
Advertising and its Effect on Industrial Concentration: A Contingency Perspective

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The ongoing debate over the effect of advertising on industrial concentration is investigated. Evidence from prior literature appears to indicate that there is no consistent relationship across industries. A framework which maintains that the effect of advertising on industrial concentration is contingent upon the type of industry being examined (convenience vs. nonconvenience) is proposed. In particular, it is proposed that: a) advertising is positively associated with industrial concentration in convenience goods industries; and b) advertising is not associated with industrial concentration in nonconvenience industries. Longitudinal data from the soft drink and personal computer industries is analyzed using a distributed-lag model to demonstrate the validity of the framework.

A Contingency Perspective

For years, the economic effects of advertising have been a topic of debate. An area that has been particularly controversial is advertising's effect on industrial concentration. The term concentration as used here refers to the degree to which a small number of firms dominate a market's output. The way in which it has been most commonly measured is through the use of a concentration ratio (Ekelund and Maurice 1969). A concentration ratio measures the percentage of total industry sales controlled by a given number of firms in an industry. Since it is believed by many that an excessively high concentration ratio is anti-competitive, the argument that advertising leads to higher concentration ratios has been heatedly debated. Unfortunately, research has produced inconsistent results.

The purpose of this paper is to propose and empirically assess a framework designed to clarify advertising's effect on industrial concentration. The paper begins with a brief review of issues related to

industrial concentration. Next, a framework is proposed which suggests that the relationship between advertising and industrial concentration is contingent upon the type of industry being examined (i.e., convenience vs. nonconvenience goods industry). This is followed by an empirical assessment of the framework using recent data from the soft drink and personal computer industries. Finally, implications of the study will be discussed.

Literature Review

The Concentration Ratio

Nicholson (1985) describes the general concentration of the firms in an industry as one of the most important types of information on market structure. A primary reason for interest in concentration ratios is the information they reveal regarding the general pattern of a given market structure. One reason for the interest in evaluating industry structures is the view that tendencies toward monopoly (or even oligopoly) have anti-competitive effects which harm both potential entrepreneurs, who may be stopped from competing in an industry, and consumers, who may have to pay higher prices for goods and services. With regard to the impact on consumers, some welfare economists (e.g., Leibenstein 1966; Shepherd 1990) have suggested

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that concentration can lead to productive inefficiencies (in particular, the X-inefficiency), which prevent consumers from getting the largest volume of a given product at the lowest price. It has also been argued that high concentration can lead to allocative inefficiencies, such as deadweight loss, which do not allow the most efficient level of resources (e.g., advertising expenditures) to be devoted to a product (McConnell and Brue 1993). Thus, the wide range of implications of arguments that advertising leads to high concentration ratios have been of interest to economists, the advertising community, and policymakers. However, the impact of advertising on industry concentration remains a major point of contention.

The Debate Over Advertising's Effect on Concentration

The traditional view of the effect of advertising on concentration ratios is that there is a connection between advertising and concentration. This view, part of the school of thought Albion and Farris (1981) refer to as "Advertising=Market Power," was summarized by Ornstein (1977, p.2) as follows:

In short, advertising increases industrial concentration, raises barriers to entry, and therefore leads to collusion and the exercise of monopoly power. The result is restricted output, raised prices, inefficient allocation of resources, long-run excess profits for the monopolists, and distortion in the distribution of wealth.

An alternative view refutes the notion that advertising necessarily leads to industrial concentration. This view, part of the "Advertising = Information" school of thought (Albion and Farris 1981), argues that advertising plays a positive role in providing the consumer with information on brands, prices, and quality, thereby increasing his/her knowledge. The increased knowledge not only reduces search costs, but also forces producers to improve the quality of their product. With regard to concentration, advertising facilitates entry by allowing previously unknown products to gain rapid awareness and acceptance. These changes lead to increased product variety which allows firms to exploit production and distribution economies of scale, and causes prices to fall.

