9-1-1976

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Accepted version. *The Journal of Industrial Economics*, Vol. 25, No. 1 (September 1976): 55-67. DOI.

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Contents

THE INFLUENCE OF MARKET STRUCTURE ON INDUSTRY ADVERTISING INTENSITY

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In recent years significant progress has been made in developing a theoretical model to explain inter-market differences in advertising intensity among consumer goods industries, and a number of empirical studies have been carried out which tend to support many of the hypotheses which have been advanced. Beginning with the pioneering work of Kaldor and Silverman,[71] these studies have included the works of Else,[14] Doyle,[3] Greer,[5] Cable,[2] and Sutton,[13] among others.

The explanation for inter-market differences in advertising intensity has generally been sought in characteristics of market structure, such as market concentration, the rate of growth in demand, market size, and the number of potential buyers, and in characteristics of the products, such as purchase frequency, unit price, product complexity, and the presence or absence of 'emotional' buying motives associated with the products. Regression models employing independent variables representing various combinations of these and other market and product characteristics have met with some degree of success. However, most of the aforementioned studies have utilized United Kingdom data on rather narrow product categories to test for the hypothesized relationships,[1] while little empirical work has been done on these matters using American data.[2] To remedy this deficiency and provide alternative tests, the present study draws together a number of previously developed and well-known hypotheses to construct a multiple regression model to explain inter-industry differences in advertising intensity. This model is then tested using U.S. data for a sample of 28 four-digit consumer goods industries.

The independent variables employed in this study have been selected on the basis of theoretical considerations, previous results, and the pragmatic criterion of data availability. They include market concentration, market size, the rate of growth of demand, and a dummy variable representing product durability, which serves as a proxy for a number of product and market characteristics. In addition, 'exceptional' product characteristics are controlled for through the sample selection process. In general, the overall results of the model tend to confirm previous findings based on U.K. data, although the relationship between advertising and concentration appears to be linear rather than quadratic, a result which runs counter to the weight of recent evidence.

SAMPLING AND THE DEPENDENT VARIABLE

The advertising data used in this study are trade journal data similar to those employed previously by Mann *et al.*[8] and Telser[15] to test for a simple linear relationship between advertising intensity and concentration.[3] The specific sources of data are the lists of 'million dollar advertisers' which formerly appeared in Printers' Ink, Advertisers' Guide to Marketing (1959-61 issues). From these lists, those firms were selected which were primarily engaged in the production of consumer goods and for which it appeared that 50% or more of sales came from a reasonably defined consumer goods industry, and for

which sales revenue data were available in Moody's Industrial Manual.[4] With the exceptions noted below, the resulting sample of industries then consists of all reasonably defined four-digit[5] Census industries producing consumer goods to which at least two firms could be assigned. [6] For each included industry, an advertising-to-sales ratio was calculated as the weighted (by sales) average of the ratios for the individual firms assigned to the industry, averaged for the years 1957-59.[7]

Three industries have been specifically excluded from our sample: toiletries, pharmaceuticals, and cleansers. These industries tend to have exceptionally high advertising intensities for reasons not accounted for in our model.[8] In addition, data on the pharmaceutical industry are seriously flawed because they lump over-the-counter drugs together with ethical drugs, which can be purchased only by prescription. Both Doyle[3] and Cable[2] attempted to account for the exceptional nature of some of these products by employing a special dummy variable in their regression equations. However, because the presence of these observations in the present sample would tend to distort the relationship between advertising intensity and some of the independent variables, we have chosen to follow the practice of both Mann *et al*.[8,9] and Sutton,[13] excluding these industries from the sample.[9]

Advertising-to-sales ratios for the 28 industries included in the sample, and data on the independent variables discussed immediately below, are presented in Appendix A. A list of firms included in each industry is presented as Appendix B.

THE INDEPENDENT VARIABLES

The hypotheses relating each of the independent variables to advertising intensity are well known and are sketched only very briefly below. The measurement of each independent variable is also briefly described below.

