Magazines
		TV	TV		TV	TV		
	(millions)				(millions)			
2023 Canned milk	31.3	0.7	1.9	0.7	14.1	5.5	3.7	4.5
2026 Milk and related products	57.6	3.0	9.9	2.1	9.4	0.2	8.6	0.4
2032 Canned specialties	105.1	9.2	7.9	11.9	37.0	19.4	8.7	7.1
2035 Pickles, sauces, dressings	87.3	24.3	19.2	13.9	28.0	11.4	7.8	7.9
2044 Rice	8.4	0.0	0.0	0.0	6.5	0.4	3.1	2.7
2051 Bread and rolls	90.3	23.1	25.5	11.5	35.7	9.5	21.2	2.4
2067 Chewing gum	16.6	4.2	5.3	0.3	36.9	10.3	25.4	0.6
2087 Flavorings	13.1	0.6	0.3	1.9	14.9	9.5	2.9	1.9
2092 Canned fish	7.5	2.3	1.7	1.2	1.1	0.4	0.5	0.2
2098 Pasta products	8.8	0.6	0.7	0.6	16.6	7.6	4.9	3.6

^a The I-O total includes many more forms of advertising than the LNA total, but only three comparable individual media are listed here.

^b The LNA total is comprised of six measured media: magazines, newspaper supplements, network and spot television, network radio and outdoor. See text for more detailed information.

Source: Rogers, 1982, p. 112.

the calculation of the advertising-to-sales ratios. However, the IO advertising data have several serious limitations.

First, the IO data are not available for all four-digit SIC industries, since there is not a one-to-one correspondence between the SIC system and the IO tables. Roughly half of the four-digit SIC industries correspond exactly with the IO sectors (or industries). A second and more important drawback in using these data results from how advertising expenditures are assigned to the IO industries. The major source of the IO advertising data is data compiled by Leading National Advertisers, Inc. (LNA).¹ However, most of the 243 LNA product groups contain two or more IO industries. To save time in assigning the LNA advertising data to the IO industries, the Department of Commerce used a value-added allocation rule. Under this rule, advertising expenditures for an LNA product group were allocated among the industries in proportion to the share of value-added of each industry within the product group. For instance, if a LNA product group contained two IO industries, and one IO industry had twice the value-added of the other, then it would be allocated twice the amount of advertising. In some instances, the advertising

¹ Now Competitive Media Reporting (CMR).

allocated to an industry was vastly different from its actual level. For example, Rogers (1982, p. 113) found that for 1972, the IO data reported \$9.5 million of total advertising for the chewing gum industry, whereas Rogers examined the original LNA data and identified \$35.7 million of advertising by this industry.

A selected comparison of the Input-Output data and the LNA data is given in Table I to show the problems involved in the IO data for 1972. Ten of the 45 food industries that had the most dramatic differences are given here. Although only the total advertising expenditures are available from the Department of Commerce Input-Output published tables, they provided Rogers access to the detailed data used to assemble the total advertising expenditures. Since the IO data used the LNA data but supplemented with additional sources, the IO total should always equal or exceed the LNA total, but in three of the ten industries the reverse is true. In addition, the IO data have three media that relied exclusively on the LNA data, yet large differences exist even for these media.

The differences between the IO data and the LNA data given in Table I underscore the importance of data quality. Researchers embraced the IO advertising data as the answer to an omitted variable problem without a thorough examination of their quality. Researchers must be reminded that data quality deserves as much attention as model specification and other econometric questions.

More careful, and laborious, use of the LNA data can eliminate the incompatibility of industry aggregation between advertising data and the industries. This is because LNA records the advertising expenditures of the individual products (rather than product groups) that can be assigned to the proper SIC industries. Therefore, LNA data are the best data available to the economic researcher who needs industry, or even brand level, detailed data. Although the data are restricted to the main measured media targeted at wide consumer audiences, their rich detail provide the researcher with substantial flexibility.

LNA has been involved in publishing advertising data since at least 1954 and the number of media covered has expanded from just four in 1954 to ten today. Some of the added media reflect improved coverage by LNA but others were added when new media emerged (e.g., cable TV). Although the network advertising is continuously monitored, most of the media are represented only by selected markets or leading publications. For example, in 1990 LNA compiled advertising data in 176 consumer magazines and in 72 newspapers. Using time and space measurements of the advertisements, the advertising expenditures are estimated and assigned to company and product records. Thus the data are available by both company and by branded products with the latter available arranged by product groups based on LNA categories.