The two schools are diametrically opposed with regard to advertising's impact on concentration. In the "Advertising = Market Power" school, (e.g., Kaldor 1950; Bain 1956, Comanor and Wilson 1974), it is assumed that advertising serves as an entry

barrier which has the long-term effect of increasing concentration. Albion and Farris (1981) summarized the primary arguments for advertising being an entry barrier as resting on economies of scale caused by advertising, the existence of a carry-over effect of advertising into subsequent periods, or restricted access to capital markets by potential competitors. In contrast, the "Advertising=Information" school assumes that advertising does not act as an entry barrier and, indeed, offers opportunity to new entrants.

Two empirical studies in the 1960's were instrumental in intensifying the longstanding debate on advertising and concentration. In one, Telser (1964) tested a linear relationship between the two variables by regressing concentration on advertising intensity in 1947, 1954, and 1958 for 42 consumer goods. No significant positive correlation between the two variables was found, with advertising intensity explaining only three percent of the variance of concentration ratio. The basic model Telser used was:

$$CR = a + b(A/S) + u$$

Where:

CR = four firm concentration ratio;

A/S = advertising to sales ratio;

u = an error term.

This model was important because it became the popular framework in which the advertising-concentration relationship was tested (Ornstein 1977).

Counter to Telser's findings, Mann, et al. (1967) found a strong correlation between advertising and concentration. This study utilized the same simple regression procedure used by Telser on a sample of 14 consumer product groups. The contradictory findings led to criticisms of each study as well as reanalysis of both the Mann and Telser data sets. Albion and Farris (1981) note that several studies subsequent to Telser and Mann tested the relationship between advertising and concentration using both linear and nonlinear models and many independent variables, both within and across industries. While a review of these studies suggested inconsistent results, Farris and Albion argued that, generally, prior research suggests that advertising is related positively to concentration.

McAuliffe (1987) reviewed the work on advertising and competition and concluded that most research has shown diminishing, rather than increasing, returns to scale for large-scale advertisers. This finding disputes one of the primary arguments for the idea that advertising leads to concentration.

McAuliffe maintains that there is little support for the hypothesis that advertising generally reduces competition by increasing concentration. However, he recommends viewing advertising's effects on concentration and competition in an industry on a case by case basis.

Prior literature also suggests that advertising's impact on concentration may vary at different levels of the marketing channel (Farris and Albion 1980). Citing the Steiner (1973) Dual Stage model, Farris and Albion (1980) find support for the idea that advertising may decrease competition at the manufacturer's level of the channel but increase competition downstream in the channel. Although the contingency framework proposed in this study is theorized to apply only to the manufacturer's level of the channel, it is important to acknowledge that advertising's impact on concentration may vary at other levels.

It is evident from the above literature review that previous studies have produced inconsistent findings regarding the effect of advertising on concentration. The debate on the topic, thus, remains unsolved.

A Contingency Perspective

The Proposed Contingency Framework

Literature suggests that the two schools differ in regard to the potency of advertising as a barrier to entry. Indeed, in the "Advertising=Market Power" school, there is an explicit assumption that advertising functions as an entry barrier. The logic follows that advertising by large firms will drive out small firms and erect high barriers to entry, leading to high concentration. However, critics of this view believe that advertising provides information to consumers and can be effectively used by both large and small firms. Thus, advertising is not assumed to be a barrier to entry, or at least one that is not nearly as important as other types of entry barriers. The debate, thus, boils down to whether advertising is viewed as a potent entry barrier in an industry.

Porter (1980) posits that advertising can be a barrier to entry since it can lead to product differentiation by increasing brand identification and customer loyalty. Differentiation creates a barrier to entry by forcing entrants to spend heavily to overcome existing customer loyalty. Porter also indicates that advertising can contribute to returns to scale in manufacturing and the purchase of me-

dia, and to increased access to channels of distribution, all of which may serve as entry barriers. However, the potency of advertising as an entry barrier has been recognized to vary from industry to industry. Porter (1976) distinguishes between convenience and nonconvenience goods industries in discussing inter-brand competition. Nonconvenience goods are defined as those for which purchases are infrequent, prices are high, and quality is important (Aspinwall 1961; Bucklin 1963; Murphy and Enis 1986). Convenience goods are defined as relatively low priced goods that sell primarily on the basis of brand image. Hence, the potency of advertising as an entry barrier is expected to differ between convenience and nonconvenience goods industries.