Concentration

While advertising has been suggested as a possible cause of rising concentration, the literature is also replete with suggestions that concentrated industries (oligopolies) are likely to advertise more intensively than other industries, and that higher concentration causes higher advertising intensity. It is argued that oligopolistic interdependence tends to deter non-price competition much less than it deters price competition, and that competition in consumer oligopolies tends to emphasize advertising.[10] This has led to the expectation of a positive, linear (i.e. monotonic) relationship between advertising intensity and concentration, although little empirical evidence has been produced to support it.[11] More recently, it has been proposed that the relationship is quadratic, with advertising intensity rising with concentration up to a point, and then decreasing with further increases in concentration as the strength of mutual interdependence leads to tacit or overt collusion on advertising as well as price, reducing industry advertising intensity towards the joint monopoly optimum. The weight of recent evidence does tend to support this 'quadratic hypothesis'.[12] Since the theoretical issues have not yet been satisfactorily resolved, we shall test both the linear and quadratic formulations with our sample data.

The measure of concentration used is generally the four-firm national concentration ratio reported by the Census Bureau for 1958,[13] but for some industries, regional or local concentration ratios are employed. Six industries in our sample are among those industries identified by the Census Bureau as being characterized by regional or local, rather than national, markets, and for these industries the Census Bureau has published concentration ratios for separate regions and/or localities as well as for the U.S. as a whole. For these industries, the use of national concentration ratios would tend to

understate the 'true' concentration in the component regional or local markets. Therefore, we have calculated weighted average concentration ratios based on Census figures for the separate regions or localities, in effect adjusting the national concentration ratios to take account of the regional or local character of the markets involved. The 'raw' and 'adjusted' ratios for the six industries appear in Table I below.[14] While these adjustments are necessarily crude, it seems certain that our adjustments are in the right direction, and highly likely that our adjusted figures more accurately describe the “true” degree of market concentration than do the raw national concentration ratios.[15]

TABLE I
RAW AND ADJUSTED CONCENTRATION RATIOS FOR SIX REGIONAL INDUSTRIES

Industry	*SIC Code*	*Raw conc.*	*Adj. conc.*
Meat packing	2011	34	42
Canned vegetables	2033	29	42
Bread and bakery	2051	22	47
Beer and malt	2082	28	62
Household furniture	251	14	26
Paints and varnishes	2851	25	28

Rate of Growth

Like concentration, the rate of growth of market demand is generally regarded as an important structural feature of the market having a bearing on the nature and intensity of competition in the industry. Although previous results obtained by Greer[15] and Cable[2] have been disappointing, a positive association between demand growth and advertising is expected for several reasons. When demand is growing rapidly, profits often rise faster than sales, and to the extent that firms spend part of these higher profits on advertising, advertising intensity may be increased. And that seems likely to happen, for aggressive behavior to increase one’s profits or market share will seem less risky in the face of rapidly growing demand. This is so because an increase in the market share of one firm need not come as the result of an *absolute* decline in a rival’s sales and profits. The chances of improving one’s situation will therefore seem especially good. And one device often used in attempting to achieve a larger market share is the introduction of new brands or new versions of existing products, which is usually accompanied by greater advertising efforts, at least for an initial period.

Our measure of the rate of growth of market demand is based upon the growth of industry shipments. To emphasize the long-term effects of demand growth and to avoid the influence of short-run cyclical fluctuations, a period of some length is necessary. Considering the availability of Census data, we were faced with the choice between two periods, 1947-58 and 1954-63. The latter period was chosen on two grounds. First, it seems likely that growth in the recent past and anticipated growth in the near future would be the most significant in influencing advertising decisions. Secondly, general business conditions were more similar in the years 1954 and 1963 than they were in the years I947 and 1958.[16] Thus, a measure based on the 1954-63 period is more likely to reflect industry trends rather than cyclical movements, which may differ greatly among industries in our sample. The measure used is the ratio of Census industry shipments for 1963 to Census industry shipments for 1954.[17]