The major drawback to the LNA data is their expense. The data are chiefly compiled for firms choosing to monitor advertising levels and rivals' strategies and are thus mainly sold to corporate customers who are major advertisers themselves. Electronic versions of the data exist but are not available to academic researchers at this time. However, LNA has created a reduced academic rate for those willing

to buy data that are at least a year out of date. Even with that restriction, the data are still more timely than most public data. The data are copyrighted and LNA is an aggressive protector of its property. No photocopying is allowed, but they have allowed publication of their data that has been transformed in a manner unavailable from themselves.²

The most troublesome feature of using the LNA data is the time consuming task of converting from LNA product codes to census SIC codes. There are about 240 LNA product codes related to manufacturing industries and 450 census four-digit SIC manufacturing industries. The task is to convert the LNA codes to the SIC codes. The inability to buy the data in electronic form is also a major setback. However, the rich detail of the LNA data allows the researcher to aggregate only those advertising data that belong together. The first major research attempt based on the LNA data by a public researcher was done by the late Robert Bailey of the Federal Trade Commission. He started with the 1967 LNA Class/Brand publication and supplemented it with newspaper advertising and outdoor advertising. Unfortunately, Bailey combined the newspaper advertising data along with the newspaper supplements advertising and hence the researcher cannot keep the two separated for comparisons over time.

To each product's advertising expenditure Bailey assigned a five-digit census SIC code (e.g., Folger's instant coffee, SIC 20952) based on the 1967 SIC manual. After this massive undertaking was completed, it was then an easy matter to aggregate the data to the five-digit SIC product class level or to the more widely used four-digit SIC industry level. If products were defined too broadly, they were assigned as narrowly as possible (e.g., Borden's Dairy Products, SIC 202) and required allocations to the proper four-digit SIC based on either the remainder of the company's advertising or the percentage of the three-digit SIC's total advertising accounted for by the various four-digit industries involved. Such allocations were rare and did not represent a substantial amount of advertising dollars.

Motivated by Bailey's original work, Rogers duplicated the procedure for the census years 1954, 1972, and 1977 for products related to food and tobacco products and other grocery store products (e.g., hair preparations). The assignment of a SIC code was often straightforward but sometimes proved difficult and required contacting Census personnel to assist in the assignment. Sometimes the company had to be contacted to learn more about the product to allow proper classification. For example, a call to a company to learn if a product was frozen or canned would allow assigning the correct SIC.

In addition, Rogers reclassified Bailey's entire data set for all manufacturing to correspond with the revised 1972 SIC codes. Tokle and Rogers collaborated to repeat the procedure for the year 1982 using only the LNA data.³ This created a new data set based on the census year 1982 that compared to the 1967 data originally

² To learn more about their data and their academic rates, call 1-800-LNA-DATA and ask for a description of the data including the pages entitled "Facts You Should Know."

³ For more information regarding the details of this procedure see Rogers (1982) and Tokle (1986).

compiled by Bailey. It is our opinion that it is only this painstaking method that allows the desired goal of Ornstein and Lustgarten of eliminating “incompatibility in industry aggregation between advertising data and concentration ratios” to be achieved. By examining every line of advertising data, we were able to exclude advertising expenditures that did not relate to product differentiation. Industry-wide associations often spend substantial sums advertising the merits of their industry’s product without any mention of specific brands (e.g., “Drink Milk” advertisements by the American Dairy Association). Such advertisements do not belong in a study seeking to examine firm advertising rivalry and market structure.

An additional advantage of the LNA over the IO advertising data is that a researcher can investigate not only the effects of total advertising, but also the effects of different media advertising. For example, Mueller and Rogers first showed that it is electronic advertising, mainly television, and not print media advertising that is associated with increased industry concentration.