The rationale for the greater potency of advertising as an entry barrier in convenience goods industries is shown in Figure 1. Murphy and Enis (1986) have noted that convenience goods are associated with low levels of perceived risk on the part of the buyer. When products are frequently purchased, uncertainty decreases and possible consequences become less important. Additionally, the effort the buyer expends in making a purchase is low. With risk and effort being low, and purchase frequency being high, consumers are likely to rely on brand images created through advertising. Scherer and Ross (1990) argue that in convenience goods industries, premium brand images rest upon astute product positioning reinforced by appropriate advertising, and that new technology or quality play no significant role. Hence, in convenience goods industries, advertising is a potent means by which products can be differentiated and a barrier to entry can be erected, while other factors such as quality and technological innovation are less potent entry barriers (Porter 1980; Scherer and Ross 1990).

In contrast to convenience goods industries, nonconvenience goods industries have a wide range of viable marketing strategies such as technological innovation and quality (Porter 1980) and, therefore, depend less on advertising as an entry barrier. As Murphy and Enis (1986) point out, for nonconvenience goods, the risk and effort involved in consumers' purchase decision are high. The level of risk is higher because nonconvenience products are purchased less frequently and the purchase price is high. Additionally, the purchase decision is associated with more uncertainty and therefore higher levels of risk. As a result, it is likely that consumers' purchase decisions will rely relatively less on advertising and more on their own information re-

Figure 1
The Proposed Contingency Framework of Advertising and Industrial Concentration

	Convenience Goods Industry	Nonconvenience Goods Industry
Purchase Frequency	Frequent	Infrequent
Price	Low	High
Primary Means of Differentiation	Brand Image / Advertising	Quality / Product Attributes
Potency of Advertising as Entry Barrier	High	Low
Advertising-Concentration Relationship	Strong	Weak

garding other marketing factors such as quality, product features, technological innovation, warranties and post-purchase service. Thus, advertising is a much less potent entry barrier in nonconvenience industries.

Because advertising is expected to serve as a potent barrier to entry in convenience goods industries, but not in nonconvenience goods industries, it is contended that, counter to the assumptions made by both the "Advertising=Market Power" and "Advertising=Information" schools, the effect of advertising on industrial concentration is *contingent* upon the type of industry. Specifically, in convenience goods industries, advertising by large firms should contribute to high industrial concentration. In nonconvenience goods industries, on the other hand, advertising by large firms should not necessarily lead to high concentration. This contingency framework is presented in Figure 1. It should be noted that the framework applies to the *manufacturer's level of the distribution channel*.

Research Propositions

A test of the contingency framework is provided using two industries as examples: the U.S. soft drink and personal computer industries. These industries were selected for an initial assessment of the framework due to their fit to the definitions of

convenience and nonconvenience industries and the availability of accurate data on market share.

Since soft drinks are low priced, purchased frequently, and sold on the basis of brand name (Kotler 1988), the soft drink industry can be considered a convenience goods industry. Thus, according to the contingency framework, advertising will serve as a potent barrier to entry to the soft drink industry, and advertising intensity of large firms should positively affect industrial concentration. There is little question that the giants, such as Coca-Cola and PepsiCo, dominate the industry and have size advantages that enable them to secure superior shelf space or get the product accepted at the retail level. It can be argued, nevertheless, that these advantages can be built and sustained only by heavy investment in advertising so that consumers will *pull* the products through the channel. Therefore, the first research proposition is:

P1: In a convenience goods industry, advertising intensity of the top four firms is positively associated with the industry's four firm concentration ratio.

Personal computers are purchased infrequently and have high selling prices (average selling price per system was \$1776 in 1991). Competition is based mainly on the price/performance relationship through leading edge technological advances, soft-

ware enhancements, rapid delivery, customer driven configurations, and regionally focused sales efforts (Hergert 1987). Thus, the PC industry can be considered a nonconvenience goods industry. According to the contingency framework, in the PC industry, advertising is *not* a potent entry barrier, and advertising, even when sponsored by large players such as IBM, Apple, Compaq and Tandy, is unlikely to contribute to industrial concentration. Thus, the second research proposition is:

P2: In a nonconvenience goods industry, advertising intensity of the top four firms is not associated with the industry's four firm concentration ratio.