Market Size

Else[4] and Doyle[3] have previously argued that industry advertising intensity will tend to be inversely related to the size of the market, in terms of the value of sales, and their own empirical results using U.K. data sup-ported this hypothesis, although Cable's results[2] did not. One reason for expecting this relationship is that industries producing widely purchased consumer goods which have large total sales have large sales per household. Therefore, the industry's products loom larger in the typical household budget, making the consumer more price conscious and less susceptible to the wiles of advertising, discouraging competitive advertising. This factor is reinforced, according to Doyle, by economies of scale in advertising. Our measure of market size is the total value of shipments (or production) in each industry for 1958, as reported by the Census Bureau.[18] For the region-al industries, market sales are actually smaller, but the number of consuming units is proportionately smaller also, and since the hypothesized relationship depends on the relative significance of an industry's products in the typical household budget, comparability between industries characterized by national and regional markets requires that national market size be used for all industries.

Because of the nature of the two variables, the variability of market size is potentially (and actually) much greater than that of advertising intensity, and this leads to the expectation of a semi-logarithmic relationship between advertising intensity and market size. Therefore, the market size variable is used in logarithmic form. This is consistent with the idea that there may be, at the industry level, economies of scale in sales promotion, but that opportunities for such economies are gradually exhausted.

Durability

Durable goods tend to embody a number of product characteristics which lead to lower advertising-to-sales ratios than those observed for non-durables. According to Doyle [3, pp. 398-9], national advertising will be less efficient for durables because the number of potential purchasers is too small and the type of information that must be conveyed is too complex for the mass media, and because durables are used over a fairly long period and have a fairly high unit price, factors which encourage buyer planning. Doyle's empirical results have provided support for this hypothesis also.

For regression purposes, we classify the products of a particular industry as either non-durable or durable, according to the postponability of the decision to purchase the products and the longevity of the products under typical use. Our classification generally follows that provided by Kaysen and Turner,[19] although a few of our industries are not classified by this source for various reasons. A dummy variable is used which takes the value of unity for non-durables and zero for durables. In accordance with previous discussion, a positive association is expected between this variable and advertising intensity.

THE REGRESSION RESULTS

Table II below shows the simple correlation coefficients between advertising intensity and each of the independent variables for our 28 industry sample. Each has the correct sign and is statistically significant.

The key results of this study are presented in Table III in the form of a series of multiple regression equations utilizing various combinations of the independent variables. Equations (I) through

(5) show the linear results, while, for purposes of comparison, equations (6) and (7) show results when a quadratic relationship between advertising intensity and concentration is hypothesized.

Referring to the set of linear results first, all coefficients have the expected signs, and for the most part tend to be statistically significant, with the exception of the rate of growth coefficient. Overall, the best fitting equation is equation (I), which includes all four independent variables, and which, after correction for degrees of freedom, 'explains' nearly 60% of the inter-industry variation in advertising intensity.

TABLE II

SIMPLE CORRELATION COEFFICIENTS—ADVERTISING INTENSITY AND THE INDEPENDENT VARIABLES

Independent variable	*Correlation*
Concentration	0·62**
Rate of growth	0·36*
Market size (log)	−0·63**
Non-durability	0·35*

* Significant at the 95% level of confidence.

** Significant at the 99% level of confidence.

The significance of the correlation coefficients is tested by means of a one-tailed '*t*'-test.

The statistical significance of the concentration variable is sensitive to the presence of the shipments variable in the regression equation, as a comparison of equation (2) with equations (I), (3), and (4) demonstrates. This is probably due to a predictable collinearity between these two variables. The simple correlation between these variables is – 0.537, and, comparing equation (5) with equations (I), (3), and (4), it can be seen that the shipments variable also performs better when the concentration variable is excluded. Despite this multicollinearity problem, the concentration coefficient is very nearly significant when all variables are included, and is significant in all other equations.

The shipments variable is consistently highly significant, as is the non-durability dummy, at least when the latter is used in conjunction with the shipments variable. Although they are crude measures, these two variables together seem to pick up much in the way of product characteristics which have an important influence on advertising intensity. The rate of growth variable performs relatively poorly compared to the other variables, although it consistently has the correct sign and is usually statistically significant at the I0% level of confidence or better.