III. The Industries Included in the LNA-Based Advertising Data

The original purpose for the development of an advertising data set by four-digit SIC industries was to study concentration change in manufacturing industries (see Mueller and Rogers; and Tokle, Rogers, and Adams). Mueller and Rogers relied on Bailey’s 1967 advertising data. They argued that this single year would capture the relative opportunities for product differentiation among the various industries. However, they were criticized for the use of single year’s advertising by others who felt that a change in advertising variable was more appropriate. Rogers tested this idea for food and tobacco product classes and found only moderate support for the change variable. Tokle, Rogers and Adams directly accepted the challenge of developing an additional year’s advertising data from LNA. They duplicated the methods used by Bailey for the year 1982 and incorporated both the 1967 data and 1982 data in a concentration change study over the period 1967 to 1982.

The resulting advertising data set has individual media advertising for each four-digit industry that was considered an appropriate observation for a change in concentration study over the period 1967 to 1982. The complete list of industries and the total advertising expenditures and the advertising-to-sales ratios are available from the authors on electronic disk that includes the individual advertising media in 1967 (including spot radio) and 1982. In 1967 spot radio advertisements were added to the LNA data by Bailey but here they were excluded from the 1967 measured media total to be more comparable with the 1982 total media expenditures.

Out of a total of 450 four-digit SIC industries in 1982, 284 are contained in the data set. The elimination of the 166 industries was caused by an attempt to include only industries that had comparable data from 1967 to 1982 and approximated an economic market. Most industries (101) were lost because their definitions were changed from 1967 to 1982. Another 60 industries were eliminated because they

were “not elsewhere classified” (NEC) industries. Five additional industries were eliminated for other data difficulties.

IV. Media Advertising, by Industries, 1967 and 1982

In 1967, the 284 industries included in our data set accounted for \$3.1 billion dollars of media advertising. This amount is 38 percent of the total manufacturing advertising expenditures recorded by the IRS for 1967. Television was the dominant media, accounting for 65 percent of the eight media included in the 1967 LNA data. By 1982 the 284 industries spent nearly \$9 billion in the six media included by LNA, which represented 28 percent of the total manufacturing advertising recorded by the IRS for 1982. (In contrast, the total value of shipments of these 284 industries accounted for 65 percent of the total for manufacturing in 1967, and 64 percent in 1982.) The decline in advertising coverage is related to the lack of newspapers and spot radio in 1982, but that alone cannot explain the decline of 10 percentage points. Television again dominated the 1982 data, with 72 percent of the total advertising expenditures (which cover two fewer media than in 1967). Since the IRS does not record advertising by media, we cannot give the percentage our data represents of an all manufacturing total expenditure on television advertising, but it should be quite high, since LNA does its most inclusive coverage of television advertising.

The most striking observation in examining the advertising by industries is the number of industries that did not advertise at all in these measured media (for more analysis, see Rogers and Tokle). In 1967, 109 of the 284 industries did not use measured media advertising at all. By 1982 the number of industries with no recorded advertising data had decreased to 89, but many industries had only minor expenditures and had advertising-to-sales ratios (the industry’s value-of-shipments given by Census data is used for sales) that rounded to 0.00 percent.

The leading 25 industries by total media advertising expenditures in 1967 are given in Table II. The largest spender was the toilet preparations industry, SIC 2844, which spent \$389 million in 1967. It was still the largest spender in 1982, when it recorded advertising expenditures of \$1,121 million (Table III). In fact, there is very little change in the rankings of the top industrial advertisers between 1967 and 1982. Out of the top 10 advertisers in 1967, only the tenth ranked petroleum refining industry (SIC 2911) was no longer in the top 10 in 1982 (Table III), where it had fallen to 23rd reflecting the decreased advertising rivalry of gasolines. Only five of the top 25 advertisers in 1967 did not reappear in the top 25 in 1982 and only one of these five was not still among the top 35 (SIC 2023, canned and evaporated milk).