Methodology

Sources of Data

The soft-drink data came from two sources. The first source is two industry surveys appearing in *Beverage Industry*, a trade publication. The two surveys provided case sales, market shares, and rank data by year for the 1977-1993 period. The second source is the *BAR/LNA* reports from 1977 to 1993 which provided annual advertising expenditure data by brand. Combined, these two sources provided time-series data for 17 years. The soft drink industry is defined in terms of *manufacturers of carbonated soft drinks*. Noncarbonated soft drinks such as Kool-Aid and Hi-C were not considered to be close substitutes for carbonated soft drinks and, thus, were excluded from analysis.

The PC industry data came from two sources as well. Market shares and unit sales of the top four firms for the 1979-1993 period were obtained from Dataquest, a market research firm specializing in the PC industry. Accurate data on unit sales of the top four firms for 1977 and 1978, the first two years of the industry's existence, were not available. While the inclusion of these two years would have allowed the same time period to be analyzed in the two industries studied, excluding 1977-1978 data allowed avoiding the very uncertain initial period of the industry's establishment. In 1977, only a very limited number of firms were producing PCs, which were a somewhat risky product to manufacture. By 1979, however, there were about 50 manufacturers in the \$300 million personal computer market (Thompson and Strickland 1984, p.389), and the industry was growing.

Annual advertising data for the PC industry came from the *BAR/LNA* reports from 1979 to 1993. Combined, the two sources provided time series

data for 15 years in the PC industry. The PC industry is defined in terms of *manufacturers of computers which are based on a single microprocessor as the central processing unit*. This includes the traditional desktop market as well as the deskside, laptop, notebook, and pen-based PCs. Value-added resellers are not included. The leading firms in the PC industry include Apple, IBM, Tandy, and Compaq, which have been (and many still are) technology platform companies continuously developing new technologies while investing extensively in advertising directed at end users to create brand equity (Dataquest, PC Annual Reports).

Model Specification

Many previous studies on advertising and concentration have used cross-sectional data (Ornstein 1977). While there have been exceptions (e.g., Edwards 1983; Vernon 1971), there are weaknesses associated with this approach. In general, the cross sectional studies have used a very limited number of data points from a number of industries. This type of "one-shot" approach does not allow for an in-depth analysis of trends within individual industries or types of industries. The aggregate nature of the data produced also ignores the idea that industry characteristics can influence advertising's impact on concentration.

It is also notable that the simple regression models which have often been employed in studying advertising and concentration (e.g., Telser 1964) assume that the effect of advertising on concentration takes place only in one period of time. This assumption is problematic since it has been well established in the marketing literature that advertising's effect on sales and market share usually carries over several time periods (Assmus, Farley, and Lehmann 1984; Leone 1983). Clarke (1976) examines the carryover coefficients from a number of studies and concludes that, when omission of a carryover effect constitutes model misspecification, upward bias of the coefficient for current advertising will result if current and past advertising are positively correlated, and if past advertising has a positive impact on current sales.

Hence, a better approach to investigating advertising's effect on industrial concentration should adopt a time series model which includes a carryover term. Based on the marketing literature (e.g., Assmus, Farley, and Lehmann 1984; Clarke 1976; Leone 1983), it is believed that the distributed lag model is superior to the simple regression model for studying the

advertising's effect on industrial concentration. The specific distributed lag model that was adopted in the present study for assessing the proposed contingency framework has the following form (see Clarke 1976 for a discussion of the distributed-lag model):

$$CR4_t = a + bCR4_{t-1} + c(A/S)_t + u$$

where:

$CR4_t$ = four-firm concentration ratio in year t ;

$CR4_{t-1}$ = four-firm concentration ratio in year $t-1$;

$(A/S)_t$ = advertising intensity by top four firms (advertising expenditures divided by sales) in year t ;

a , b , c , are coefficients to be estimated;
 u is the error term.

