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AN EMPIRICAL INVESTIGATION OF MAGAZINE ADVERTISING CYCLES

City University of New York PH.D. 1980

AN EMPIRICAL INVESTIGATION OF MAGAZINE ADVERTISING CYCLES

by

STEVEN R. MALIN

A dissertation submitted to the Graduate Faculty in Economics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1979

This manuscript has been read and accepted for the Graduate Faculty in Economics in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

AN EMPIRICAL INVESTIGATION OF MAGAZINE ADVERTISING CYCLES

by

Steven R. Malin

Adviser: Professor Ralph L. Nelson

Studies of the economics of advertising have been hampered by a lack of detailed advertising data for individual media and vehicles. The present study fills part of that void with the development of a seasonally adjusted quarterly advertising series for the magazine medium. Consumer magazines listed in audits conducted between 1965 and 1976 by Leading National Advertisers, Inc. are reclassified into eight unique classes distinguished by their editorial contents. Current dollar advertising volume data for each class are used to test a number of hypotheses about the relationship between advertising and general economic conditions.

Since the mix of products advertised in magazines differs across classes, each class experiences a unique advertising growth trend and cyclical pattern. Ranking the classes by their respective growth rates reveals characteristics that distinguish relatively higher-growth classes from relatively lower-growth classes. Magazines in relatively higher-

growth classes generally aim at men; have narrow editorial foci and concentrated advertising bases; and carry substantial volumes of automotive advertisements. Relatively lower-growth magazine classes typically aim at women; have broad editorial foci and diversified advertising bases; and carry substantial volumes of food advertisements.

Cyclical analyses indicate that turning points of magazine advertising cycles, on the average, lag GNP cycle turns by 1.8 quarters at troughs, 0.6 quarters at peaks, and 1.2 quarters overall. Across classes, the average lag tends to vary directly with the average long-run advertising growth rate. A diffusion index of cycle phases shows that magazine advertising volume fluctuates procyclically and tends to lag briefly at business cycle turning points.

Prevailing economic conditions at the firm level, industry level, and in the national marketplace influence advertising volume, regardless of firms' individual ad-budgeting policies. Magazine advertising fluctuations correlate closely and positively with fluctuations in GNP, industrial production, personal consumption expenditures on goods, and department store sales, each lagged about one quarter. The lag indicates that advertisers do not instantaneously adjust their expenditure levels to changes in business conditions. Econometric estimations reveal that the target ratio of magazine advertising-to-sales and the mean adjustment lag are about 0.8 percent and 1.9 quarters, respectively.

The target ratio of advertising-to-sales and the mean adjustment lag vary widely across magazine classes, reflecting differences in the composition

of their respective advertising bases. On the average, the magazine advertising-to-sales ratio tends to be higher for "search" goods and consumer durable goods than for "experience" goods and consumer non-durable goods, respectively. Graphical analyses indicate that fluctuations in consumer durable goods sales are the primary factor in the cyclical adjustment of magazine advertising; the considerably smaller and less synchronous fluctuations in consumer non-durable goods sales contribute to the overall advertising growth trend. The relative proportions of consumer durable and non-durable goods in each class's advertising base determines the target ratio of advertising-to-sales and the timing of the adjustment mechanism.

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Access to most of the data employed in this study was provided by Mary Catherine Smith of CBS Inc., who unselfishly opened her data library to me. Dorothy McGowan of the Magazine Publishers' Association provided hard-to-get trade publications. Toby Thierer of CBS Inc. helped me through the thicket of corporate bureaucracy.

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CHAPTER I

INTRODUCTION AND SUMMARY

Introduction

The theoretical and empirical examination of the level and fluctuation of advertising activity has become increasingly sophisticated in the postwar period. Expansion of mathematical and computer capabilities and management information systems has opened up new demands for better and more up-to-date information about advertising and its effects. Economists have responded to this demand with intensive studies of the broad interaction between advertising volume and macroeconomic stability, industrial concentration, product sales, and profits. A large body of scholarly literature presents econometric and noneconometric estimates of the impact of advertising on the distribution of disposable income between consumption and saving; total demand for products in an industry; the inter-industry distribution of demand; and the distribution of sales among competing products or brands.

The specificity of studies dealing with the economics of advertising generally has been limited by a lack of government data on advertising volume for individual media and for narrowly defined

product categories. Most studies have had to rely on government data found in the Internal Revenue Service Sourcebook of Statistics of Income that show total advertising expenditures reported by corporations classified at the four-digit SIC-code minor industry level. Consequently, few, if any, scholarly studies have investigated the determinants and/or effects of advertising activity in individual media.

In the postwar period, the private sector has made great strides in meeting the growing need for more up-to-date and accurate advertising data collection, storage, handling, and analysis. Several private data-gathering and disseminating services, assisted by the growth of computer technology, have developed to monitor advertising volume, audiences, and distribution in the various media. Using widely divergent techniques, these syndicated services offer data on a vast number of brands, products, industries, and media vehicles.

The primary objectives of the present study will be the development and application of seasonally adjusted quarterly advertising revenue data for the magazine medium. The magazine medium has particular investigatory appeal for two reasons: (1) it is comprised of a substantial number of diverse publications that carry advertisements for a large number of national products and brands; and (2) the lack of suitable government data has heretofore impeded systematic and comprehensive analyses of the determinants and effects of magazine advertising. In the present study, which covers the period from the

first quarter of 1965 to the fourth quarter of 1976, data will be used to test several hypotheses about the determinants of advertising volume over the business cycle as they apply to the magazine medium.

Probably the most fruitful source of data on magazine advertising is the Publishers' Information Bureau, Inc., an organization that supplies reliable information about the magazine industry to subscribers to their syndicated service. The PIB publishes advertising revenue figures by product, brand, and company on a monthly basis. Although only a small proportion of magazines (about 90 per year) choose to be included in the PIB's data base, almost all major consumer magazines that print advertisements for national brands are represented in their totals. For present purposes, the availability of these data enabled the reclassification of individual magazines into 8 unique classes (automotive, business, general editorial, home, men's, news, sports, and women's), each class being comprised of magazines with a common editorial direction. (An alternative classification procedure, based upon readership surveys, was considered and dismissed because the surveys demonstrated gross sampling and technical errors and were inaccessible except to paying subscribers.) Although individual magazines within a particular class are not perfect substitutes from the advertiser's standpoint, different magazines could be fairly close substitutes for the purpose of conveying messages to target audiences of prospective buyers. The advantages of reclassifying magazines into independent classes is discussed at greater length in Chapter 2.

The magazines that comprise a particular class do more than simply carry messages -- they supply an environment that determines the size and composition of their audiences and the sales response to advertisements. Although certain magazines and magazine classes are not suitable for advertising certain types of products, the great diversity of magazines permits advertisers to "fish where the fish are." The products most heavily advertised in any magazine class could be expected to reflect a close association with the editorial content of its constituent magazines and the reading interests of their audiences. Each magazine class could be expected to attract a unique product mix of advertising; and for each product, the magazine classes chosen for advertising are also likely to be unique. A detailed description of the product distribution of advertising in each magazine class appears in Chapter 2.

Any attempt to match product characteristics with potential magazine audiences must be made with particular attention to seasonal patterns in the product market as well as in the reception of advertising messages. Therefore, the original advertising data for each class developed for this study were seasonally adjusted using standard options in the Census Bureau's X-11 program. Deseasonalization of the quarterly series was a prerequisite to the identification of trends and cycles in the advertising revenue figures of each magazine class considered in Chapter 3.

The procedures used in this study to identify and measure cycles combine techniques developed by Arthur Burns and Wesley Mitchell with other procedures developed by Ilse Mintz. Since the standard procedures

associated with Burns and Mitchell were sometimes cumbersome or inappropriate for the analysis undertaken in Chapter 3, we generally relied on Mintz's techniques for the identification and measurement of "growth-cycles." GNP was selected as the primary reference series for all turning point and amplitude comparisons; and the Index of Industrial Production was used as a secondary reference series.

The cyclical analysis could have been strengthened by expressing each seasonally adjusted data series in constant dollar terms. However, the problem of generating appropriate price indexes for advertising revenue data has proven difficult and has not been satisfactorily solved. Since in this study we undertake to reclassify magazines into homogeneous classes which differ from the categories previously used, no published price deflators accurately match our current dollar series. Thus, for purposes of the present study, appropriate price deflators for each magazine class neither exist nor can they convincingly be developed.

Since 1900, a relatively small number of studies have attempted to describe the relationship between cycles in advertising and in general economic conditions; and only two of those studies focused on individual media. On the whole, studies completed before the mid-1960's attempted to describe and/or analyze the impact of advertising on fluctuations of a number of business conditions. In the 1970's, however, a handful of studies expressed serious doubts that advertising fluctuations could significantly affect general business conditions or the distribution

of demand across product categories or the level of aggregate demand relative to aggregate saving. These more recent studies report little evidence to support the claim that business cycle fluctuations are affected by advertising volume fluctuations in a strong causal manner. These conflicting positions -- between the earlier and the more recent studies -- remain largely unresolved, and an empirical investigation of the major issues is largely beyond the scope of the present study. Instead, we will focus on the proximate, rather than the ultimate, causal relationship between magazine advertising volume fluctuations and fluctuations in business conditions indicators.

The original seasonally adjusted advertising revenue data for the magazine classes developed here are particularly well suited to an empirical investigation of the characteristics and determinants of advertising revenue cycles. The data for each magazine class are directly comparable since they are both independent and pertain to a single medium. (In previous studies, comparative descriptions of advertising cycles were obscured by the sharp structural and functional differences between different media.) Because the product mix of advertising varies sharply from magazine class to magazine class, cyclical differences across classes are likely to be sharp. Comparisons of the cyclical characteristics of the eight magazine advertising revenue series with those of two reference series -- GNP and the Index of Industrial Production -- could provide new insights into the association between cycles in advertising and general economic activity.

The identification of growth-cycles requires careful measurement of the secular trend and growth rate of the eight magazine advertising series and two reference series. In each quarter, the position of the trend line and the level of seasonally adjusted advertising revenue determine the level as well as the direction and magnitude of change of the growth-cycle measures (called "cyclical indexes"). Moreover, calculations of the secular growth rates of the eight magazine classes provide a basis for comparing the attributes of magazine classes that experienced different rates of advertising revenue growth. In addition, these comparisons reveal the broad outlines of the determinants of cycles in magazine advertising. Comparisons of the timing, duration, amplitude, pattern, and diffusion of magazine advertising cycles with the same measures of GNP cycles shed light on the relationship between fluctuations in advertising volume and in the economy in general. These comparisons are presented in Chapter 3.

The relationship between magazine advertising revenue cycles and GNP cycles reflects a number of behavioral processes, including (1) advertisers' propensity to determine future advertising expenditures on the basis of past sales; (2) the inability of advertisers to fully anticipate turning points in their sales cycles, leading them to maintain increases or decreases in advertising outlays past their turning points; and (3) the fixed, or semi-fixed, character of most advertising budgets and space insertions. Advertising policies vary considerably among firms and, from time to time, within a firm, depending on the type of product, market conditions, the company's financial condition, profit stability, and other relevant economic

factors. Sometimes ad-budget decisions are based upon fairly simple rules-of-thumb; at other times, combinations of factors contribute to the budget decision.

The processes by which ad-budget levels are set may be summarized by four distinct budget approaches: (1) competitive parity; (2) all-you-can-afford; (3) task-and-objective; and (4) percentage-of-sales. For a given product, the cyclical characteristics of advertising volume fluctuation depend on the ad-budget approach used in its promotional campaign. For example, advertising budgets set strictly on a percentage-of-sales basis are likely to be more susceptible to business fluctuations than budgets set under task methods which contain long-term objectives. The impact of fluctuations in general business conditions on advertising expenditure levels set under each of the four budget approaches will be discussed in Chapter 4.

Economic theorists have made few attempts to model the process by which advertising expenditure levels set as a percentage of sales adjust to changing business conditions. Rasmussen and Dorfman and Steiner pioneered in the development of theoretical analyses of advertising-sales relationships. Nerlove and Arrow, Gould, Grabowski, and Schmalensee generalized these early contributions to include dynamic, monopolistic, and oligopolistic considerations. The applications of theory have led to the conclusion that total advertising levels adjust gradually to changes in sales and with a short lag --

i.e., in the proximate sense, the direction of causality runs from changes in sales to changes in advertising volume, and not the other way around.

In Chapter 4, results from estimations of a partial-adjustment model will be presented which involves the advertising-to-sales ratio and the timing of the adjustment process. This will be done for products advertised in the magazine medium in general and in each magazine class. To the extent that the product mix of advertising differs across magazine classes, these estimates could be expected to vary from one magazine class to another. Each estimate will be compared with similar estimates calculated by Schmalensee as a separate test of the stability, over an extended time period, of the magazine advertising-to-sales ratio and its adjustment process.

The magazine advertising-to-sales ratio is also an outgrowth of a number of non-economic or non-quantitative attributes of the advertised consumer goods on the one hand, and these attributes of magazines and magazine advertisements on the other. Economic literature provides a number of hypotheses that purport to explain how qualitative attributes of advertising media influence the product mix of their advertising and, ultimately, the cyclical characteristics of their revenue streams. In Chapter 5, the results of several of these hypotheses are presented and evaluated using our original magazine advertising data. These results provide the background for additional estimations of the partial adjustment model using alternative specifications of the sales variable.

Summary of Findings

The basic empirical contribution of the present study is a seasonally adjusted quarterly advertising revenue series for the magazine medium as a whole and for eight magazine classes each distinguished by its editorial content. These data were used to test several hypotheses about the cyclical behavior of advertising during the 1965/1 - 1976/4 period. Although magazine advertising -- in each magazine class and in the medium as a whole -- experienced only three cyclical peaks and three cyclical troughs (i.e., two-and-a-half full cycles) during the study period, several broad tendencies were revealed concerning the timing duration, amplitude, pattern, and diffusion of magazine advertising cycles.