Since a controversy exists as to whether the relationship between advertising intensity and concentration is linear or quadratic, we also present in Table III equations (6) and (7), which should be compared directly to equations (I) and (2), respectively. In both cases, the comparison reveals that the addition of the C^2 term to the regression equation actually reduces the multiple coefficient of determination, corrected for degrees of freedom. Furthermore, in both cases the C^2 term takes the wrong (positive) sign, and the concentration coefficients are not statistically significant. These same results are obtained for all combinations of the independent variables. The results with our sample data

TABLE III

MULTIPLE REGRESSION EQUATIONS EXPLAINING ADVERTISING INTENSITY
(28 industries; *t*-values in parentheses)

Equation	*Constant*	*C* *Concentration*	C^2 *Square of concentration*	*Rate of growth*	*Log shipments*	*Non-durability*	R^2	*Corrected* R^2
(1)	5·4712	0·0330		1·8709	−2·6368**	1·8629**	0·646**	0·584**
		(1·62)		(1·41)	(−3·20)	(2·62)		
(2)	−4·3655	0·0678**		2·1083		1·3789	0·488**	0·424**
		(3·37)		(1·35)		(1·69)		
(3)	8·1876	0·0388*			−2·7018**	1·8595**	0·615**	0·567**
		(1·92)			(−3·22)	(2·56)		
(4)	4·5333	0·4203*		1·8552	−2·1727*		0·539**	0·481**
		(2·14)		(1·26)	(−2·41)			
(5)	8·6430			2·3045*	−3·3578**	2·1625**	0·604**	0·555**
				(1·71)	(−4·67)	(3·04)		
(6)	6·0668	0·0139	0·0002	1·7878	−2·6284**	1·8559**	0·646**	0·566**
		(0·13)	(0·22)	(1·25)	(3·11)	(2·55)		
(7)	−3·1622	0·0309	0·0003	1·9474		1·3685	0·490**	0·401**
		(0·25)	(0·30)	(1·16)		(1·64)		

* Significant at 95% level of confidence.
** Significant at 99% level of confidence.
The statistical significance of the regression coefficients is tested by means of a one-tailed '*t*'-test, and of the multiple coefficients of determination by means of the *F*-ratio test.

strongly suggest that the relationship between advertising intensity and concentration is linear rather than quadratic.[20]

DURABILITY AND THE NATURE OF RETAILING

It is interesting to note the relationship between the durable-non-durable classification used in this paper and Porter's classification of manufacturing industries into those which sell through convenience and non-convenience retail outlets, respectively [II]. Porter argued, and his empirical tests tended to confirm, that manufacturers' advertising would have a much greater impact on industry profits for those industries selling through convenience outlets, defined as outlets where (I) little or no sales assistance is provided with the sale, and (2) high locational density of outlets signals that convenience is very important to the consumer. One would expect most durables to be sold primarily through non-convenience outlets, since they typically embody product characteristics such as high unit prices and product complexity which would lead consumers to 'shop around'. One would also expect most non-durables to be sold through convenience outlets because they lack these same characteristics.[21] Although the data are not entirely adequate for classifying four-digit product categories, it does appear that, for our sample of industries, the two classifications 'match' in at least 26 out of 28 cases.[22] Thus, our results suggest the common-sense conclusion that industries in which advertising is likely to be more profitable are those which tend to advertise more intensively.

CONCLUDING REMARKS

The statistical results in this paper are reasonably consistent with the theoretical predictions, for each of the four independent variables employed in the multiple regression equations appears to have an influence on advertising intensity in the manner predicted, and roughly three-fifths of the inter-industry variation in advertising intensity was explained by the independent variables. The relationship between advertising intensity and concentration appeared to be linear rather than quadratic, contrary to some recent results of Greer, Sutton, and Cable, suggesting that this controversy is still far from resolved.