In the model, coefficient b is a measure of the inertia in the time series and is a function of the carryover effects of the past advertising as well as other marketing mix elements (Clarke 1976). Coefficient c is a measure of advertising's current effect on the concentration ratio, whereas coefficient a is a constant.

Measurement of Variables

Four-firm concentration ratios were chosen for two primary reasons. First, the four firm concentration ratio follows the tradition of the advertising/concentration literature (McAuliffe 1987) and allows for comparison of the results to previous studies. Second, and most importantly, the link between the four firm ratio and basic industry structures is well documented by economists (Angelmar 1985). McConnell and Brue (1993), for example, note that a benchmark for determining whether an industry is oligopolistic is whether the four-firm ratio is greater than forty percent. Four-firm concentration ratio ($CR4$) in the soft drink industry was measured as the combined market share of the top four firms in the regular and diet carbonated soft-drink market, based on data from *Beverage Industry*. During the 17 years studied, Coca-Cola, Pepsi, 7-Up, and Dr. Pepper were consistently ranked as the top four, though their combined share of the market varied from year to year. Advertising expenditures (A) of the top four firms were compiled from *BAR/LNA* reports by aggregating each firm's expenditures for individual brands in regular and diet carbonated soft drink categories. These figures were then adjusted for inflation using the consumer price indices published in the *Statistical Abstract of the United States*. Case sales of top

four firms (S) are taken from *Beverage Industry's* reports.

In the PC industry, unit sales of the top four firms were divided by overall industry unit sales to arrive at the concentration ratio. As in the soft drink industry, advertising expenditures of the top four firms were compiled from the *BAR/LNA* reports by aggregating each firm's advertising expenditures for individual brands in the personal computer categories. These figures are also adjusted for inflation.

Results

Table 1 summarizes four-firm concentration ratios, unit sales, and advertising expenditures for the top four firms in the soft drink and PC industries for the period investigated. During the 17 years studied, the carbonated soft drink industry has experienced an increase in concentration and case sales. Advertising expenditure by the top four firms during the same period increased consistently. In the 15 years included in the PC industry analysis, it can be seen that the four firm concentration ratio generally declined, but then increased as of 1992. Over the same period, advertising expenditures by the top four firms have fluctuated to some extent.

The distributed lag model is calibrated by both an OLS regression analysis and maximum likelihood (ML) analysis. The OLS regression is used because of its popularity in previous studies on the advertising-concentration relationship and its relative robustness against violations of distribution assumptions. The ML criterion is applied to shed additional light on the stability of the parameter estimates produced by alternative fitting criteria. In addition, the ML model also allows for an explicit account of the inter-correlations between independent variables and the error term. The parameter estimates of the distributed lag model for both the soft drink industry and the personal computer industry are shown in Table 2.

The OLS regression model explained 97.8 and 82.8 percent of the variance in four-firm concentration ratio CR_t , respectively, for the soft drink industry and the PC industry. The F-statistics for the two industries also are statistically significant. Thus, it is concluded that the distributed lag model fits the data from both industries very well under the OLS criterion. Similarly, when the maximum likelihood (ML) criterion is used, the distributed lag model also fits the data of both industries well.