Each magazine class was found to have its own unique secular growth trend and cyclical pattern, both of which were found to reflect the particular qualitative and quantitative attributes of the component magazines. Magazine classes with the highest average revenue growth rates (automotive, sports, and men's magazines) generally (1) had a narrow editorial focus aimed at men and/or leisure time activities outside of the home; (2) had relatively concentrated product mixes of advertising dominated by the automotive, automotive accessories and parts product category; and (3) earned a relatively small share of total magazine medium advertising revenue. On the other hand, magazine classes with the lowest long-run average growth rates (women's, home, and general editorial) were characterized by (1) their broad editorial

foci aimed primarily at women and/or home and family activities; (2) less concentrated product mixes of advertising; and (3) having earned the predominant share of total magazine advertising revenue.

All comparisons of magazine advertising revenue series with GNP and the Index of Industrial Production (IIP) suggest that magazine advertising tends to fluctuate procyclically. With the exception of the 1967/2 - 1969/1 GNP expansion, magazine advertising cyclical patterns conformed strongly and positively to the two reference series. Timing analysis indicated that turning points in magazine advertising cycles, on the average, lagged turning points in GNP cycles by 0.6 quarters at peaks, 1.8 quarters at troughs, and 1.2 quarters overall. The tendency for magazine advertising cycles to lag at GNP cyclical turns was confirmed by the consistent tendency of turning points in the diffusion index to lag at peaks and troughs of GNP cycles. On the average, magazine classes with the highest long-run advertising growth rates also tended to lag by the largest number of quarters at GNP cycle turning points.

Since, on the average, advertising revenue cycle turning points tend to lag at GNP troughs and to lag less at GNP peaks, the average contraction in magazine advertising cycles tends to be longer, and the average expansion shorter, than corresponding phases of the reference cycles. The duration of each magazine advertising cyclical contraction, on the average, exceeded that of all three corresponding IIP cyclical contractions and two out of the three GNP cyclical contractions; and the duration of each magazine advertising cyclical expansion, on the

average, was shorter than all corresponding cyclical expansions in both the GNP and the IIP.

The average full-cycle amplitude of magazine advertising cycles varied considerably across the eight magazine classes. Moreover, on the average, the amplitude of magazine advertising cycles increased over each succeeding phase and consistently exceeded the amplitude of the reference cycles. On a per-quarter basis as well, there was a general tendency for increasingly sharp cyclical swings in both the magazine advertising and the reference series.

A strong statistical relationship appears to exist between magazine advertising expenditures and a number of broad economic aggregates. To supplement cyclical turning point and amplitude comparisons, statistical correlation tests were made for variation in magazine advertising and GNP, the IIP, corporate profits, department store sales, and personal consumption expenditures on consumer goods. Based upon the results of these tests, we concluded that: (1) there has been a close, stable relationship between advertising and business conditions indicators during the postwar period; (2) magazine advertising expenditures are highly correlated with broad measures of business conditions; and (3) fluctuations in magazine advertising expenditures appear to lag fluctuations in most business conditions indicators by up to 1 quarter. The final result suggests that advertisers do not instantaneously adjust their expenditures to changes in marketplace conditions.

To capture the dynamic adjustment process of magazine advertising

expenditures to changes in sales, a partial-adjustment model successfully employed in other studies was used. Estimates derived from application of this model indicated that the adjustment by advertising to changes in sales is a distributed lag process. Over the 1965/2 - 1976/4 period, the estimated mean adjustment lag was 1.7 quarters; the estimated target ratio of magazine advertising-to-sales was 0.8 percent and showed no tendency to systematically increase or decrease over the whole period or over the business cycle.

The partial-adjustment model was used to measure the mean target ratio and timing of the adjustment process for goods advertised in each magazine class. Results of these estimations revealed wide variation across classes in the mean advertising-to-sales ratio and in the characteristics of the adjustment process. These variations were interpreted as reflecting broad differences in the distribution of products in their respective advertising bases.

The availability of magazine advertising data for 40 product categories enabled the comparison of magazine advertising-to-sales ratios of products differentiated by various qualitative attributes. These data were used to test several hypotheses about the impact of those attributes on advertising expenditure levels and fluctuations. The first series of tests focused on differences in the mean advertising-to-sales ratios of "search goods" (whose advertisements transmit direct, factual information) and "experience goods" (the ads for which seek only to relate brand to function). The results of those tests indicated

that the magazine advertising-to-sales ratios of search goods were higher, on the average, than the advertising-to-sales ratios for experience goods. Moreover, the ratios were higher than the average advertising-to-sales ratio for search goods advertised in all media combined.

We next undertook a comprehensive examination of the relative levels of advertising-to-sales ratios of consumer durable and consumer non-durable goods. The evidence suggested that, on the average, the advertising-to-sales ratio for durable goods is higher in magazines than in all media combined. Additional tests based on annual data revealed that the direction and magnitude of fluctuations in magazine advertising and consumer durable goods sales were in close conformity. On the other hand, for consumer non-durable goods, magazine advertising was not in close conformity with sales over their respective cycles. These findings were confirmed by graphical and statistical analyses that employed seasonally adjusted quarterly data.

Using the partial-adjustment model, we estimated the mean advertising-to-sales ratio and characteristics of the adjustment process of magazine advertising to changes in sales of consumer durable and non-durable goods sales. Results of those estimations indicated that fluctuations in magazine advertising are explained more strongly by fluctuations in consumer durable goods sales than by fluctuations in non-durable goods sales or sales of all consumer goods. The properties of the adjustment process were again found to differ from magazine class to magazine class, reflecting broad differences in the proportion of durable and non-durable goods in their advertising bases.

CHAPTER II

DEVELOPING A DATA BASE

Selecting a Data Base

The empirical examination of trends and fluctuations in advertising activity have become increasingly sophisticated in the postwar period. A substantial body of scholarly literature has focused intensively on the broad economic interactions between advertising and sales, profits, industrial concentration, and macroeconomic stability. The intensified interest in the economics of advertising coincides with the substantial growth of broadcast, print, and outdoor media as powerful marketing tools. Expansion of mathematical and computer capabilities and management information systems has opened new demands for better and more up-to-date information about advertising and its effects. To accommodate these demands, more accurate advertising data collection, storage, handling, and analysis have been required.

Advertising Data from Government Sources

Empirical studies of the economics of advertising generally have been hampered by a lack of detailed government data on advertising in individual media and for narrowly defined products. Most studies have had to rely on government data found in the Internal Revenue Service (IRS) Sourcebook of Statistics of Income that show total advertising

expenditures reported by corporations. These data are useful for investigations that require an extensive data base at the 4-digit SIC-code minor industry level of aggregation. However, six major characteristics of the IRS data preclude their use in some types of economic studies:

(1) The release date of IRS data lags by several years because of delays in data processing. Although the IRS publishes advertising data starting with 1945, data for a current year are generally delayed up to three years.

(2) Since the IRS data include only reported advertising expenditures by corporations, they tend to understate total business expenditures for advertising by the amounts spent by unincorporated businesses.[1]

(3) Because the IRS's data are constructed from consolidated tax returns, large errors may result from the computation of industry aggregates. In some years, large corporations may benefit by filing consolidated tax returns that include all subsidiaries; in other years, tax liabilities may be reduced if the subsidiaries file separate tax returns.

(4) Each corporation designates its own industry classification, making it possible for a firm that produces an unchanged product mix to switch from one industry classification to another.

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[1] Shortcomings of IRS data are discussed in Charles Y. Yang, "Input-Output Concept is Basis for Improved Estimates of Advertising Expenditures in the U.S.," Advertising Age, 29 March 1965, pp. 82-85. Also see Jules Backman, Advertising and Competition (New York: New York University Press, 1967), pp. 166-177.

(5) The IRS periodically changes its classification systems and allowable accounting practices.

(6) Corporations are not required to report their advertising expenditures on either a monthly or quarterly basis. Most large corporations file their tax reports on a calendar-year basis.

Because of these shortcomings in the IRS data, Henry Grabowski examined a number of alternative data sources for his study of the effects of advertising on the interindustry distribution of demand.[2] First, traditional firm income statement data as reported in Securities and Exchange Commission Form 10K and in Moody's were considered. Grabowski found that a majority of firms do not explicitly report advertising expenditures but, instead, aggregate them into more general administrative and selling cost categories. In addition, where advertising data were reported, they invariably were on a total firm basis, rather than by industry or product categories. This leads to a compositional error of the same kind that underlies the IRS data.

Advertising Data from the Publishers' Information Bureau (PIB)

In the last 30 years, the private sector has made great strides in meeting the growing needs for advertising data. Several private data gathering and disseminating services have developed to monitor advertising volume and distribution in the various media. Syndicated services gained

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[2] Henry G. Grabowski, "The Effects of Advertising on the Interindustry Distribution of Demand," NBER Explorations in Economic Research 3 (Winter 1976): 71.

widespread acceptance in the 1960's when computer technology greatly expanded their capabilities to collect, process, and analyze data. Using different techniques, syndicated services offer data on a vast number of brands, products, industries, and media. These data permit the advertising industry to monitor individual advertisers, and to monitor its own performance, the state of competition, composition of demand, and growth patterns on annual, quarterly, and monthly bases.

In the absence of detailed government data on advertising in individual magazines, the Publishers' Information Bureau publishes reliable information about the magazine industry for use by subscribers to its syndicated service. The PIB serves as the unofficial magazine industry library and recordkeeper and its data are widely recognized as the magazine industry's most reliable compilations of advertising volume figures. These roles were earned in part through default and in part as an outgrowth of the PIB's technical competence and its developing reputation for unbiased data collection and presentation.

The PIB has published magazine revenue data since 1929, and, since 1945, PIB has used Leading National Advertisers, Inc. (LNA) to compile the data. In its Magazine Class Totals, the PIB presents figures for total paid advertising revenue and pages on a monthly and cumulative basis, together with comparative previous year totals and percentage of difference. Total paid advertising revenue consists of three components: (1) full-run; (2) less than full-run; and (3) affiliated advertising. Full-run, or national advertising, represents advertising carried in the entire circulation. Included in this arrangement is split-run, or copy change

advertising, in which an advertiser uses total circulation, splitting on either a numerical or geographical basis. Less than full-run circulation, or partial circulation, has four components: (a) regional and test market advertising; (b) demographic editions; (c) national advertising in which an advertiser purchases only a percentage of total circulation, but on a national circulation basis; and (4) exclusive newsstand or exclusive subscription circulation. Affiliated advertising represents advertising for a product, service, or publication of any corporate division which is in the same parent organization as the PIB publication.

The advertising revenue total for each magazine is derived from the summation of the advertising records contained in the product sections of the PIB's report. Data in the product sections are broken down into seven major classifications: (1) foods and beverages; (2) transportation and agriculture; (3) drugs and toiletries; (4) home and building; (5) apparel; (6) business and finance; and (7) general retail. These major classifications are further subdivided into about 325 more narrowly defined product classifications that correspond fairly closely with personal consumption expenditure classifications in the National Income and Product Accounts for the U.S. Department of Commerce.

The PIB publishes advertising revenue figures by product, brand, and company on a monthly basis for each magazine it audits. Individual magazines are not obliged to provide LNA or PIB with detailed data on advertising in particular issues and editions. In their place, they voluntarily provide

LNA with a master dummy copy of the immediately forthcoming issue or edition of the magazine from which LNA audits and analyzes the composition of advertising. This procedure assures uniform standards and curtails opportunities for inclusion of false or misleading information into the published data. LNA charges fees to each publisher for auditing its magazine and for including the audited data in the magazine reports for the PIB. Publishers benefit from the service by obtaining inclusion and visibility in the PIB data tabulations, widely used as a magazine industry reference book. Visibility in the PIB's data tabulations allows magazines' advertising profile to be compared with competitive magazines vying for the advertising dollar. For advertisers, the PIB's tabulations reveal the advertising policies of competing companies and brands.

Despite these apparent benefits of inclusion in the PIB's data tabulations, only a small proportion of consumer magazines -- most of which have a relatively large circulation -- choose to pay LNA to audit their advertising base. According to the Magazine Publishers' Association, at least 6,000 different magazine and periodical titles were published each quarter between 1965/1 and 1976/4.[3] The PIB's coverage, however, spread over only 120 different titles (an average of 93 titles per quarter) during that period, or about 2 percent of all magazines and periodical titles. Of these titles, only 63 were included in the LNA audit in every quarter between 1965/1 and 1976/4; the remaining 57 titles

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[3] The Magazine Publishers' Association (MPA) is the trade association of the magazine publishing industry. The MPA conducts a limited amount of research into magazine industry problems and performance and disseminates formal and informal information to its members.

either ceased publication, voluntarily dropped out of the audit, published for the first time after 1965/1, or merged with other publications.

In spite of the small absolute number of magazines audited, almost all of the major consumer magazines that contain national advertising have gained inclusion in the PIB's totals. As Table 1 shows, the PIB's data accounted for about 90 percent of the advertising expenditures reported in the more comprehensive summary series developed by McCann-Erickson, Inc. and published periodically in Advertising Age and in the Survey of Current Business.[4] The major difference between the two data series is McCann-Erickson's broader coverage of farm, airline, and specialized magazines aimed at narrowly defined audiences.

The PIB's data have been criticized not only for their incompleteness but for the procedure used to calculate each magazine's advertising revenue. Advertising revenue figures are based on rate cards published periodically by each magazine publisher. The current one-time gross rate for a black-and-white or four-color page (whichever applies) is multiplied by the number of advertising pages in the issue to determine the magazine's advertising revenue. Critics of this simple multiplicative procedure argue that it biases reported revenue figures upward (i.e., actual billing charges are somewhat lower than charges reported by the

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[4] Advertising Age publishes data developed by Robert Coen of McCann-Erickson, Inc. These data are published in varying degrees of detail throughout the year. Data in Table 1 were taken from Robert J. Coen, "Estimated Annual U.S. Advertising Expenditures: 1935-1976," Advertising Age, 18 July 1977, pp. 30-31. McCann-Erickson's data are analyzed in David M. Blank, "Cyclical Behavior of National Advertising," Journal of Business 35 (January 1962): 17-18.