Although the results of this paper are based on a limited single time period, they do corroborate previous findings the role of market size and durability, and suggest that market and product variables do play a major role in influencing industry and performance in the area of advertising intensity. It much of the 'unexplained' variation in industry advertising due to differences in the nature of the product other than those captured by the durability classification, as well as to measurement generally. Further refinements in the specification and independent variables might be expected to yield positive, if returns.

Appendix A

INDUSTRY DATA USED IN THE REGRESSION ANALYSIS

Brief industry title	*SIC Code*	*A/S ratio*	*Conc. ratio*	*Growth rate*	*Shipments ($ millions)*	*Non-durability*
Meat packing	2011	0·41	42	1·37	11,962	1
Condensed milk	2023	2·06	50	1·27	770	1
Canned vegetables	2033	1·42	42	1·62	2,911	1
Cereal preparations	2043	5·94	83	1·81	433	1
Prepared flour	2045	4·31	75	1·61	263	1
Bread and bakery	2051	3·09	47	1·47	3,699	1
Biscuits, crackers	2052	2·62	65	1·42	917	1
Chewing gum	2073	6·91	89	1·42	184	1
Beer	2082	5·19	62	1·25	1,980	1
Distilled liquor	2085	7·26	60	1·53	830	1
Soft drinks	2087	5·02	55	1·64	495	1
Cigarettes	2111	5·60	79	1·62	2,159	1
Cigars	2121	5·09	54	1·06	352	1
Household furniture	251	1·70	26	1·54	3,163	0
Sanitary paper	2649	2·09	37	1·70	1,171	1
Periodicals	2721	1·64	31	1·59	1,651	1
Soaps and detergents	2841	8·02	90	1·62	1,176	1
Paints and varnishes	2851	0·63	28	1·52	1,736	0
Tires and tubes	3011	0·69	74	1·42	2,272	0
Shoes	3141	0·79	27	1·26	2,026	1
Razors and razor blades	34212	10·52	97	2·35	81	1
Home laundry equipment	3633	1·00	71	1·44	722	0
Electric housewares	3634	2·88	43	1·44	755	0
Radio and TV sets	3651	1·10	38	1·51	1,516	0
Photographic equipment	3861	1·52	65	2·11	1,134	0
Clocks and watches	3871	5·74	48	1·55	322	0
Pens and mech. pencils	3951	6·54	51	1·50	143	0
Hard-surface flooring	3982	2·20	83	1·12	179	0

Data sources are cited in the text.

Appendix B

THE SAMPLE OF FIRMS

SIC Code	*Included firms*
2011	Swift, Armour, Wilson, Morrell
2023	Carnation, Pet Milk
2033	California Pack., Libby, Stokely-Van Camp, Green Giant
2043	Kellogg, Quaker Oats, Cream of Wheat
2045	General Mills, Pillsbury
2051	American, Continental, Ward, Interstate
2052	Sunshine, National
2073	American Chicle, Beech-Nut, Wrigley
2082	Anheuser-Busch, Schlitz, Falstaff, Lucky Lager
2085	Hiram Walker, National, Distillers Corp., Schenley
2087	Canada Dry, Coca-Cola, Pepsi-Cola, Royal Crown
2111	American, Ligget & Myers, Phillip Morris, Reynolds
2121	Bayuk, General, Consolidated
251	Kroehler, Simmons
2649	Kimberly-Clark, Scott Paper
2721	Curtis, Time, Inc., McCall
2841	Colgate-Palmolive, Proctor & Gamble
2851	Glidden, Sherwin-Williams
3011	Firestone, Goodyear, U.S. Rubber, Goodrich
3141	Brown Shoe, Genesco, International Shoe
34212	Gillette, Eversharp
3633	Whirlpool, Maytag
3634	Sunbeam, Landers, Frary & Clark
3651	Admiral, Motorola, Philco, Zenith
3861	Eastman Kodak, Polaroid
3871	Bulova, Longines-Wittnauer, Elgin
3951	Parker Pen, Shaeffer, Scripto
3982	Congoleum Nairn, Armstrong Cork, Sandura

Footnotes

* This paper had its origins in an unpublished Ph.D. dissertation [I]. I am grateful to David McFarland, George Douglas and James Murphy for helpful comments during the course of that study. I would also like to acknowledge the financial support of the University of North Carolina and the services of the Marquette University Computing Center. The present version of this paper has benefited substantially from the comments of an anonymous referee.