Table 1
Four-Firm Concentration Ratios, Unit Sales, and Advertising Expenditures

Year Industry	Concentration Ratio (CR4)		Unit Sales		Advertising Expenditure	
	Soft Drink (percent)	PC	Soft Drink (million cases)	PC (units)	Soft Drink (thousands)	PC
1977	75.14	—	3,389.0	—	\$101,586.6	—
1978	75.74	—	3,597.5	—	133,669.0	—
1979	76.32	83.34	3,800.6	235,000	177,019.5	16,073.2
1980	75.99	4.14	3,936.3	346,000	195,960.5	15,832.3
1981	75.70	68.41	4,046.3	516,496	176,877.3	26,747.8
1982	75.67	61.75	4,169.3	2,662,660	195,629.4	32,661.4
1983	76.77	64.28	4,437.2	3,984,717	253,841.3	114,544.1
1984	77.92	68.80	4,776.6	5,344,384	306,214.2	172,900.4
1985	79.24	66.95	5,150.3	5,413,000	334,832.0	113,156.0
1986	80.27	47.25	5,434.3	3,280,400	329,969.6	104,603.3
1987	81.01	46.25	5,784.0	4,019,620	323,967.4	101,565.7
1988	81.10	37.20	6,102.0	3,660,104	375,445.8	101,224.1
1989	81.50	36.18	6,261.1	3,842,098	388,948.4	92,054.1
1990	82.00	33.97	6,490.4	3,790,282	452,451.8	103,553.0
1991	82.40	33.35	6,651.8	3,922,848	436,677.7	49,082.5
1992	83.20	33.65	7,040.6	4,221,217	460,617.1	111,734.5
1993	83.50	45.01	7,269.1	6,652,717	484,556.4	174,387.0

Sources: LNA Class/Brand Year-to-Date, 1977-1993; Soft Drink Report, 1988 and 1994 Dataquest, Inc.

Table 2
Parameter Estimates for the Distributed Lag Model

General Model: $CR_t = a + b CR_{t-1} + c (A/S)_t$	Soft Drink Industry		PC Industry	
	OLS	ML	OLS	ML
Independent Variable				
Four-Firm Concentration Ratio in Year t-1 (CR_{t-1})	1.029 (t=22.354)	1.030 (t=24.041)	.864 (t=4.697)	.865 (t=5.106)
Advertising Intensity by Top Four Firms in Year t (inflation adjusted) (A/S) _t	.095 (t=2.068)	.096 (t=2.230)	.062 (t=0.335)*	.062 (t=0.365)*

* Not significant at .05

Therefore, the relationship between four-firm advertising intensity and concentration ratio is adequately represented by the model.

From Table 2, it can be seen that, for both the soft drink industry and the personal computer industry, the OLS parameter estimates for the dis-

tributed lag model are extremely close to the ML estimates of the model. In addition, the corresponding estimates of the standard errors and the t-values also are very close. These results indicate that the parameter estimates for the distributed lag model are very stable under alternative estimation

criteria, suggesting the robustness of the distributed lag model.

For the soft drink industry, it is found that the current effect of advertising intensity $((A/S)_t)$ on four-firm concentration ratio $(CR4_t)$ is positive and statistically significant. This finding suggests that current advertising by the top four firms has a positive net contribution to increased concentration in the soft drink industry. In addition to the significant current effect of advertising, there is a strong and positive carryover effect on concentration. This finding indicates that the past year's concentration $(CR4_{t-1})$ in the soft drink industry, which represents the total marketing activities of the top four firms in the past, including advertising, is a key determinant of the current concentration $(CR4_t)$ in the industry. Given the relative potency of advertising and the relative impotency of other marketing mix variables in the soft drink industry (see Porter 1980; Scherer and Ross 1990), this carryover effect of the past year's concentration can be roughly interpreted as the effect of past advertising on industrial concentration. Therefore, the advertising by the top four firms in the soft drink industry has both a positive current effect and a positive carryover effect on industrial concentration. Hence, preliminary support is found for proposition 1.

For the personal computer industry, it can be seen that the current year's advertising's effect $((A/S)_t)$ on industrial concentration $(CR4_t)$ is positive but not statistically significant. This finding suggests that current advertising by the top four firms is not related to current concentration in the PC industry. The past year's concentration $(CR4_{t-1})$ is, however, found to have a significant carryover effect on current concentration $(CR4_t)$. Our contingency framework would suggest that this effect is caused by the potency of non-advertising variables such as quality, features, and technological innovation in the PC industry (see Hergert 1987). Therefore, in the personal computer industry, our findings indicate that industrial concentration is not related to advertising of the top four firms, and preliminary support is found for the proposition 2.