The similarities between an industry’s 1967 advertising and its 1982 level is captured by the simple correlation of 0.964 between the advertising levels of the two years. The correlation is still 0.962 if the 114 industries that had an advertising-to-sales ratio of 0.00 in both years are omitted. The mean A/S ratio for 1967 was

TABLE II. The leading 25 industries, by 1967 total measured media advertising

Rank	SIC	Name	A67 (\$000)	A82 (\$000)	AS67 (%)	AS82 (%)
1	2844	Toilet preparations	389,351	1,120,578	15.48	11.00
2	3711	Motor vehicles: car	328,917	1,018,907	1.20	1.44
3	2834	Pharmaceutical	285,901	710,595	6.08	2.74
4	2111	Cigarettes	266,264	610,224	8.74	5.03
5	2841	Soap: other detergents	207,225	373,048	7.99	4.06
6	2085	Distilled liquor,except	130,485	283,179	9.56	9.05
7	2086	Bottled and canned soft	113,638	238,601	3.58	1.41
8	2082	Malt beverages	111,123	414,296	3.79	3.70
9	2043	Cereal breakfast foods	106,299	291,743	13.40	7.06
10	2911	Petroleum refinery	95,550	91,587	0.47	0.04
11	2647	Sanitary paper products	54,894	179,659	4.24	1.97
12	2079	Shortening and cooking	53,119	90,896	3.07	1.85
13	2095	Coffee	50,390	190,421	2.40	3.26
14	3651	Radio: TV receiving	48,474	129,160	1.26	2.13
15	2032	Canned specialties	45,924	74,152	3.37	1.79
16	3011	Tires: inner tubes	45,522	72,225	1.21	0.77
17	2033	Canned fruits and	43,777	129,176	1.26	1.39
18	2065	Confectionery products	43,314	96,868	2.31	1.43
19	3861	Photographic equip and	42,933	229,765	1.17	1.34
20	2051	Bread, cake, and related	37,557	72,049	0.73	0.54
21	2023	Condensed and evaporated	36,852	10,876	2.91	0.22
22	2067	Chewing gum and chewing	36,037	110,910	11.89	12.12
23	2731	Book publishing	33,483	101,478	1.56	1.31
24	3634	Electronic housewares	30,518	53,001	2.74	1.67
25	2011	Meat packing plants	23,901	60,368	0.15	0.13

Where: A67 (82) is total media advertising for 1967 (1982).
AS67 (82) is media advertising-to-sales ratio for 1967 (1982).

0.72 percent, but with 138 industries having an A/S ratio of 0.00 the mean is not a good measure of central tendency (the median is 0.01 percent). A better indicator of the 1967 distribution of industry A/S ratios is given in Table IV. Nearly half (48.6 percent) of the 284 industries had an A/S ratio of 0.00 percent. Of those industries with a positive A/S ratio, 58 industries had A/S ratios between 0.01 and 0.25 and 44 more industries had A/S ratios exceeding .25 but under 1 percent. At the high end of the distribution, 24 industries had A/S ratios of at least 1.00 but less than 3 percent whereas 20 industries had ratios exceeding 3 percent.

The distribution of industries by their 1982 A/S ratios is remarkably similar to the 1967 distribution (Table IV). The mean A/S ratio in 1982 was 0.66 percent, but again almost half (47.5 percent) of the industries had an A/S ratio of 0.00. Also, 20 industries had ratios exceeding 3 percent, and the majority of these 20

TABLE III. The leading 25 industries, by 1982 total measured media advertising

Rank	SIC	Name	A67 (\$000)	A82 (\$000)	AS67 (%)	AS82 (%)
1	2844	Toilet preparations	389,351	1,120,578	15.48	11.00
2	3711	Motorvehicles: car	328,917	1,018,907	1.20	1.44
3	2834	Pharmaceutical	285,901	710,595	6.08	3.74
4	2111	Cigarettes	266,264	610,224	8.74	5.03
5	2082	Malt beverages	111,123	414,296	3.79	3.70
6	2841	Soap: other detergents	207,225	373,048	7.99	4.06
7	2043	Cereal breakfast foods	106,299	291,743	13.40	7.06
8	2085	Distilled liquor, except	130,485	283,179	9.56	9.05
9	2086	Bottled and canned soft	113,638	238,601	3.58	1.41
10	3652	Phono records, record	22,517	235,689	8.15	13.33
11	3861	Photographic equip and	42,933	229,765	1.17	1.34
12	2095	Coffee	50,390	190,421	2.40	3.26
13	3573	Electric computing equip	3,074	184,814	0.08	0.50
14	2084	Wines, brandy, and	20,988	182,532	5.11	6.55
15	2647	Sanitary paper products	54,894	179,659	4.24	1.97
16	2721	Periodicals	15,971	149,031	0.51	1.29
17	2066	Chocolate and cocoa	7,341	134,924	1.41	6.08
18	2033	Canned fruits and	43,777	129,176	1.26	1.39
19	3651	Radio: TV receiving	48,474	129,160	1.26	2.13
20	2067	Chewing gum and chewing	36,037	110,910	11.89	12.12
21	2731	Book publishing	33,483	101,478	1.56	1.31
22	2065	Confectionery products	43,314	96,868	2.31	1.43
23	2911	Petroleum refinery	95,550	91,587	0.47	0.04
24	2079	Shortening and cooking	53,119	90,896	3.07	1.85
25	2032	Canned specialties	45,924	74,152	3.37	1.79