TABLE 1

COMPARING PIB AND McCANN-ERICKSON MAGAZINE
ADVERTISING REVENUE COVERAGE
(in millions of dollars)

Year	PIB	McCann-Erickson	PIB as a Percent of McCann-Erickson
1965	$1,046	$1,161	90.1%
1966	1,134	1,254	90.4
1967	1,126	1,245	90.4
1968	1,157	1,283	90.2
1969	1,215	1,344	90.4
1970	1,164	1,292	90.1
1971	1,243	1,370	90.7
1972	1,309	1,440	90.9
1973	1,323	1,448	91.4
1974	1,371	1,504	91.1
1975	1,335	1,465	91.1
1976	1,625	1,789	90.8

SOURCES: Advertising Age; Publishers' Information Bureau.

PIB) by failing to account for discounts offered to advertisers. Furthermore, revenues based on rate cards vary in their overstatement, depending on the different discount structures offered by magazine publishers and the special price arrangements negotiated by particular advertisers.

To understand the rationale for the PIB's decision to base revenue data on undiscounted published rate cards, we must first understand the process by which magazine space is ordered. The purchase of magazine space usually entails two steps: (1) a space order contract followed by (2) an insertion order. A space contract is an agreement on the rates to be paid for whatever space is used in the coming year. It is merely an agreement and is not a commitment for any amount of space (unless it is noncancellable). Whenever the advertiser is ready to order space, he needs an insertion order for the space desired. An insertion order for a black-and-white advertisement in a monthly magazine must be placed about 30 days before its publication date; for a four-color advertisement, about 50 days are required.

A publisher might provide a frequency discount to reward companies that advertise more often during a 12 month period. Thus, an advertiser that purchases space 13 times in a particular weekly might get a 5 percent discount; 26 times, a 10 percent discount; 39 times, a 12 percent discount; and 52 times, a 16 percent discount. As an alternative to a frequency discount based on the total number of times space is used, a publisher might allow a discount based on the total number of pages placed in a

year, or a bulk discount. Thus, 13 pages might earn a 5 percent discount, 26 pages a 7 percent discount; and so on.

An advertiser's rate is finally computed at the end of the year, based upon what he actually ran, regardless of the rate at which he was billed during the year. Otto Kleppner cites the following example:

> Suppose the advertiser starts off believing he will run twelve times during the year ... and enters a space contract accordingly. ... However, he decides to skip the last two insertions that he had previously planned, and runs only ten times. Therefore, he did not earn the higher frequency rate. The rate he earned was the next best rate. The difference between what's paid (e.g., $8,500) and what he should have paid (e.g., $9,500) is the short rate ($1,000). If an advertiser earns a better rate than the one to which he originally agreed, per the space contract he signed, he gets a cash rebate.[5]

Precisely because discounts are so fluid, the PIB has elected to compute advertising revenue volume without regard to discounts. To do otherwise would force nearly continuous adjustment and revision of advertising volume figures as the rates paid by each advertiser adjust with each threshold in the discount structure of each magazine. Development of a current, up-to-date, reliable time series for each magazine and for each advertiser would simply be intractable. In order to turn out such a series, the PIB was forced to use one-time gross rates even at the risk of biasing reported figures upward. Despite this bias, however, the PIB's data compilations may be used in cross-sectional and time-series studies that require reliable and consistent data on advertising in individual magazines.

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[5] Otto Kleppner, Advertising Procedure (Englewood Cliffs, N.J.: Prentice-Hall, 1973), p. 228.

Grouping Magazines into Differentiated Classes

In general, economists have not studied the economics of advertising in individual media. The paucity of reliable and accessible disaggregated advertising data, by medium, for narrowly defined products has forced economists to use aggregative IRS data presented in the Sourcebook of Statistics of Income. In the context of the government's aggregate (total) advertising expenditures figures, every dollar spent on advertising is equally weighted, regardless of the medium in which it was spent. Measured in this way, the aggregate of total advertising expenditures may be viewed as the summation of expenditures by advertisers to various media for a homogeneous productive input.

From the standpoint of an advertiser, however, the various media do not provide a homogeneous service. Advertisements in the various media differ in price, provide information about different product attributes, and differ in their sales-inducement efficiency. Thus, in many ways an advertiser's choice of media mix is outside his control, depending as it does on characteristics of the advertised product, buyer population, and the technology of the media (factors that are also beyond the media's control).[6] The media mix differences among consumer goods advertisers are obvious even to the most casual observer.

An advertiser must allocate his advertising budget not only among competing media, but also among competing advertising outlets, or vehicles,

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[6] This point is discussed in greater detail in Michael J. Porter, "Interbrand Choice, Media Mix and Market Performance," American Economic Association Proceedings, May 1976, p. 400.

within each medium. According to Leo Bogart, "variations among vehicles within one medium are far, far greater than the differences between media."[7] Tremendous regional, seasonal, and other kinds of variation occur in the audiences and advertisers of many vehicles within a medium which are not always reflected in their rate structures. These variations play a vital role in deciding whether a particular vehicle is right for a particular product in terms of the marketing characteristics of the people it reaches or its psychological suitability as a form of persuasion. (Such considerations, in part, motivated the attempt of the present study to examine the intra-medium fluctuations in magazine advertising revenue.)

In an unpublished paper, Glen Beeson and Reuben E. Slesinger suggest that the market definitions for magazines include only relevant sales of advertising space by magazines whose readership and audience exposure are reasonable substitutes in the same price/quality range.[8] Although potential sellers influence the supply curves of advertising space in individual magazines, and thus the market supply curve, the latter is comprised only of supply curves of magazines already in the market at a particular moment.

Analysis of market demand, on the other hand, helps us to indicate the selection of sellers of advertising space (i.e., the individual magazines) for inclusion in the market. Beeson and Slesinger state the

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[7] Leo Bogart, Strategy in Advertising (New York: Harcourt, Brace & World, 1967), p. 262.

[8] Glen Beeson and Reuben E. Slesinger, "Suggested Guidelines for Defining the Relevant Market in Antitrust Administration," unpublished mimeo, p. 9.

following:

> The suggested guidelines offer a product dimension or line of commerce definition of the relevant market as products/services which are reasonable substitutes in the same price/quality range for a given use. Since products/services compete for a given use, the demand schedule of buyers is based on the need of buyers to satisfy the requirements of that use. When buyers view products as ready and reasonable substitutes to fulfill the requirements of that use, these products belong in the same market. ... Thus, suggested guidelines offer a concept of the market similar to the commonly accepted market of economic literature: a group of sellers offering a group of products which are close substitutes for each other to a common group of buyers.[9]

Within the context of demand for advertising space, it is also plain that the advertising strategy and tactics of competitors influence or even dominate the advertising plans of particular companies or brands. In a careful empirical study, Darral G. Clarke showed that "advertising influences not only the sales of the advertised brand but also the sales of other brands."[10] Moreover, even if the volume of advertising messages purchased by a firm is independent of the number of messages purchased by other firms, the influence or domination of competitors can directly determine the firm's level of spending and media choice, or it can influence its choice of vehicles within a medium. In addition, Brown, et. al. show that information on competitors' advertising expenditures may be used by an individual company "to determine the seasonal patterns of competitive advertising. ... It brings into bold perspective the question of whether, and, if so, to what extent one's own firm should follow seasonal expenditure

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[9] Ibid., p. 13.

[10] Darral G. Clarke, "Sales-Advertising Cross-Elasticities and Advertising Competition," Journal of Marketing Research 10 (August 1973): 260.

patterns."[11]

For purposes of the present study, the availability of the PIB's data enabled the reclassification of magazines into eight classes, each comprised of magazines that sell advertising space to a common set of advertisers. The magazines in each class are close substitutes for each other in terms of the information they convey in advertisements and in their efficiency in placing messages before potential audiences. Two different considerations suggested themselves as criteria for determining the composition of the magazine classes: (1) similarity of readership; and (2) similarity of editorial content. These alternative classification criteria could be expected to produce similar, though somewhat different, classifications of magazines.

Similarity of Readership as the Criterion for Grouping Magazines

The desire of manufacturers to carefully match the characteristics of buyers in their product markets with the audiences of magazine advertising messages has led to the development of syndicated research and data services. Once product manufacturers secure complete profiles of the markets they wish to reach, they turn to advertising vehicles' audience profiles to direct their advertising dollars toward the best prospects for their products. The syndicated services offer data on a variety of media, vehicles, and products, usually based on a single set of interviews. These inter-media and intra-media services provide what to a layman could easily appear to be essentially the same information, although the services use substantially

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[11] Lyndon O. Brown et al., Advertising Media: Creative Planning in Media Selection (New York: Ronald Press, 1957), pp. 290-291.

different methods.

Many syndicated services have supplemented traditional audience measurements (e.g., circulation) with a broader concept of "readership" in order to more fully capture the extent to which magazine copy is received and/or perceived. However, beyond the statistics on circulation, there is no way to more directly audit the readers of a magazine. Thus, syndicated services use personal interviews to collect information on the audiences and potential audiences of magazines. Given the lack of detailed audited audience measures, the syndicated services provide useful adjuncts to circulation profiles required by advertisers choosing vehicles to carry their messages.

Unfortunately, the data provided by the syndicated services are far too imperfect to assume a dominant role in the media planning process. According to William S. Blair, "what the syndicated services offer to their clients is an inaccurate measure of a meaningless variable performed with considerable frequency at vast expense....I think it is fair to say that the syndicated services and the numbers they have produced have not been of great value to the magazine industry as a whole."[12] Many advertising industry professionals add the following criticisms of the syndicated services: (1) The syndicated services have not had much effect on the amount of advertising going into magazines as a medium. They have neither helped nor have they hindered in the competitive struggle with television and newspapers. (2) They have not substantially affected the fortunes of any of the major magazines.

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[12] William S. Blair, "The Case Against Magazine Audience Measures," Journal of Advertising Research 14 (April 1974): 8-10.

(3) They probably have had minor positive effects for small magazines by the mere fact of inclusion. and (4) Their cross-section samples are exceedingly inefficient ways of finding out what is happening in small segments of the total population.[13] Furthermore, Blair argues the following:

> Syndicated services set out to measure the total audience of a magazine -- that is to say, the number of people who are ever exposed to a particular issue. And exposure means looking inside the cover....Now the first thing to understand is that this is an enormously difficult situation to measure. This difficulty arises precisely because even the most casual reader is included. No matter how ingenious the technique and no matter how patient the interviewer, we must rely on the respondent's memory. We are asking the respondent to remember a transitory, non-salient event that may have taken place many weeks ago...for a great many magazines....The chances are good that the answers will be inaccurate.[14]

Even when two or more syndicated services use what appear to be identical research methods, their findings lack comparability because of their differing field forces, sampling procedures, and interview instructions. Needless to say, if they use different questioning techniques and timing, the variations in their results are apt to be even larger. Unexplained differences in media audiences often appear from one survey period to the next, even in the reports of the same research organization. In a widely publicized article in Advertising Age in 1965, estimates of adult audiences of a number of magazines were presented based on personal-interview-type

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[13] These criticisms were cited by a number of advertising agency account executives and media analysts interviewed by the present author during the Summer and Autumn of 1978.

[14] Blair, "Against Magazine Audience Measures," p.9.

[15] This problem is discussed in Lawrence Friedman, "Constructing a Media Simulation Model," Journal of Advertising Research 10 (August 1970): 33-34.

studies conducted by three different organizations.[16] For four publications, all three estimates were quite close; for the rest of the magazines (seven magazines), however, the highest estimates were from almost 20 percent to more than 40 percent greater than the lowest estimates. And there were comparable differences for several magazines measured by only two of the organizations. As Leo Bogart stated, "These variations can look frightening to anyone who assumes that the estimates provided by the surveys represent reality. When we recognize not only that these estimates are approximations subject to human error, but also that at best they mirror phenomena which are constantly changing, we must be far less willing to take the term 'audience' at its literal meaning."[17]

Similarity of Editorial Content as the Criterion for Grouping Magazines

Because syndicated services rely upon interviews that do not provide unequivocal audience composition reports, alternative criteria must be found for relating product market and advertising market activities. For an advertiser, the media are simply means of communicating with the prospective purchasers of their product. The media's value to the advertiser does not depend directly on the total number of people exposed to the message, but rather on the total number of good prospects among them for the product advertised. The media themselves determine in large measure the size and the character of the audience exposed to advertising; that is to say, how

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16 The three organizations that participated in the study were Politz, Inc.; W. R. Simmons, Inc.; and SRDS-Data, Inc. See "Studies Yield Contrasting Data for Magazines," Advertising Age, 16 August 1965, pp. 131-133.

17 Bogart, Strategy in Advertising, p. 229.

many and what type of people have an opportunity to see the advertising and, to a considerable extent, how often they are exposed to it. The media provide an environment that is favorable, unfavorable, or neutral for advertising copy and the products featured; in interaction with copy and audience, they determine the overall impact of an advertising campaign -- the information communicated, the attitudes formed or changed, or the action taken as a result of advertising.[18]

Within the magazine medium, as was shown earlier, there are also major differences in the vehicles carrying advertisers' messages. Some of these differences include: (1) total number of pages per issue; (2) price paid per copy; (3) frequency of publication; (4) editorial quality -- the ratio of editorial pages to total pages; (5) amount and composition of advertising and the space devoted to it; (6) availability of geographic and demographic editions; and (7) editorial appeal or content -- choice of subject matter for articles. These differences influence the size and make up of the audience of the various magazines. By so doing, they also determine the composition and distribution of advertising among the various magazines.

Even though individual magazines are not fungible from the advertisers' standpoint, different magazines could be fairly close substitutes for the purpose of conveying messages to target audiences of prospective buyers. Ideally, audience profiles like those sought by the syndicated services could be used to distinguish magazines whose audience characteristics are

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[18] Harry Deane Wolfe et al., Evaluating Media, Studies in Business Policy, no. 121 (New York: The Conference Board, 1966), pp. 36-37.

most similar. For purposes of the present study, however, such data were both unavailable and unacceptable (for the reasons explained earlier). Thus, we were forced to use an alternative means of organizing or grouping magazines with relatively similar audience characteristics into defined markets composed of competitive rivals.