[1] Among the works cited, only the Greer study made use of U.S. data, and he employed only two independent variables, concentration and industry growth. Among the U.K. studies, Sutton used broader industry categories, but tested only for a relationship between advertising intensity and concentration.

[2] Relevant U.S. studies have concentrated almost exclusively on the relationship between advertising and concentration. Besides the work of Greer, important studies include those of Mann et al. [8] and Telser [14, 15].

[3] Drawing upon the same data sources, Mann et al. found a statistically significant rela-tionship, while Telser did not. This result was due largely to differences in the sample of industries used in the two studies, a matter to be discussed shortly.

[4] The criteria could not be applied with precision in all cases. Firms were checked through Moody's Industrial Manual, Poor's Register of Corporations, Directors, and Executives, and other sources to determine principal product lines and the extent as well as the nature of diversification. This effort produced results very similar to those of an independent investigator. On this, see footnote 9.

[5] Two industries were included at other than the four-digit level of detail: household furniture (SIC 25i) and razors and razor blades (SIC 342I2). The household furniture group consists of five separate four-digit industries, but the establishments of the different industries within the group frequently employ the same basic types of machinery and fabrication operations, and produce products belonging to several of the four-digit industries within the group, making for a high cross-elasticity of supply. (See M. Conklin and H. Goldstein, 'Census Principles of Industry and Product Classification, Manufacturing Industries', in National Bureau of Economic Research, Business Concentration and Price Policy, p. 3I (Princeton University Press, Princeton, N.J., I955).) It should be noted that there is considerable for substitution on the demand side as well. The production and marketing characteristics of razors and razor blades differ substantially from other products in the four-digit cutlery industry, and it is not uncommon to treat them as a separate industry. See, e.g. W. G. Shepherd, Market Power and Economic Welfare, p. 276 (Random House, New York, 1970).

[6] No more than four firms were assigned to any industry. In a very small number of cases data for more than four firms could have been used, but without any significant change in results. In these cases data for the largest four firms (in terms of average annual sales, 1957-59) were used.

[7] The broad data coverage on which this study is based was unfortunately discontinued by Printers' Ink in 1962. However, firm data of this type, had it been available for more recent years, would probably have been less useful in measuring industry advertising intensity because of the growing diversification in American industry. The same problem arises with use of the Internal Revenue Service advertising data which were employed by Telser [14] and which are available for more recent years.

[8] It is not uncommon for the measured advertising intensities in these industries to be four or five times the mean advertising intensity of other consumer goods industries. See the data in the two studies of Telser [14, 15]. Also see Sutton [13, p. 67]. These exceptionally high advertising intensities have been attributed to the presence of powerful emotional buying motives, such as the desires for health, beauty, social success, etc. [3, pp. 408-9], and to a high turnover of brands in these product categories [14, pp. 547-51], [15, p. 94].

[9] The present sample includes all of the remaining 23 industries included in a previous study by Telser [15]. For these 23 industries, the correlation between our advertising-to-ratios and those calculated by Telser on a comparable basis (excluding excise taxes from the sales figures for beer, liquor, and cigarettes) is +0.98. This indicates little variation in the sample of firms selected in the two studies. Telser argued for including excise taxes, and for his purposes, he may be right [15, pp. 89-90]. However, in this study the advertising-to-sales ratio is viewed as a measure of the proportion of total resources which flow into sales promotion. In this framework, excise taxes are irrelevant, since they do not reflect resource use.

[10] See, e.g. Else [4, PP. 96-9] and Scherer [12, pp. 334-7].

[11] Those finding support for such a relationship include Else [4], Mann et al. [8], and, to a certain extent, Cable [2]. Those testing for such a relationship and failing to find one include Doyle [3], Telser [14, 15], and Sutton [13].