TABLE IV. Distribution of U.S. manufacturing industries measured media advertising-to-sales ratios, 1967 and 1982

A/S (%)	Number of SICs		Percent of total	
	1967	1982	1967	1982
=0.00	138	135	48.6	47.5
.01 to .24	58	68	20.4	23.9
.25 to .99	44	35	15.5	12.3
1.00 to 2.99	24	26	8.5	9.2
3.00 and higher	20	20	7.0	7.0

industries were the same as those found in 1967 but some changes took place. Eight of the top 25 industries, based on their A/S ratios in 1967, did not reappear

TABLE V. The twenty-five largest increases in industry advertising-to-sales ratios, 1967-82

Rank	SIC	Name	AS67 (%)	AS82 (%)	CAS Change
1	3652	Phono records, record	8.15	13.33	5.17
2	2066	Chocolate and cocoa	1.41	6.08	4.67
3	2251	Women hosiery, except	0.65	4.39	3.73
4	3692	Primary batteries, dry	0.87	4.24	3.36
5	3751	Motorcycles, bicycles	1.23	3.91	2.68
6	2322	Mens, boys, underwear	1.42	3.88	2.46
7	3262	Vitreous: porcelain	2.46	4.41	1.95
8	2084	Wines, brandy, and	5.11	6.55	1.43
9	3851	Ophthalmic goods	0.47	1.70	1.22
10	3635	Household vacuum	0.87	1.87	0.99
11	2371	Fur goods	0.06	0.93	0.86
12	3651	Radio: TV receiving	1.26	2.13	0.86
13	2095	Coffee	2.40	3.26	0.85
14	2721	Periodicals	0.51	1.29	0.78
15	2771	Greeting card publishing	0.47	1.24	0.77
16	2271	Woven carpets: rugs	0.10	0.76	0.66
17	3991	Brooms: brushes	0.30	0.93	0.62
18	3942	Dolls: stuffed toys	7.82	8.39	0.56
19	3432	Plumbing fixture	0.11	0.57	0.46
20	2328	Mens: boys work	0.04	0.49	0.44
21	2515	Mattresses: bedsprings	0.95	1.40	0.44
22	3263	Earthenware semivitreous	1.29	1.72	0.42
23	3573	Electric computing equip	0.08	0.50	0.42
24	2643	Bags, except textile	0.43	0.84	0.41
25	3295	Minerals: earths	0.00	0.40	0.40

Where: AS67 (82) is media advertising-to-sales ratio for 1967 (1982).
CAS = AS82 - AS67.

on the 1982 top 25 list. Only three of these industries fell dramatically in the rankings. Cigars (SIC 2121) fell from 14th in 1967 to 46th in 1982. Interestingly, the banning of cigarette advertising on television in the early 1970s did not displace the industry from the top 10 in 1982. The industry that suffered the largest fall in the rankings was condensed and evaporated milk (SIC 2023). Sewing machines also fell substantially from 25th to 48th place.