The investigative approach chosen for this study categorizes magazines into eight classes with similar editorial content.[19] These classes are: (1) automotive; (2) business; (3) general editorial; (4) home; (5) men's; (6) news; (7) sports; and (8) women's. The editorial content of the magazines that comprise each class is sufficiently narrow and well-defined to attract a unique mix of advertisers whose seasonal and cyclical patterns are distinct. The classes are also broad enough to allow for placement of almost all magazines covered by the PIB's data.[20] The magazines that comprise a particular class are assumed to be competitive rivals, with roughly similar audience characteristics and thus roughly the same product advertising mix. Classification of magazines by editorial content provides two benefits over more aggregative approaches to media studies: (1) it allows for isolation of magazines whose revenue fluctuations should be most alike over the business cycle; and (2) it allows for isolation of magazines whose revenue is determined by roughly the same set of economic conditions. Such grouping of magazines into fairly homogeneous classes can

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[19] This approach was suggested in 1975 by David M. Blank, Vice-President, Economics and Research, CBS Inc., while the present author was employed by CBS.

[20] Some fraternity and travel magazines covered by the PIB were not used in this study because their distinctive editorial approaches precluded their placement in any of the eight magazine classes developed for this study.

lead to sharper statistical analyses and to an increase in the explanation of the variance in advertising revenue of individual classes realtive to that for the universe of magazines.[21]

The names of the classes designed for this study, and the magazine titles included in them, match corresponding names and titles used by Standard Rate and Data Service, Inc. (SRDS) in their Consumer Magazine and Farm Publication Rates and Data, a prominent magazine industry compendium of circulation, cost, and other data for hundreds of magazines.[22] SRDS categorizes magazines into 51 classes according to their editorial content. These classes were originally designed by SRDS to form a uniform listing format. Designation by SRDS to one of the 51 classes is predicated on the publishers' own editorial statements, which describe their magazines' editorial approach. For purposes of this study, we maintained SRDS's designations to classes, but we merged these classes into 8 broader ones. By merging classes, we reduced the possibility of incorrectly assigning a magazine to a narrowly defined market area and we reduced the scope of the study to more manageable proportions. Where assignments to particular classes required further confirmation, the editorial descriptions found in The Standard Periodical Directory published by Oxbridge Communications, Inc. provided supplementary details necessary to verify those assignments.[23]

The magazines that comprise a particular class do more than simply carry

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[21] The statistical implications of grouping data are discussed in Edwin J. Elton and Martin J. Gruber, "Improved Forecasting Through the Design of Homogeneous Groups," Journal of Business 44 (October 1971): 432. Also see Frank M. Bass, "Profit and the A/S Ratio," Journal of Advertising Research 14 (December 1974): 9.

[22] Published monthly.

[23] This study uses editorial descriptions found in the 5th edition, 1977.

messages; they supply an environment that may help or hinder the effectiveness of the advertiser's message or affect the probability that it will be seen. It has long been understood that a product can borrow prestige from the magazine in which it advertises, and much advertising is based on this understanding. Certain types of editorial focus (defined as the percentage of space devoted to subjects pertaining to advertisers' products) can attract into the audience people who consult the publication for expert advice about a product before shopping for it. Similarly, other magazines that highlight such subjects may provide a background that fosters buying interest among readers who might otherwise have little purchase interest. Furthermore, a high level of usage of a magazine, or magazine class, by several competitive brands could establish the magazine, or magazine class, in the minds of prospective purchasers as a place to look for the latest information about the product. If this is so, advertisers might want to maintain representation in a particular magazine, or class of magazines, to avoid any pre-emptive loss among current shoppers.

One recognizes intuitively that certain magazines and magazine classes are not suitable for advertising certain types of products. A seller of religious articles, for example, would not consider including Playboy in its media schedule even if that publication had a high percentage of faithful churchgoers among its readers.[24] In addition, just as some types of television programs leave viewers more prone to distraction, so certain types of magazines require less intensive reading. Text magazines are

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[24] Advertising strategies of 25 firms are discussed in Wolfe et al., Evaluating Media, pp. 85-100.

read longer and kept around longer than picture books. Monthlies are kept around longer than weeklies. A person may approach a bridal magazine in one frame of mind and a news magazine in another. These differences can affect the response to advertising in the various magazine classes, even when the advertisements in the different magazines have the same copy.

From the standpoint of advertisers, the great diversity of magazines allows them to "fish where the fish are." Advertisers choose certain magazines to maximize the purchase or repeat-purchase probability of their brand. Recognizing that those whose tastes are best served by a given product or brand are most disposed to perception of its advertisements, ads are dispersed so that the message will be seen by those most likely to purchase or repeat-purchase the product or brand. An esoteric, high priced soup, for example, gets advertised in The New Yorker, while Campbell's soup displays its products in Good Housekeeping.[25] And, if the product is sold to a small proportion of households, it may be less efficient to utilize magazines that reach a broad range of households than to use more specialized magazines that cost more per message but are subject to less audience leakage. In light of these considerations, the product distribution of advertising could be expected to differ from magazine class to magazine class.

Table 2 presents the percentage distribution of advertising, by product, in each of the eight magazine classes in 1976. The data in the table clearly show differences in the relative proportion of advertising in each class

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[25] This example was presented by Phillip Nelson in his excellent economic analysis of media utility to advertisers and their audiences. See Phillip Nelson, "Advertising as Information," Journal of Political Economy 82 (July/August 1974): 734.

TABLE 2

PERCENT DISTRIBUTION OF ADVERTISING REVENUES IN EIGHT MAGAZINE CLASSES, BY PRODUCT CLASSIFICATION (1976)

Product Classifications	Automotive	Business	General Editorial	Home	Men's	News	Sports	Women's
Apparel, Footwear, and Accessories	0.7%	0.3%	1.4%	0.9%	5.9%	2.3%	7.1%	11.4%
Consumer Services	10.0	27.2	5.9	2.9	1.6	6.0	4.9	2.1
Office Equipment, Stationery, and Writing Supplies	0.0	11.4	1.1	0.1	0.5	3.2	0.3	0.2
Publishing and Media	3.9	2.9	11.5	2.7	4.2	4.5	2.9	2.6
Industrial Materials	0.1	18.3	1.1	1.0	0.0	3.6	0.1	0.7
Toiletries and Toilet Goods	0.7	0.1	6.1	2.0	5.8	1.6	1.7	21.6
Smoking Materials	11.0	1.5	8.2	6.0	21.1	16.0	8.3	7.7
Entertainment and Amustment	1.4	1.1	3.8	0.9	4.1	4.8	1.6	2.2
Sporting Goods and Toys	3.0	0.2	0.8	0.7	0.9	1.0	28.2	1.1
Miscellaneous General	4.1	2.8	10.8	3.0	1.6	6.3	5.6	2.9
Retail and/or Direct by Mail	6.7	0.3	8.4	11.5	6.5	0.9	4.9	6.2
Household Furnishings	0.4	0.1	1.9	13.6	0.2	0.5	0.2	4.9
Household Equipment and Supplies	2.3	0.5	2.0	7.2	0.0	0.9	0.4	3.5
Building Materials, Equipment, and Fixtures	4.8	3.5	1.1	6.6	0.1	0.0	0.6	0.6
Food and Food Products	0.0	0.1	4.9	16.0	0.5	0.6	0.3	17.4
Beer, Wine, and Liquor	2.2	4.1	4.4	5.0	21.3	13.2	6.4	2.2
Automotive, Automotive Accessories and Equipment	38.8	7.5	7.1	3.2	8.6	15.6	12.2	0.5
Travel, Hotels, and Resorts	0.1	3.8	3.6	7.5	2.5	5.8	8.9	1.3
Other	9.8	14.3	15.9	9.2	14.6	13.2	5.4	10.9
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

SOURCE: Publishers' Information Bureau.

accounted for by the 18 product classifications listed. The relative concentration of advertising among the most important products to the advertising base of the respective magazine classes also varies distinctively. In the automotive magazine class, the four products that comprised the largest share of the advertising base accounted for 66.5 percent of total advertising volume. For five other magazine classes, more than half of the advertising volume was concentrated in their four leading product classifications: business (64.4 percent); women's (58.1 percent); sports (57.6 percent); men's (56.9 percent); and news (51.1 percent). Home magazines (48.6 percent) and general editorial magazines (38.9 percent) were the only magazine classes with less than half of their respective advertising concentrated in four product classifications. The key products advertised in each class reflect a close association between editorial content of the magazines and the product distribution of their respective advertising base. With the exception of women's magazines -- which appeal to a broad and diverse audience of women -- the concentration of advertising tended to be greater in the more specialized magazine classes than in magazine classes with more general appeal. This finding is consistent with two propositions stated earlier: (1) that advertisers of specialty and seasonal items prefer specialized media in order to avoid message leakage; and (2) that magazines with broad, general audiences could be expected to have a broad range of products in their advertising base.

The data in Table 3 show the distribution of advertising, by magazine class, for 18 product classifications. Even a cursory inspection of the

TABLE 3

PERCENT DISTRUBUTION OF MAGAZINE ADVERTISING EXPENDITURES FOR SELECTED PRODUCTS, BY MAGAZINE CLASS (1976)

Product Classifications	Automotive	Business	General Editorial	Home	Men's	News	Sports	Women's	Total
Apparel, Footwear, and Accessories	0.5%	0.5%	6.6%	1.6%	5.3%	12.9%	7.7%	65.0%	100.0%
Consumer Services	5.7	35.1	19.3	3.3	1.0	23.5	3.8	8.4	100.0
Office Equipment, Stationery, and Writing Supplies	0.0	45.9	10.7	0.5	1.0	39.2	0.6	2.1	100.0
Publishing and Media	2.8	4.7	47.2	4.1	3.3	21.8	2.8	13.3	100.0
Industrial Materials	0.1	52.0	8.3	2.7	0.0	30.8	0.2	5.9	100.0
Toiletries and Toilet Goods	0.3	0.1	16.4	2.1	3.1	5.2	1.1	71.8	100.0
Smoking Materials	4.0	1.3	17.4	4.8	8.7	39.9	4.1	20.0	100.0
Entertainment and Amusement	1.7	2.9	26.5	2.4	5.6	39.7	2.6	18.7	100.0
Sporting Goods and Toys	4.8	0.9	7.2	2.4	1.6	10.5	60.1	12.6	100.0
Miscellaneous General	2.7	4.1	41.0	4.3	1.2	28.1	5.0	13.7	100.0
Retail and/or Direct by Mail	4.7	0.4	33.5	17 3	5.1	4.0	4.6	30.4	100.0
Household Furnishings	0.4	0.4	13.8	37.1	0.3	4.2	0.4	43.5	100.0
Household Equipment and Supplies	3.8	1.8	18.7	25.2	0.0	9.8	0.9	39.7	100.0
Building Materials, Equipment, and Fixtures	10.0	16.0	12.9	29.6	0.3	20.7	1.6	9.0	100.0
Food and Food Products	0.0	0.2	14.6	18.2	0.3	2.3	0.2	64.3	100.0
Beer, Wine, and Liquor	1.2	5.0	13.6	5.9	12.9	48.5	4.6	8.4	100.0
Automotive, Automotive Accessories and Equipment	16.2	7.1	17.1	2.9	4.0	44.5	6.8	1.4	100.0
Travel, Hotels, and Resorts	0.1	7.8	19.1	14.9	2.6	36.3	10.9	8.3	100.0

SOURCE: Publishers' Information Bureau.

table reveals that the relative proportion of advertising in each magazine class varies from product classification to product classification. At least 30 percent of the advertising volume for each product classification was concentrated in a single magazine class; at least 50 percent was concentrated in two magazine classes (for five product classifications this proportion exceeded 80 percent). Viewed alternatively, no magazine class earned a substantial portion of the total magazine advertising of more than a few products. Only general editorial, news, and women's magazines (all of which have broad, general audiences) earned at least 10 percent of the total magazine advertising of 10 or more product classifications. In short, not only has the product distribution of advertising been shown to vary from magazine class to magazine class, the magazine class distribution of advertising has been shown to vary from product classification to product classification.

In light of these findings, we tested to determine whether the product distribution of advertising in each class significantly affects its overall advertising volume. By means of two-factor analysis of variance, we tested the null hypothesis that the product distribution of advertising has no effect on advertising volume across magazine classes. The results of that test led to rejection of the null hypothesis at the 5 percent level of significance. That is to say, the probability that the product distribution of advertising among magazine classes resulted from random chance was less than 5 percent. This finding supports the basic behavioral assumption of the present study, that the volume of advertising in classes of magazines distinguished by editorial content depends on the composition of products that comprise their respective advertising bases. (See Table 4.)

TABLE 4

Two-Factor Analysis of Variance: Advertising Volume by Magazine Class and Product Classification

Year	Degrees of Freedom				Mean Square Variance			F-Ratio		Critical F-Ratio (5%)	
	Total	Between Rows	Between Columns	Unexplained	Between Rows	Between Columns	Unexplained	Between Rows	Between Columns	Between Rows	Between Columns
1965	231	28	7	196	71.8	254.9	35.7	2.0*	7.1*	1.6	2.1
1971	231	28	7	196	161.1	615.5	70.0	2.3*	8.8*	1.6	2.1
1976	231	28	7	196	246.1	833.6	113.6	2.1*	7.3*	1.6	2.1

* Significance at 5 percent.

Some Concerns About the Magazine Classes Used in this Study

The decision to divide the collection of audited magazines into eight autonomous classes was made with the awareness that the procedure was not unblemished. Some pitfalls of the procedure include the following: (1) individual magazines changed editorial approach during the twelve years covered by the study; (2) individual magazines may actually fit comfortably into more than one class; (3) magazines may be incorrectly assigned to a class; (4) the composition of the classes changed over time; (5) the decision to group magazines into classes rests on the plausible, but as yet rigorously untested assumption that editorially similar magazines attract similar audiences and thus similar product advertising mixes; and (6) the cyclical and/or seasonal patterns of particular magazines may be severely affected by the fortunes of but a single, dominant magazine. As will be shown below, however, none of these problems were found sufficiently important to preclude a careful analysis of the available PIB data from which broad conclusions may be drawn about differing patterns of economic fluctuations within and across magazine classes.