[12] The quadratic relationship was first suggested in the work of Kaldor and Silverman [7]. For the theory and empirical evidence supporting the quadratic hypothesis, see Greer [5], Cable [2], and Sutton [13].

[13] U.S. Bureau of the Census, Concentration Ratios in Manufacturing Industry I958, Part I, Table 2. Because the industry classification used was that of the 1957 revision of the Standard Industrial Classification, it was necessary for some industries to employ the concentration ratio for the four-digit 'product class' rather than the four-digit 'industry'. See Table 4 of the same publication. The figure for industry 34212 is for 1954.

[14] Regional concentration ratios for 1958 were available for three industries: meat packing, canned vegetables, and beer. The ratio used is simply the weighted (by value of shipments) average of the regional ratios provided. See Concentration Ratios ... I958, Part II, Table 36. For three additional industries, regional or local concentration ratios were available for 1963. For paints, the ratio used is the weighted average of the regional ratios provided. For the three-digit industry group, household furniture, the ratio used is the weighted average of the regional concentration ratios for industries 2511 and 2515, which are the two largest industries among those comprising group 251. Since the bread industry is data, characterized by local markets, the concentration ratio used is the weighted average of the ratios provided for eleven Standard Metropolitan Statistical Areas. See U.S. Bureau of the Census, *Concentration Ratios in Manufacturing Industry 1963*, Part II, Tables 25 and 26.

[15] One indication of this is the close similarity of our adjustments with those made by William Shepherd for these same industries for 1966, by methods not described but for similar reasons. See his *Market Power and Economic Welfare*, Appendix Table 8, Random House, New York, 1970.

[16] One indicator of this is the civilian labor force unemployment rate. In 1954 this averaged 5.5%, and in 1963, 5.7%. In 1947, the rate averaged 3.9%, and in 1958, 6.8%. See *Economic Report of the President*, 1969, Table B-22, p. 252.

[17] Since a major revision of the Standard Industrial Classification used by the Census Bureau to compile data took place in 1957, resulting in the reclassification of many products and changes in many industry definitions, comparable shipments data for the two years 1954 and 1963 were available for only 18 of our 28 industries. For the remaining industries, meaningful estimates could still be made, however. In general, for these industries, com-parable data for the years 1954 and 1958 were available under the 'old' definition, and for 1958 and 1963 under the 'new' definition. These data were used to compute estimates of the desired measure. Shipments for 1954 under the 'new' definition were simply estimated on the assumption that the ratio of shipments under the 'new' definition to shipments under the 'old' definition was the same in 1954 as it was in 1958. In most cases, considering the minor nature of the changes, this should be a fairly accurate assumption. For data under the 'old' definitions, see *Concentration Ratios* ... 1958, Part I, Table 2. For data under the 'new' definitions, see U.S. Bureau of the Census, *U.S. Census of Manufactures*, 1958 and 1963, Vol. I, Chapter 2, Table 3 (each year).

[18] See Concentration Ratios ... 1958, Part I, Table 2. For those industries for which the concentration ratios are on a 'product' basis, the shipments figures are also (same source, Table 4).

[19] Carl Kaysen and Donald Turner, Antitrust Policy, pp. 322-328, (Harvard University Press, Cambridge, Mass., 1959).

[20] It should be noted that the exclusion of the three exceptional industries has had a bearing on our finding a relationship between advertising intensity and concentration, but not on the nature of that relationship. All three industries would be extreme outliers under either the linear or quadratic formulation, since their reported concentration ratios are very low.

[21] Exceptions would appear to be found primarily in the clothing field, in which products are typically classified as non-durables but which are sold through non-convenience outlets. Here the vagaries of fit and fashion lead consumers to shop around.

[22] The one clear exception is the shoe industry, which we have classified as non-durable, although its products are sold through non-convenience outlets, again for reasons of proper fit and fashion. The nature of the data did not permit any inference about retailing of pens and mechanical pencils.

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