Although the stability of the relative rankings of industries by either their advertising totals or their A/S ratios is most apparent, it is interesting to examine the leading changes that took place over the 15 year period. Most of the industries that posted the largest increases in advertising expenditures were already the largest advertisers in 1967. Toilet preparations had the largest absolute dollar increase,

TABLE VI. The twenty-five largest decreases in industry advertising-to-sales ratios, 1967-82

Rank	SIC	Name	AS67 (%)	AS82 (%)	CAS Change
1	2043	Cereal breakfast foods	13.40	7.06	-6.34
2	2844	Toilet preparations	15.48	11.00	-4.47
3	2841	Soap: other detergents	7.99	4.06	-3.92
4	2111	Cigarettes	8.74	5.03	-3.71
5	2121	Cigars	4.39	1.02	-3.36
6	2023	Condensed and evaporated	2.91	0.22	-2.68
7	3421	Cutlery	6.12	3.61	-2.50
8	2843	Pharmaceutical	6.08	3.74	-2.34
9	2647	Sanitary paper products	4.24	1.97	-2.26
10	2098	Macaroni, spaghetti, and	4.43	2.18	-2.25
11	2086	Bottled and canned soft	3.58	1.41	-2.16
12	3996	Hard surface floor	4.81	3.10	-1.71
13	2032	Canned specialties	3.37	1.79	-1.58
14	3636	Sewing machines	2.53	0.96	-1.56
15	2034	Dehydrated fruits	2.86	1.45	-1.41
16	2091	Canned and cured seafood	1.77	0.45	-1.32
17	2079	Shortening and cooking	3.07	1.85	-1.22
18	3634	Electric housewares	2.74	1.67	-1.06
19	2843	Surface active	0.96	0.00	-0.96
20	2065	Confectionery products	2.31	1.43	-0.88
21	2044	Milled rice and	1.39	0.87	-0.52
22	3842	Surgical appliances	1.02	0.50	-0.52
23	2085	Distilled liquor, except	9.56	9.05	-0.50
24	3172	Personal leather goods	1.04	0.54	-0.50
25	2831	Biological products	0.48	0.00	-0.48

insuring its place as the largest advertiser in both years. The electronic computing equipment industry (SIC 3573) did increase from an almost nonadvertiser to nearly \$184 million in 1982, but that resulted in only a 0.50 percent A/S ratio.

The changes are more meaningful when examining an industry's change in its A/S ratio. First, recall that 114 industries had A/S ratios of 0.00 in both 1967 and 1982, thus at least 40 percent of the industries had no change in their advertising intensity. The 25 largest increases in A/S ratios, calculated by subtracting the 1967 ratio from the 1982 ratio (CAS) are given in Table V. The largest increase was in the phonographic records and prerecorded tape industry as it posted a 5 point increase in its A/S ratio to a value of 13.3 in 1982. The chocolate industry was next, as it increased from 1.41 percent to 6.08 percent. The next eight largest increases ranged from nearly 4 points to just a one percentage point increase over their 1967 A/S ratio. Even the industry with the 20th largest increase increased by less than half

of a percentage point, suggesting again that industry A/S ratios were reasonably constant over this 15 year period.

There were also industries that decreased their A/S ratio over the period (Table VI). The largest percentage point decline came from the cereal industry, losing 6 percentage points to leave it a 1982 A/S ratio of slightly over 7 percent, or the sixth largest A/S in 1982. Most of the largest declines came from industries that were and still are considered substantial advertisers. Indeed, three of the top four declining industries still remained in the top 10 in terms of 1982 advertising intensity and the fourth slipped only to 13th place. The 25th largest decline came in with only half of a percentage point change over the 15 year period. Hence, again the conclusion of relative stability emerges as 18 industries increased their A/S by half of a percentage point or more and 24 industries decreased their A/S ratio by that much. The remaining 242 industries did not change by more than half of a percentage point from their 1967 A/S ratio. The correlation between the A/S ratios in 1967 and 1982 was .88, and if you remove the 114 industries that had an A/S of 0.00 in both years, the correlation is slightly lower at .84.

In conclusion, there was dramatic stability in the relative advertising levels and intensities by the 284 industries over the 1967 to 1982 period. Such stability suggests that any one year's A/S ratios should provide a relative ranking of industries along a product differentiation scale. The stability is remarkable, given that some movements should be expected with macroeconomic conditions and other short-term influences that could hit an industry. The best measure of advertising intensity would not use a single year's data but would average 3 to 5 years of data centered on the year of interest. This average should prove even more stable.

Researchers seeking reliable advertising data should consider the LNA data. Despite its expense and limitations, it provides the best link between media advertising and individual brands. The rich detail allows aggregation for cross-sectional industry studies or individual matching of brands with the growing availability of other data at the brand level.

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