While a handful of magazines have altered their editorial approach since 1965 (e.g., Sports Illustrated sought recognition as a news magazine rather than a sports magazine), these alterations did not markedly change the advertising product mix of these or similar magazines.[26] Furthermore, the carefully worded publishers' editorial statements found in SRDS's Consumer

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[26] This statement was confirmed by a statistical expert employed by Leading National Advertisers, Inc.

Magazine and Farm Publication Rates and Data and the descriptive information found in The Standard Periodical Directory provide sufficient detail for a reasoned, though admittedly subjective, determination of the magazine market class appropriate for a particular magazine. The concept of classes is far less questionable when rationalized in the context of accepted and acknowledged media planning practices that lead to advertisement insertion in magazines whose audiences are most likely to see and react to them. The varying composition of magazine classes over time is not, itself, a significant flaw in a study that purports to examine the economic fortunes of an industry in defined markets, rather than the fortunes of single firms or magazines. It is not unreasonable to assume that since demand for advertising space tends to be inelastic in the short run, new entrants (or withdrawals) generally tend to change the relative revenue shares of magazines in the class rather than extend (or reduce) the total dollar volume of the magazines in the market.[27] This is especially true where entering (or withdrawing) magazines in the market do not hold a dominant share of the revenue in their class and where synergy is not important.

A common characteristic of each of the eight magazine classes assembled for this study is the relatively high proportion of advertising revenue received by a small number of magazines. Table 5 indicates that in 1976 the largest magazine's share of advertising revenue ranged from 13.9 percent for women's magazines to 53.6 percent for men's magazines; the two largest magazines' share of advertising ranged from 27.5 percent for women's magazines

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27 Beeson and Slesinger, "Relevant Market," p. 11.

TABLE 5

PERCENT OF CLASS REVENUE EARNED BY
LEADING MAGAZINES IN SELECTED YEARS

Magazine Class	Number of Magazines	1965	1971	1972	1973	1976
Automotive	1	38.3%	22.1%	20.2%	20.2%	20.6%
	2	70 7	42.3	39.4	38.4	41.0
	3	91.7	59.3	54.0	52.2	56.3
	4	100.0	74.2	68.2	66.4	63.9
Business	1	54.7	51.2	47.8	49.8	50.8
	2	80.0	75.4	73.3	72.9	70.9
	3	87.0	89.1	87.7	86.9	85.6
	4	93.2	93.7	92.7	90.7	90.4
General Editorial	1	37.8	30.4	32.0	43.9	46.8
	2	56.1	54.9	59.5	72.3	70.8
	3	71.4	71.9	81.1	81.3	79.2
	4	79.7	84.0	87.6	87.5	85.1
Home	1	44.9	44.6	48.7	48.1	43.9
	2	60.6	62.2	62.9	59.4	58.0
	3	74.2	73.7	73.7	70.9	69.4
	4	86.5	83.4	82.0	79.6	80.6
Men's	1	43.2	60.2	58.6	53.9	53.6
	2	72.8	85.6	82.4	76.2	78.3
	3	91.0	91.3	89.7	87.4	90.0
	4	99.0	96.8	95.3	92.5	94.5
News	1	47.8	40.1	39.4	38.6	32.3
	2	69.7	66.5	65.1	64.0	59.7
	3	85.0	86.6	85.9	85.9	79.2
	4	99.8	97.9	97.8	97.5	90.2
Sports	1	22.2	19.7	19.7	18.3	16.7
	2	43.4	37.7	38.6	36.5	32.2
	3	61.7	49.2	49.7	47.6	41.2
	4	75.0	58.8	58.5	57.1	48.4
Women's	1	22.0	15.3	13.8	14.1	13.9
	2	36.1	27.3	26.9	27.1	27.5
	3	48.6	39.0	39.5	40.0	39.2
	4	58.4	49.2	51.6	50.8	50.7

SOURCE: Publisher's Information Bureau.

TABLE 6

NUMBER OF PIB-MAGAZINE TITLES, BY CLASS,
1965 - 1976

	1965	1966	1967	1968	1969	1970
Automotive	4	5	5	7	7	8
Business	7	7	7	7	7	7
General Editorial	18	18	18	18	14	15
Home	7	8	8	8	8	8
Men's	5	4	4	4	4	5
News	5	5	5	5	7	7
Sports	10	10	10	10	12	12
Women's	20	20	20	20	19	17
TOTAL	76	77	77	79	78	79

	1971	1972	1973	1974	1975	1976
Automotive	9	8	8	8	8	8
Business	7	8	8	8	8	8
General Editorial	16	15	16	16	16	15
Home	8	9	9	9	9	8
Men's	5	5	6	6	6	6
News	7	6	5	6	6	7
Sports	12	12	14	14	15	15
Women's	19	19	21	23	22	22
TOTAL	83	82	87	90	90	89

SOURCE: Publisher's Information Bureau.

to 78.3 percent for men's magazines. These relatively high proportions reflect the relatively small number of competing magazines in each class, as well as the superiority of the dominant magazines in terms of circulation and audience reach. Comparison of Tables 5 and 6 shows that concentration at the one-magazine, two-magazine, three-magazine, and four-magazine levels usually exceeds 50 percent and this figure tends to decline as the number of magazines in a class increases.

The Special Problem Created by the Demise of Life and Look

The general editorial magazine class deserves separate mention, because its history suggests that the fortunes of a single dominant magazine could affect the fortunes of other magazines in its class, and to a lesser extent, those of magazines in other classes. As a magazine class, general editorial magazines went through great changes during the 1965-1976 period. The most significant changes in this magazine class were structural (i.e., important magazines ceased publication while other magazines either expanded their revenue base or began to publish for the first time). The most notable magazines to leave the general editorial class were Look (in October, 1971) and Life (in December, 1972); important new magazines to join PIB coverage between 1965 and 1976 included Psychology Today and Smithsonian.

The demise of Look and Life were significant structural "shocks," not only to the general editorial class of magazines, but to the entire magazine publishing industry and to other media. These two magazines combined accounted for over half of the total dollar volume of advertising in the

general editorial magazine class between 1965 and 1971.[28] Life's demise was particularly important because that publication, at its peak, was one of the world's most influential magazines. Moreover, from the outside looking in, Life's financial position seemed reasonably secure, even up to its cessation of publication in December, 1972. The magazine's subscription figures looked healthy. Fewer subscription arrears were being carried and an increasing number of full-price subscriptions were being sold. Editorial content improved with better use of photos and copy and an innovative approach to human interest news reporting.

Nonetheless, Life had several actual problems, some on the revenue side and some on the cost side. In reporting the collapse of Life after 36 years of publication, Advertising Age disclosed the following information:

> In January-October, 1972, Life pages totaled 1,653, up more than 5% from 1,570 in the comparable 1971 period. But while pages were up slightly, ad rates were down, again creating a standoff. In contrast, Life's ad pages in 1960 numbered 3,360. In 1959, Life showed 3,663 pages. For 1954, Life carried 4,196 pages, down from 4,293 in 1953. Clearly, the advent of television was creating problems for the national weekly magazines, since editorial content had to compete, pictorially and in every other way, with "free" tv fare. The excitement of a dramatic black-and-white still photo could not outweigh the appeal of the television picture either for news or entertainment.[29]

Although Life instituted minimum rate plans and fast close arrangements for advertisers, and while 1972 page totals were above 1971 levels,

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[28] Between 1965 and 1971, Life earned, on average, 35.4 percent of general editorial magazines advertising revenue; Look earned 17.1 percent.

[29] Advertising Age, 11 December 1972, p. 89.

the demise of the magazine was at least partially due to spiralling costs which the magazine could not handle. Rising costs of selling and keeping subscriptions and rapidly increasing postal costs significantly increased the magazine's overall expenses.

In short, Life, and Look to a lesser extent, were outmoded magazines unable to convert to the editorial requirements of a changing print market. These magazines could not adequately cover the wide range of news subjects that the news-weeklies could handle and they could not conform to vertical specialization in magazines. Sensing these inherent weaknesses, many small advertisers re-routed their media expenditures away from Life and Look. Thus, the combination of high and rising postal rates, competition from television, and the growing popularity of special-interest magazines severely hurt the giant general editorial magazines.

Other general editorial magazines did not experience the severe setbacks suffered by Life and Look. Most commonly, these magazines relied less heavily on pictorial displays, had a more specialized editorial approach, had a larger textual basis to their editorial content, or did not construct deep discount structures to increase their competitive strength. Cost advantages and more stable readership made these magazines more than sufficient substitutes for the larger general editorial magazines, especially for some small advertisers with limited advertising budgets. Yet, the more secure general editorial magazines were not immune to the economic consequences of the Life-Look demise; some advertisers whose media schedules suddenly excluded the giant magazines either switched to other general editorial magazines or transferred their advertising dollars into other media.

These major structural events make analysis of seasonally adjusted cyclical behavior of the general editorial magazine class a formidable task. Since Life and Look held such a dominant share of advertising -- at least through 1971 -- the cyclical patterns of these two magazines left a heavy imprint on the cyclical pattern of the whole general editorial class. Moreover, Life and Look set the tone for the quality and quantity of advertising attracted to the general editorial class as a whole. In light of these considerations, Life and Look had to be excluded from the analysis of general editorial magazine cyclicality that follows. Their exclusion facilitates the discovery and analysis of the underlying trend and cyclicality of other magazines that comprise the general editorial class. This exclusion also eliminates a large source of bias in the seasonal adjustment process.

Adjusting Magazine Class Advertising Revenues for Seasonality

The dynamics of advertising in magazines depend importantly on advertisers' responses to product market purchase patterns that recur seasonally. Advertisers recognize that messages repeated at different intervals of time may reinforce each other with varying degrees of effect. For products purchased evenly throughout the year, advertisers customarily assume that if the messages are evenly spread, the likelihood that they will hit the target audience increases the more often they are repeated at a time close to the original purchase decision, when their effect is presumably greatest.

The case of department store promotions during the Christmas season offers a classic example of advertisers' response to seasonal fluctuations

in demand. According to Julian Simon, department stores advertise more heavily in busier seasons than in slack ones.[30] Contrary to the general yearly pattern, however, advertising in December is less than proportional to sales relative to other months. This promotional schedule is consistent with the following facts:

(1) Department stores come close enough to peak capacity in December that the marginal production costs of additional sales increase steeply.

(2) Any given amount of advertising produces more incremental sales in busier seasons than in slack seasons.

(3) There are diminishing sales returns to advertising scale, but advertising budgets allocated throughout the year in such a way that marginal returns will be the same in each period result in higher expenditures in relatively busier selling seasons.

(4) The lower marginal production cost of sales in slower selling seasons raises the optimal promotion level in slow seasons relative to what they would be if production costs were the same the year round. In their 1943 book on retail advertising, Edwards and Howard added the following:

> One should not waste money in low-volume months by trying to force business when people are not inclined to buy. It erroneously curtails expenditures in months when business would normally be easy to get if sufficient publicity were used. Nor should one go to the opposite extremes of squandering money needlessly in high-volume months and of pinching pennies beyond the point of discretion

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[30] Julian L. Simon, Issues in the Economics of Advertising (Urbana, Ill: University of Illinois Press, 1970), pp. 82-83.

> in low-volume months. Instead, publicity money should be spent to invite people to the store when they are naturally inclined to buy. It follows the course of least resistance by recognizing people's buying habits.[31]

Advertisers may choose between relatively fewer, large, dominant advertisements strategically placed in a magazine (e.g., on the back cover or in a special issue) and a relatively greater number of small advertisements at an equivalent cost, which can be dispersed evenly at one time or clustered in groups succeeding each other at short time intervals. Clustering may provide an immediate advantage by creating immediate awareness. However, clustering also detracts from continuity and the chance that any message will reach the maximum number of purchasers close to the psychologically ripe moment.

The attempt to match product characteristics with potential audiences of magazines must be made with the complete understanding of seasonal patterns in the product markets as well as seasonal patterns in reception of advertising messages. For purposes of this study, product market sales seasonality is assumed to be only marginally affected by seasonal advertising patterns so it contributes to the explanation of seasonality in magazine advertising. In this regard, Warren Bahr showed that "there is almost a direct relationship between broad-appeal magazines published in September and October, which are new car introduction months, and the physical characteristics /or the appearance of new cars in/ car dealerships

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[31] Charles Mundy Edwards, Jr. and W. H. Howard, Retail Advertising and Sales Promotion (New York: Prentice-Hall, 1943), pp. 116-117.

themselves."[32] Bahr also points out the following:

> In an advertising sense, the increasing number of ads designed for a particular audience creates and sells a better marketplace. People shop the ads and want to see a variety of purchase opportunities in relation to a particular product category or a specific buying need. However, each calendar season (e.g., Christmas, Mother's Day) may precipitate an advertising clutter to exploit an opportunity for brand promotion. In this regard, the audience characteristics of the different types of magazines become vital to advertisers seeking brand promotion to readers receptive to their ads.[33]

Various products appear to be locked into seasonal cycles (i.e., consumers associate a given season with a product). Advertisers may attempt to change prospect tastes and desires by also making consumers associate a season with information about a product or a feature of a product. Since advertisement recall is always a matter of peaks and troughs because of the rapid decay of an exposure's effect, advertisers often seek to maximize average recall over the year. Quite often, special interest magazines, whose editorial contents are related to an activity for which there is a definable season but which publish on a year-round basis, are utilized by advertisers during what Bahr has labelled a "season of participation" and a "season on anticipation." In the "season of participation," the audience actively searches for advertising information about the seasonal products currently in use; in the "season of anticipation," the same audience drops out of the market for those products, but they

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[32] Warren A. Bahr, "Uses of Print Media," in Roger Barton, ed., Handbook of Advertising Management (New York: McGraw-Hill, 1970), pp. 19-30.