Discussion and Implications

Counter to both the "Advertising = Market Power" and "Advertising = Information" schools of thought, it has been proposed that advertising's effect on concentration is contingent upon industry type. In convenience goods industries, in which advertising

serves as a potent barrier to entry, advertising by large firms will contribute to high concentration. In nonconvenience goods industries, in which advertising is not a potent barrier to entry relative to other factors, advertising will not be associated with industrial concentration. Analysis of data from the carbonated soft drink and PC industries provides initial support for this contingency perspective.

Specifically, in the soft drink industry, a convenience goods industry (Kotler 1988; Scherer and Ross 1990), the current study finds that advertising has a significantly positive net effect on industrial concentration, in addition to the significant carryover effect of past concentration. In the PC industry, a nonconvenience goods industry, it is found that industrial concentration is not related to advertising intensity of the top four firms. Concentration in the PC industry is mainly determined by the carryover effect of past concentration which can be interpreted as the contribution of the past non-advertising variables such as product performance, design, features, quality, warranty, post-sales service, innovation, and speed to market.

This study presents a new framework and demonstrates its applicability in two industries only. If found to hold up across other convenience and nonconvenience industries, the contingency perspective presented can have important implications for the academic community as well as public policy makers. The findings of the present study demonstrate that the distributed lag model with a carryover term fits the data from two industries extremely well, and is robust under alternative fitting criteria. Thus, the model reliably represents the true relationships among the variables, and the coefficient estimates can be interpreted with confidence. A further implication of the study is that models that do not fit the data well, such as the simple regression models used by many previous researchers, should be avoided.

Rather than making a blanket argument, the contingency perspective suggests that advertising's effect on concentration is contingent upon the type of industry. This contingency should be considered by marketers and those from other disciplines studying the impact of marketing strategy on industry structure. The framework suggests that advertising serves as a potent entry barrier in convenience industries, but not in nonconvenience industries. Hence, advertising's impact on industry structure can be viewed as much more pronounced in convenience goods industries.

The framework also has implications for welfare economists studying resource allocation who are concerned with issues such as the X-inefficiency and deadweight loss. It suggests that advertising may lead to allocative inefficiencies in convenience industries, but not in nonconvenience industries. Regardless of the orientation of the investigator, this study suggests that researchers studying advertising's impact on concentration consider the type of industry being studied before developing hypotheses.

As for public policy makers, it is advisable not to make broad cross-industry generalizations about the economic effects of advertising. If one subscribes to the proposed framework, it is suggested that advertising does not hinder opportunities for small firms in nonconvenience goods industries. On the other hand, the framework posits that there is a possibility of advertising hindering new entry in convenience goods industries. Thus, the framework suggests that in evaluating the impact of policies, the nature of the industries must be considered.

Limitations and Directions for Future Research

Although the time-series data from the two industries included in this study provide initial support for the argument that advertising's effect on industry concentration is contingent upon the industry type, the findings should be considered as preliminary evidence. The major objective here was to present a new framework. Future research on a large number of industries using a cross-sectional design must be conducted before the framework can be validated and results can be safely generalized across industries. While there is little dispute that the soft drink industry is a convenience goods industry and the PC industry is a nonconvenience goods industry, the proposed framework needs to be validated using data from other convenience and nonconvenience industries.

This paper suggests that advertising does not provide an explanation for concentration ratios in nonconvenience industries. In situations where advertising does not provide an explanation, future studies are needed to model industrial concentration in terms of other marketing factors (e.g., product design, performance, quality, technology, warranty, post-sales service, and speed to market).

This study investigates the effects of advertising on industry concentration at the manufacturer's level of the channel. Generalizations of the findings to the wholesale and retail levels cannot be made. Additional research on advertising's impact on concentration at other levels of the marketing channel is needed.

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Endnote

To address whether the growth of the PC industry may have an impact on industry concentration, we explicitly considered the market size of the PC industry by including total industry sales as an independent variable in the model. The results indicate that the carryover effect remains positive and significant ($b=.997$, $t=4.197$), the effects of advertising intensity ($c=.103$, $t=.551$) and the size of the industry ($d=.355$, $t=1.233$) are not significant. Since these results are consistent with what we found using the standard distributed lag model, only standard results are reported here.