[33] Ibid.

collect a stock of information while waiting for the return of the season during which the products will again be used. The editorial environments and audience demographics are the same, but the basic reader attitude goes through a wide cycle, from participatory at one time to anticipatory at another time.

The effects of seasonality on readership vary from magazine class to magazine class, and from magazine to magazine. In terms of climatic seasons, national magazines lack geographic leverage; the sequence of seasons in the Sun Belt, for example, differs from that of the Northeast. To adjust for these differences, publishers have accommodated themselves and their advertising base with regional editions of their magazines. Creation of a relationship between when, how, and where an advertisement appears draws a closer involvement with the brand prospect. There is a greater than average opportunity, for example, to gain attention in hot-weather periods and areas with advertising strategies which have hot-weather connotations, in magazines which attract a hot-weather audience.

For the purposes of this study, seasonal fluctuations are defined as those variations in a time series which tend to recur regularly at least every four quarters. Beside seasonal fluctuation, each time series is also made up of longer-term movements, or a trend-cycle component, and a short-run irregular component that reflects unexpected and significant short-run developments and/or mistakes in measuring the series. Irregularities reverse themselves quickly so they do not cumulate and contribute to the trend-cycle component and, since they do not reappear each year, they are not part of the seasonal factors.

The seasonal adjustment process used in this study employs the X-11 Variant of Method II, the computerized seasonal adjustment program developed by the U.S. Bureau of the Census in 1965, and widely available to private users.[34] The X-11 program adjusts a series according to a multiplicative model:

$$O = C * S * I \text{ , where}$$

O = the original observation; C = the trend-cycle; S = the seasonal factor; and I = the irregular component.

The method underlying X-11 makes extensive use of the smoothing technique of moving averages to separate time series into their components. First, a five-term Henderson moving average is computed from the original series to get a trend-cycle component. The original series is then divided by the trend-cycle to yield a series (S-I ratios) that contains only seasonal and irregular components. The S-I ratio for each quarter is then smoothed by a 3x5-term moving average (a 3-term average of a 5-term average) to estimate final seasonal factors. The seasonal factors may change as the S-I ratios change.

Before the final smoothing, the S-I ratios for values differing greatly from all the others are replaced or modified to bring them into line with historical experience. This is done by comparing preliminary estimates of the irregular component with its 5-year moving average. Those irregularities falling within 1.5 standard deviations of the mean are retained; those outside 2.5 standard deviations are replaced by values

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[34] U.S. Department of Commerce, Bureau of the Census, The X-11 Variant of the Census Method II Seasonal Adjustment Program, Technical Paper, no. 15 (Washington: U.S. Government Printing Office, 1965).

calculated from other years; and those between 1.5 and 2.5 standard deviations are modified according to their distance from the mean. Thus, extreme values are prevented from having an undue impact on the seasonal factors. Finally, after the seasonal factors are obtained, the original series is divided by the seasonal factors to obtain seasonally adjusted values.

Constructing Constant Dollar Measures of Magazine Advertising

The elimination of seasonal influences from the revenue data for each magazine class left behind still another systematic influence on measured advertising volume. Because the data represent seasonally adjusted current dollar advertising revenue in each class, they are influenced not only by the number of pages advertisers purchase, but also by the price-per-page in each magazine. The purchase of advertising space in a magazine, like the purchase of any producers' service, is affected by the absolute price of the space and the relative price of similar advertisements in similar magazines or in other media. An advertiser's choice of magazines in any particular class, his total advertising expenditures in a class, and his overall media mix are therefore influenced by price considerations. These considerations become particularly important in the mid-1960s and 1970s when inflation accelerated. Statistical series that measure economic activity in current dollar terms are affected by these price changes to a greater extent now than in most earlier periods. Under these circumstances, convincing arguments can be made for replacement of current dollar series with their price-deflated counterparts.

Many sophisticated analyses of the cyclical behavior of economic time series work with data expressed in constant dollar terms. However, while desirable in principle, specific-versus-reference cycle comparisons based on constant dollar measures are not always possible. For most measures of economic activity, the government has been able to develop and publish reasonably accurate deflators, particularly for the non-service sectors. However, for advertising, the task of generating appropriate price indexes has proven to have been very difficult, and has not been resolved. The problem emanates from many sources, but two particular complications are most important: (1) there is no universally agreed upon definition of the service offered for sale; and (2) base rates for an advertising message are very poor measures of the prices actually paid by individual advertisers, most of whom are offered and exploit a complex discounting structure.[35] As will be detailed below, it is for these reasons that we have not been able to use constant dollar advertising measures.

Advertising rates (prices) for magazine space may be considered from two perspectives: from the persepctive of the magazine publisher and from the perspective of the advertiser. To the magazine publisher, page rates represent remuneration received for value given (i.e., a black-and-white page or a four-color page). The value given is the page of advertising

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[35] In a study of the demand and supply of television advertising, Gary Bowman suggests that the "product" offered by television networks is "viewers to watch commercial minutes." Similar logic leads to the conclusion that the "product" offered by magazines to advertisers is "readers of advertising pages." See Gary Bowman, "The Demand and Supply of Network Television Advertising," Bell Journal of Economics, 7 (Spring 1976): 258.

copy set in type and printed at some expense to the magazine in a particular issue. The advertiser has a different perspective. Not only is the advertiser concerned with the size of a particular advertisement, but an equal or greater concern rests with the number of people the advertisement will reach, often approximated by the magazine's circulation. (The magazine publisher sees the advertising rate as the price charged for a page of advertising lines set, proof-readers' time, etc; the advertiser sees it as a price per customer reached.) This is merely another way of saying that supply of advertising space is a function of production costs, while demand for advertising space is determined by cost effectiveness and readership. Final advertising rates (prices) reflect both of these factors, as well as the degree of competition.

The most appropriate measure of price from the standpoint of the advertiser would capture the interaction between the page rate and the magazine's audience. The industry price standard, then, is expressed as page cost per thousand of circulation (CPM). Media planners prefer CPM measures to simple page rates because page rates do not capture or reflect the price of what they perceive to be the service for sale by magazines -- potential audience for the advertising message.

There are, however, a number of serious problems with the use of CPMs as measures of price. The primary difficulty with this measure is the variability of both the numerator (page rate) and the denominator (circulation) of the fraction. Advertisers are unlikely to be indifferent between the alternatives of a larger circulation for a given advertisement and a larger advertisement brought before a given circulation. A higher

page rate may signal either a higher marginal cost to the magazine associated with a given circulation or the greater quantity of advertising provided to the advertiser which is associated with a higher circulation. Since the demand for advertising is a function of circulation, and the demand for magazine space is the demand for advertising, the real relation must remain two-dimensional. Thus, magazine advertisement pricing tends to be sensitive both to changes in audience size and to changes in the prices of the goods and services that the magazines themselves purchase.

In reacting to changes in audience size, the yardstick most commonly used in setting the price of advertising is the magazine's circulation. However, this proxy measure of magazine audience is unavoidably crude. Ideally, the most important criterion for a valid CPM computation is an audience unit which includes people potentially exposed to specific advertising messages. However, there is no readily available and generally accepted way to measure the number of people who are potentially exposed to a specific printed advertisement. A print message is not delivered at any predetermined point in time. In fact, the specific delivery of specific print messages may take place over extended periods of time, because print media vehicles have long lives. Thus, direct measurement of the number of people potentially available to specific magazine advertisements is very difficult, if not impossible, to accomplish. Certainly, then, measures of people exposed to the "average" issue of a magazine (the "gross potential audience" figure supplied by syndicated services) do not adequately indicate "availability to a specific advertising message" which is necessary for audience measures used in properly constructed CPM ratios.

The size of the advertising unit (i.e., the amount of magazine space used) has an impact on CPM computations even if the size of the audience does not change. By the usual methods of evaluating advertising, the smallest unit of space almost invariably appears to have the lowest CPM. But, the size of the effective exposure will not be doubled if advertisers go from a single page in a magazine to a double-page spread, even though costs will be doubled. To expect that the effective exposure would double would assign each page equal weight and efficiency, even though we know that a one-page ad will carry a weight different from one-half that of a two-page ad. Thus, the efficiency of a magazine must be seen not only in terms of the number of message units it delivers, but in its capacity to reach a qualitatively, as well as a quantitatively, relevant audience. The intensity of communication through different size space-units is normally not reflected in CPM measures.

For purposes of this study, therefore, appropriate price deflators for each of the magazine classes do not exist, nor can they convincingly be developed. Moreover, since in this study we have undertaken to reclassify magazines into conceptually meaningful classes, no published price deflators accurately match the current-dollar series.

Data on magazine pages do exist, however, but as we have shown, they do not represent the real quantity of "output" sold, which must also take account of changes in audience size. Cost per thousand measures are published by the Association of National Advertisers for each magazine and, in principle, a composite CPM could be constructed for each magazine

class.[36] However, in light of the conceptual problems surrounding CPM measures, they do not offer precise enough insight into the price movements of each class to qualify as price deflators.[37]

Summary

Empirical studies of advertising composition, growth, and distribution have been severely restricted by a lack of detailed and reliable data for the various media. Published government data are too aggregative and in other ways are ill-suited for detailed examination of advertising for specific products, by specific advertisers, or in specific media. A more useful sourse of data available for such uses are collected by private syndicated data services which have published detailed and comprehensive data series on the volume and composition of advertising in major media.

For purposes of the present study of magazine advertising -- which covers the period from 1965/1 to 1976/4 -- data were used which were originally developed by Leading National Advertisers, Inc. for the Publishers' Information Bureau. The PIB's data report total advertising revenue for almost all of the major weekly, biweekly, and monthly magazines based on undiscounted costs presented in their rate cards. These data, consistent and reliable by most standards, account for about 90 percent of

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[36] The Association of National Advertisers (ANA) provides CPMs, circulations, and rate data for about 70 leading audited magazines. See Magazine Circulation and Rate Trends, 1940-1976 (New York: Association of National Advertisers, 1977).

[37] There are several possible deflators for advertising expenditures series. These include: (1) cost per page; (2) cost per page per capita; (3) duplicated audience; and (4) duplicated audience per capita. The latter deflator was used by Grabowski, "Interindustry Distribution of Demand," pp. 36-37.

annual total magazine advertising revenue. By deliberately failing to take account of publishers' discounts, these data tend to overstate advertising revenue. However, this omission makes possible the calculation of revenue figures for each magazine, a task that would otherwise require continuous revisions as advertisers cross thresholds in their discount structures.

The PIB's data for individual magazines permit us to group together magazines having a similar editorial approach. (An alternative classification procedure, based upon readership surveys, was considered and dismissed because the surveys demonstrated gross sampling and technical errors and were inaccessible except to paying subscribers.) Since the magazines that comprise a particular class are assumed to be competitive rivals, they tend to appeal to roughly similar audiences and, therefore, to attract roughly the same product mix of advertisers.

The product mix of advertising was shown to differ markedly for each of our eight magazine classes. The relative proportion of advertising revenue accounted for by each of 18 selected product categories differed from magazine class to magazine class. Furthermore, the relative concentration of advertising accounted for by the leading product categories in each advertising base varied widely among the magazine classes. The magazine class distribution was also shown to vary from product classification to product classification. Results of a two-factor analysis of variance led to the conclusion (with 95 percent confidence) that the product distribution of advertising among magazine classes did not result from random chance.

Because the dynamics of magazine advertising depend on advertisers' responses to product market purchase patterns that recur seasonally, the quarterly advertising revenue data for each class were seasonally adjusted using standard options in the Census Bureau's X-11 program. However, we were unable to derive constant dollar measures of the seasonally adjusted data because appropriate price deflators for each class do not exist, nor could they convincingly be developed.

The original seasonally adjusted data developed for this study permit a detailed analysis of the economic determinants of magazine advertising volume. Specifically, the timing, amplitude, and duration of advertising revenue cycles for each magazine class will be presented in Chapter 3. Comparisons of the cyclical patterns of the eight magazine classes with those of a reference cycle will permit inferences to be drawn concerning the relative stability of advertising in each class. In Chapters 4 and 5, statistical and econometric measures will be developed to explain these relative stability characteristics.

CHAPTER III

SEASONAL AND CYCLICAL PATTERNS OF MAGAZINE ADVERTISING

In 1900, Sidney A. Sherman published what appears to have been the first article that addressed the relationship between advertising activity and general economic conditions. Sherman gathered data on general economic conditions and the number of pages of advertisements in Harper's Magazine for the period 1864 to 1900. Based upon some relatively crude observations, the author concluded that "the effects of hard times on advertising could have no stronger illustration."[1]

In the present chapter, an attempt will be made to carefully describe the relationship between the general business cycle and cycles in magazine advertising revenues. Specifically, the cyclical characteristics of deseasonalized quarterly advertising revenue data will be compared with those of a primary reference series -- Gross National Product (GNP) -- and a secondary reference series -- the Federal Reserve Index of Industrial Production (IIP). The relative timing of turning points, duration, amplitude, and pattern of advertising revenue cycles of each of our eight magazine classes will be compared with those of the reference series, as well as with those of the other classes.

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[1] Sidney A. Sherman, "Advertising in the United States," 7 (December, 1900): 161-162.

These cyclical characteristics will also be examined with attention to the secular trend and product mix of advertising of each magazine class. By identifying the respective dates of cycle turning points for all eight magazine classes, the results presented in this chapter facilitate a more accurate measurement of the longer-run trend in magazine advertising and its relationship to the product mix of advertising. The cyclical descriptions presented here are thus designed to shed light on the cyclical or counter-cyclical ad-budgeting and expenditure practices used for consumer goods and services. The analysis of cyclical patterns in ad-budgeting practices is then presented in Chapter 4.

Earlier Studies of Advertising Cycles and Business Cycles

The relationship between general business cycles and advertising revenue cycles has not received much attention from economists. Since Sherman's article in 1900, only a handful of studies have attempted to describe and analyze the business cycle - advertising cycle relationship; and only two of those studies examined that relationship on a medium-by-medium basis.[2] In general, the studies between 1900 and the mid-1960s attempted to determine the impact of advertising on overall business activity. Although the data, time period covered, and analytical methods differed from study to study, several generalizations can be distilled from

[2] The two studies were written while both authors were employed by CBS, Inc. as economists. See Charles Yang, "A Theoretical and Empirical Investigation of Advertising Cycles" (Ph.D. dissertation, New York University, Graduate School of Business Administration, 1962); also see David M. Blank, "Cyclical Behavior of National Advertising, Journal of Business 35 (January 1962): 14-27.

their findings:

(1) There is, in general, positive conformity between advertising revenue cycles and the general business cycle.

(2) With few exceptions, advertising volume has lagged behind general business activity, as measured by such diverse aggregates as GNP, IIP, sales, and profits.

(3) Amplitude comparisons suggest that advertising mildly reinforces both economic expansions and economic contractions.

(4) Fluctuations in advertising expenditures for consumer durable goods tend to be larger than those for nondurable goods.

The following brief paragraph written by Joel Dean in 1951 draws together the general consensus of the earlier economic analyses that examined the relationship between the business cycle and advertising revenue cycles:

> To the extent that advertising does affect the consumption function, aggregate advertising has in the past probably accentuated business fluctuations rather than offset them, since advertising cycles have corresponded closely to general business cycles. Cyclical fluctuation of advertising expenditure are even more mechanically tuned to business cycles than changes in other types of investment when they result from budgeting practices that relate appropriations to sales or profits.[3]

Since the mid-1960s, however, the effect of advertising on the overall pattern of consumer demand has been the subject of considerable speculation and debate by economists. At one end of the spectrum, Galbraith and Weiserbs and Taylor have argued that advertising strongly affects both the inter-

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[3] Joel Dean, "Cyclical Policy on the Advertising Appropriation," Journal of Marketing 15 (January 1951): 266.

industry distribution of consumption expenditures and the aggregate level of consumption relative to saving. On the other hand, Solow, Schmalensee, Simon, and Grabowski argue that advertising mainly influences market shares within a particular industry or between product classes that are close substitutes. These authors express serious doubts about whether advertising outlays can significantly influence either the distribution of demand across broad product classes (e.g., food, clothing, housing, automobiles) or the level of aggregate demand relative to saving. These conflicting positions remain unresolved, but an empirical investigation of the major issues are beyond the limited scope of the present study. In the chapters that follow, especially Chapter 4, we focus on the proximate, rather than the ultimate causal relationship between advertising and sales.

While the evidence from Dean's study, and other studies, demonstrates an apparent association between business cycles and advertising cycles, there is little reason to believe that advertising affects business activity in a strong causal manner. The effectiveness of advertising in damping recessions, for example, depends on how well it can overcome spending timidity caused by lower incomes or slower income growth; how far it can offset contractions in other kinds of business spending, notably outlays for inventory and plant and equipment; and how rapidly it can cause adjustments in consumers' short-run consumption functions.

Since total advertising expenditures comprise only about 2 percent of GNP, are quantitatively only about one-third as large as private investment in producers' durable equipment, and are not much more cyclically volatile than GNP, fluctuations in advertising -- after account is made for the

multiplier -- can be expected to account for no more than perhaps 5 percent of the fluctuations in GNP.[4] Fluctuations in other spending categories, especially other forms of business investment, must therefore account for the much larger proportion of cyclical swings in aggregate economic acitvity. Hence, the proposition that fluctuations in advertising activity contribute in a significant way to overall business cycle fluctuations does not have a strong a priori conceptual appeal.

A different approach to the association between advertising fluctuations and general business cycle fluctuations may thus be called for. Specifically, this approach should examine whether and to what extent fluctuations in aggregate demand have a measurable impact on the level and fluctuation of advertising volume. For business managers who plan advertising budgets and make strategic judgments over the course of business cycles, consumer demand fluctuations have a significant impact on the decision-making process. Specifically, advertisers must consider a number of characteristics of demand for their goods and services when planning the timing, magnitude, and medium for their promotional activities. The following are 5 of the major product market characteristics that are commonly considered:

(1) the degree to which consumer responsiveness to advertising changes with cyclical adjustments in their purchasing power;

(2) the degree to which advertisers of competitive products are able

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[4] The impact of advertising on GNP fluctuations is discussed in Walter A. Verdon, Campbell R. McConnell and Theodore W. Roesler, "Advertising Expenditures as an Economic Stabilizer: 1945-64," Quarterly Review of Economics and Business 8 (Summer 1968): 7-18.

to increase their market share over the business cycle;

(3) the relationship between income elasticity for the product and changes in the effectiveness of promotion;

(4) the proportion of total advertising that must be directed to long-term goodwill rather than to direct market expansion;

(5) the relationship between the firm's ad-budgeting practices, or rules-of-thumb, and cyclically sensitive business conditions indicators, such as sales and profits.

The classification of the magazine medium into eight unique classes as reported in Chapter 2 resulted in a data base uniquely well-suited to an empirical investigation of the effects of these product market characteristics on advertising revenue cycles. The advertising revenue data for each class are independent, but since they relate to only the magazine medium they are directly comparable. Previous studies compared advertising cycles in different media, but they did not adjust for differences in mode of communication or the relative rigidity of space contract terms.[5] Moreover, since the product mix of advertising varies widely across magazine classes, we could expect to find differences in the timing, duration, amplitude, and pattern of advertising revenue cycles of each magazine class. Comparison of these cyclical characteristics across classes, as well as with GNP and the IIP, serve as the foundation for the quantitative analysis of the determinants of magazine advertising fluctuations presented in Chapter 4.

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[5] Both Yang and Blank make blanket comparisons of advertising cyclicality in different media, but they do not standardize for differences in reach and audience perception due to mode of communication (e.g., outdoor, print, broadcast). Each medium has different audience characteristics and qualitative attributes that make it more or less attractive to advertisers at different phases of the business cycle. Moreover, space contract terms in each medium have different lead-times and different degrees of flexibility that influence ad-budgeting policies over the business cycle.

Procedures for Analysis of Magazine Advertising Cyclicality

Development of an accurate, yet economical, means of identifying and comparing magazine advertising revenue cycles on a consistent basis proved to be a formidable task. Standard procedures generally associated with Arthur Burns and Wesley Mitchell of the National Bureau of Economic Research were either too cumbersome or inappropriate for the kind of comparative analysis to be undertaken in the present chapter.[6] In order to compare cyclical characteristics of magazine advertising revenue across classes, as well as with broad economic aggregates, it was necessary to combine some of the techniques developed by Burns and Mitchell with others developed by Ilse Mintz. This involved the development of a combined manual and computerized system for the identification and quantification of the cyclical characteristics of each data series.[7]

The key to the procedures developed by Burns and Mitchell for cyclical analysis is the determination of cycle turning points. Burns and Mitchell's format for cyclical analysis is described in the following two paragraphs:

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[6] Burns and Mitchell wrote the classic text on the identification and measurement of business cycles. See their Measuring Business Cycles (New York: National Bureau of Economic Research, 1946).

[7] The basic computer techniques employed in this study are described in Gerhard Bry and Charlotte Boschan, Cyclical Analysis of Time Series: Selected Procedures and Computer Programs, Technical Paper, no. 20 (New York: National Bureau of Economic Research, 1971). In a telephone discussion with the present author, Charlotte Boschan recommended that various calculations be performed manually. Whenever possible, the cyclical analysis performed here followed Dr. Boschan's advice.

> After eliminating seasonal variations we divide the series into segments marked off by reference troughs. Since each segment spans an interval between successive reference troughs we call it a 'reference cycle' for brevity. Next we compute the average of the monthly values during each 'reference cycle' and convert the data into percentages of this base; these percentages are called 'reference cycle relatives'. The application of a uniform set of dates to all series, and the reduction of the original data expressed in diverse units to relatives of their average values during the periods thus marked off, put all the materials into comparable form and enable us to see how different processes behave during successive business cycles.
>
> Next, we look in every series for wave-like movements whose length is of the same order as that of business cycles. We call the cyclical movements peculiar to a series its 'specific cycles.' In most series the dates of the troughs and peaks of the specific cycles are fairly clear, but in some series they are obscured by erratic fluctuations. We mark off the specific cycles by the dates of their turning points as well as we can, compute the average value of the monthly data during each cycle, and convert the monthly data into 'specific cycle relatives' which correspond in every way to the reference cycle relatives, except they show movements during the cycles in the series itself.[8]

In order to standardize their procedures for application to a variety of types of data series, Burns and Mitchell suggested several rules that would be followed when identifying cycles and determining the timing of their turning points. These rules permit the selection of specific-cycle peaks and troughs only after the specific-cycles have been unambiguously pinpointed. In general, specific cycle peaks and troughs are to be placed at the highest and lowest points of the cyclical fluctuations. Peaks and troughs must alternate (i.e., a peak cannot succeed another peak without there first having been an intervening trough); and in the case of equal consecutive values, the latest value -- the value at the last time period

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[8] Burns and Mitchell, Measuring Business Cycles, p. 24.

before the reversal of the cyclical phase -- is designated as the turning point. Clearly defined cyclical swings must be longer than 5 quarters but shorter than 48 quarters, from peak to peak or from trough to trough. The amplitude of specific cycles must be larger, on the average, than the amplitude of irregular fluctuations in the specific series. Finally, the amplitude of a doubtful expansion or contraction should not be materially smaller than that of the smallest clearly recognized cycle in the series.

For the most part, the rules established by Burns and Mitchell were strictly enforced in the present study. However, exceptions to the rules were required whenever a value in question was clearly extreme, isolated, or possibly compensated for (or surrounded by) other values that deviate in the opposite direction. The fundamental criterion for the selection of cyclical turning points in the present study was the determination that our set of cyclical turning point dates make better economic sense than any other possible set of dates.

In several important ways the procedures adopted in the present study differ from those prescribed by Burns and Mitchell. These differences relate to the sequence of cycle determination and turning point identification; treatment of the secular trend of each series; and selection of a reference-series. The procedures adopted in the present study will be briefly summarized below.

Since advertising activity and the business cycle generally avoided alternating periods of absolute and sustained declines from World War II through at least the mid-1960s, traditional cyclical analysis did not seem appropriate to capture the kinds of fluctuations experienced by our data

series. Therefore, we adopted a number of procedures developed by Ilse Mintz of the National Bureau of Economic Research for the identification of growth cycles, defined as "fluctuations in aggregate economic activity, consisting of a period of relatively high growth rates occurring at about the same time in many economic activities (adjusted for their long-run trends), followed by a period of similarly widespread low growth rates, which merge into the high-growth phase of the next cycle."[9]

Because of the conceptual differences between the traditional and the growth cycle approaches, a change was required in the criterion by which consecutive cycle phases were distinguished from each other. For traditional cycles, the distinguishing feature between two cyclical phases -- tentatively identified before the precise dates of turning points are set -- is the direction of change in economic activities; for growth cycles -- in which turning points are established before cycles are identified -- the criterion is the relation of a given rate of change in economic activities to a corresponding "average" or long-run trend rate. In this latter context, growth-cycle characteristics (duration, amplitude, and pattern) differ in meaning from their counterparts based on the traditional concept; and turning points represent growth upturns and growth downturns -- instead of troughs and peaks of economic activity.

For the present study, the growth-cycle concept offered the particularly attractive framework of working with trend-adjusted data. Under traditional National Bureau procedures, the intercycle portion of the secular trend is

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[9] Ilse Mintz, "Dating United States Growth Cycles," NBER Explorations in Economic Research 1 (Summer 1974): 6-7.

is removed by separating successive cycles after having identified them. This method inevitably leaves the intracycle portion of the secular trend unadjusted. This procedure is not appropriate for the present study which attempts to compare cycles whose secular trends are considerably different.

Under Mintz's growth-cycle procedure, however, the secular trend could be removed before specific-cycles are identified. In the present study, this procedure permitted the identification of growth-cycles in terms of percentage deviations of the seasonally adjusted indexes from their long-run trend values which, by definition, represent cyclical fluctuations. (The particular trend calculation used in this study was to fit first or second degree logarithmic trend lines to the deseasonalized data series.) The data were then converted into "cyclical indexes" (a measure of cyclicality based entirely upon deviations from the long-run trend value of each period) and analyzed according to traditional National Bureau procedures.[10]

The most important difference between the National Bureau's methods of cyclical analysis and those adopted here centers around the selection of an appropriate reference series.[11] Simply stated, the National Bureau's procedures reject the definition of reference-cycles in terms of a single economic aggregate; instead, they measure reference-cycles in terms of

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[10] The cyclical index of series X, for example, is defined in each time period as 100 plus the seasonally adjusted index of X, less the long-run trend value of X. Thus, if the seasonally adjusted index of X equals 130 and its trend value equals 125, the cyclical index of X equals 130 - 125 + 100, or 105.

[11] For an excellent study of the effects of dating reference cycles by GNP cycles, see two articles by Victor Zarnowitz, "On Dating Business Cycles," Journal of Business 36 (April 1963) and "Cloos on Reference Dates and Leading Indicators," Journal of Business 36 (October 1963). For a contrary view, in favor of the use of GNP as a reference series, see George W. Cloos, "How Good are the National Bureau's Reference Dates," Journal of Business 36 (January 1963).

fluctuations occurring at about the same time in a broad variety of activities. In the present study, GNP -- a single economic aggregate -- was selected as the primary reference-series; and cycles in GNP represent the primary reference-cycles against which magazine advertising cycles will be compared.

The National Bureau's chronology based on the concept of an abstract reference cycle was not chosen for the present study because it does not provide information about the amplitude of general business fluctuations; it only identifies the timing of general business cycle turns. Moreover, it is expected, and indeed generally is the case, that the clustering of economic series that determines the National Bureau's reference-cycle turning points agrees closely with turning points in the most comprehensive measures of economic activity (such as GNP and the IIP). The cyclical patterns of these economic aggregates provide reasonably close agreement with chronologies of the timing of turning points in overall economic activity. More important, they provide a basis for comparing amplitudes of advertising cycles.

One other minor difference between traditional National Bureau procedures and those employed here concerns the application of Burns and Mitchell's nine-stage breakdown of cyclical phases. Under their traditional procedure for analyzing cycle patterns, stages I and IX cover the beginning and terminal troughs; stage V measures the peak; stages II to IV cover the three thirds of the expansion; and stages VI to VIII cover the three thirds of the contraction. (When the analysis is expressed on a reference-cycle basis, the nine-stages are determined by the dates of the peaks and troughs

of the reference-cycle, rather than those of the specific-cycles.) The difference between this procedure and the one adopted for the present study relates only to the means of expression of amplitudes and values at each stage. Under the traditional approach, the value at each stage is expressed in seasonally adjusted dollar terms; in the present study, the values are expressed in terms of the cyclical index. All amplitudes under Burns and Mitchell's format are expressed in cycle-relatives; in the present study, amplitudes refer to first-differences in the cyclical indexes between consecutive turning points.

Patterns and Trends of Magazine Advertising Growth

The growth-cycle concept, as employed in the present study, requires a careful accounting of the growth rate and trend of each magazine advertising revenue series. (See Chart 1.) In each quarter, the position of the trend line and the level of seasonally adjusted advertising revenue determine the level and direction of change of the respective cyclical indexes. The discussion that follows will focus on qualitative and quantitative distinctions between magazine classes distinguished from one another by their relative advertising growth rates. Because each magazine class has a unique editorial direction and distribution of products in its collective advertising base, the discussion will reveal the broad outlines of the major determinants of magazine advertising revenue. (More definitive identification of determinants of magazine advertising revenue awaits the empirical analysis presented in Chapter 4.) At the same time, the discussion of relative growth rates across magazine classes will serve as an

CHART 1

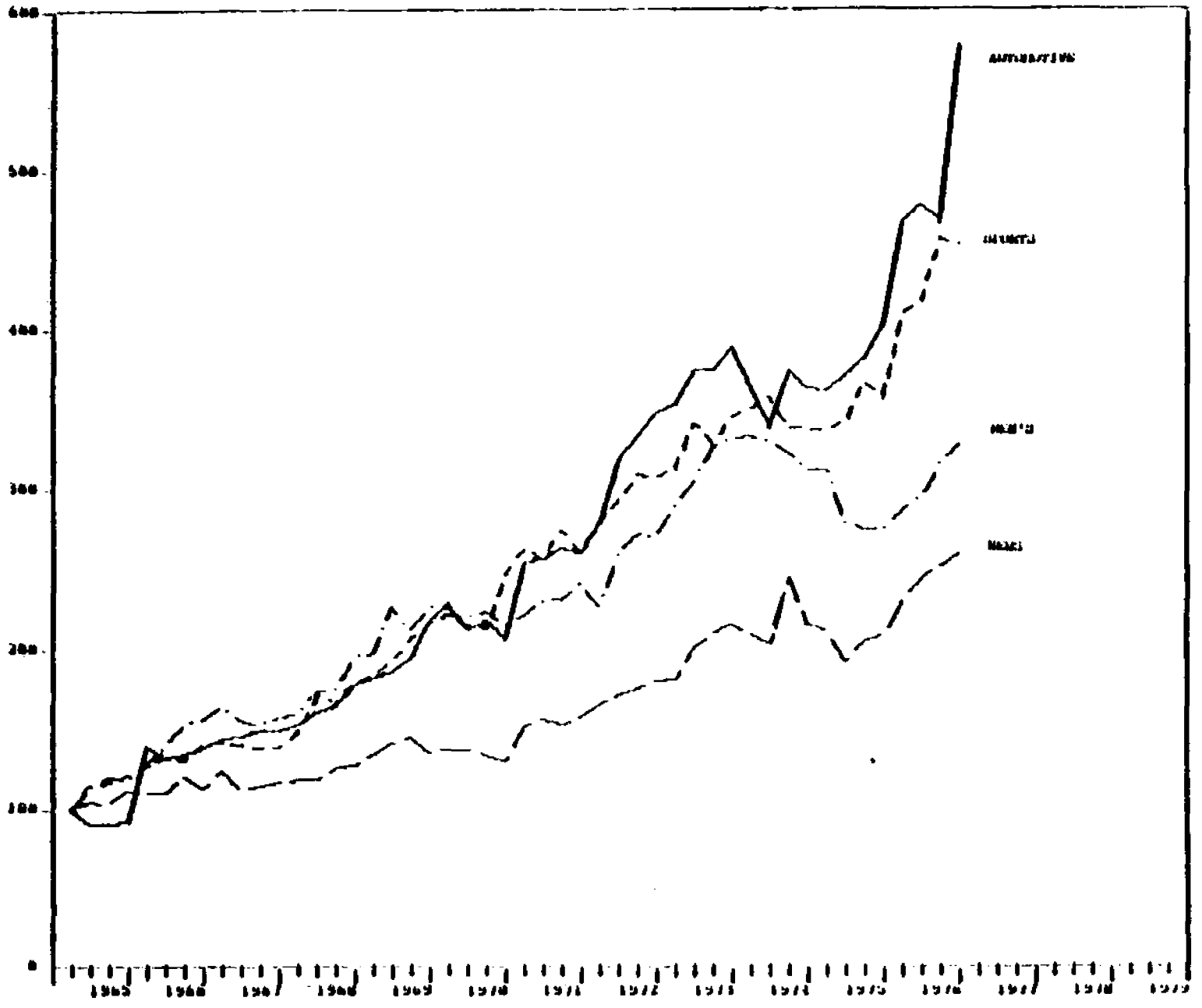
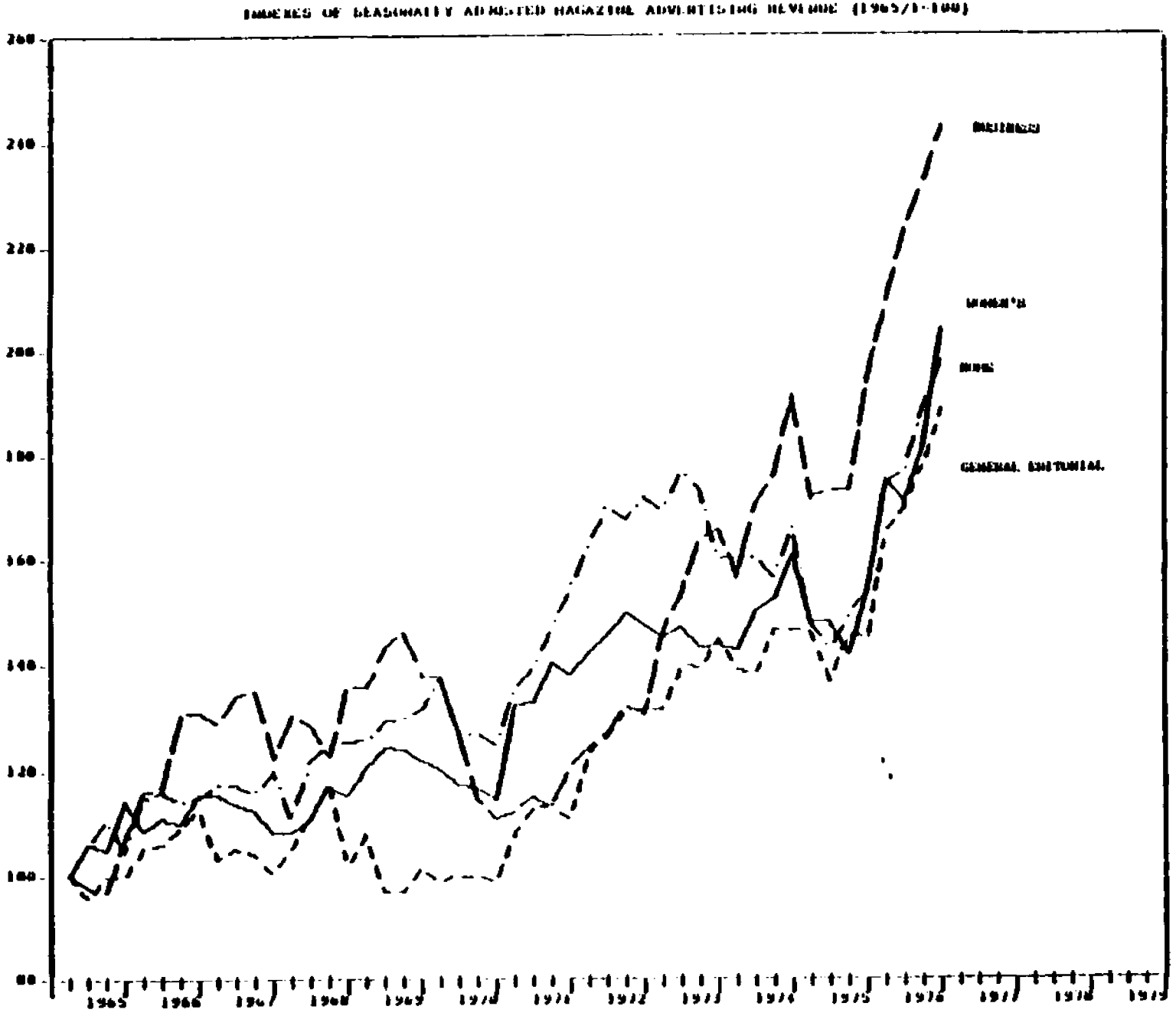


CHART 1 -- Continued



adjunct to the description of advertising revenue cycles in the succeeding section.

The information presented in Tables 7 and 8 provide the basis by which similarities and contrasts between the eight magazine classes can be analyzed. On the most general level, examination of Tables 7 and 8 reveals that magazine classes whose advertising growth rates were most similar were also apt to be alike in other ways: (1) they tend to earn similar shares of total magazine advertising revenue; (2) the average deviations of their respective quarterly advertising levels from their long-run trend values tend to be of similar magnitudes; (3) advertising bases dominated by roughly similar types of products tend to comprise almost equal shares of total magazine medium advertising revenue; and (4) their editorial contents are directed toward broadly similar types of audiences.

In the analysis that follows, therefore, we group together the magazine classes with the highest relative advertising revenue growth rates and contrast them with the group of magazine classes with the lowest relative growth rates. This comparison was possible because of the fairly wide range of magazine advertising revenue growth rates. Advertising revenue of three of the eight magazine classes (automotive, sports, and men's) increased at a rate higher than the average annual growth rate of GNP (9.2 percent) during the 1965 - 1976 period -- automotive magazine advertising revenue increased at an average annual rate of 17.3 percent; sports magazine advertising revenue rose an average 14.7 percent a year; and men's magazine advertising revenue increased an average 10.0 percent a year. For the other five magazine classes, advertising revenue growth ranged from 5.9 percent a year in general editorial magazines to 9.0

TABLE 7

MAGAZINE CLASS SHARES OF TOTAL ADVERTISING, REVENUE GROWTH RATES, AND DEVIATIONS FROM TREND, 1965 - 1976

Magazine Class	Share of Total Magazine Advertising Revenue [a] 1965	1976	Compound Average Annual Growth Rate [b]	Mean Deviation from Trend Value [c]
Automotive	1.4%	3.7%	17.3%	9.3%
Business	7.5	8.3	8.4	12.0
General Editorial	24.0	20.8	5.9	8.5
Home	9.3	8.0	6.4	5.8
Men's	3.6	4.4	10.0	9.8
News	21.8	25.0	9.0	6.2
Sports	2.6	4.9	14.7	7.0
Women's	29.8	25.0	6.7	5.1
Total	100.0%	100.0%	--	--
Average	--	--	9.8%	8.0%
GNP	--	--	9.2%	1.2%
IIP	--	--	3.8	3.5

[a] Four-quarter average magazine class advertising revenue, seasonally adjusted, as a percentage of four-quarter average advertising revenue, seasonally adjusted, for the eight classes combined.

[b] Based on growth from 1965 average to 1976 average advertising revenue.

[c] Mean absolute quarterly deviation of seasonally adjusted advertising revenue from its trend value.

TABLE 8

SHARE AND CONCENTRATION OF THE THREE MAIN PRODUCT CATEGORIES IN THE ADVERTISING BASE, BY MAGAZINE CLASS (1976)

Magazine Class	Product Category [a]	Share of Magazine Class Ad Base [a]	3-Product Herfindahl Index of Concentration [b]
Automotive	Automotive, Auto Accessories, et. al.	38.6%	
	Smoking Materials	11.0	
	Consumer Services	10.0	.173
Business	Consumer Services	27.2	
	Industrial Materials	18.3	
	Office Equipment, Stationery, et. al.	11.4	.120
General Editorial	Publishing and Media	11.5	
	Miscellaneous General	10.3	
	Retail and/or Direct by Mail	8.4	.032
Home	Food and Food Products	16.0	
	Household Furnishings	13.6	
	Retail and/or Direct by Mail	11.5	.057
Men's	Beer, Wine, and Liquor	21.3	
	Smoking Materials	21.1	
	Automotive, Auto Accessories, et. al.	8.6	.097
News	Smoking Materials	16.0	
	Automotive, Auto Accessories, et. al.	15.6	
	Beer, Wine, and Liquor	13.2	.067
Sports	Sporting Goods and Toys	28.2	
	Automotive, Auto Accessories, et. al.	12.2	
	Travel, Hotels, and Resorts	8.9	.102
Women's	Toiletries and Toilet Goods	21.6	
	Food and Food Products	17.4	
	Apparel, Footwear and Accessories	11.4	.090

[a] Derived from Table 2.

[b] Defined as $\sum_{i=1}^{n} S_i^2$, where n = 3 and S_i = share of advertising base comprised of advertisements for product category i.

percent a year in news magazines.[12]

Automotive, sports, and men's magazines share various qualitative and quantitative attributes in common. Editorially, the contents of all three of these classes principally aim at an adult male audience. As shown in Table 8, the product mix of advertising in these magazine classes emphasizes activities and products traditionally associated with expenditures by and for men between the ages of 18 and 49 years.[13] Automotive, automotive accessories and equipment ranks among the three largest product categories in the respective advertising base of each of these magazine classes. For automotive magazines, this product category comprises the largest proportion of the advertising base; for sports and men's magazines, it ranks second and third, respectively, in importance. The relatively large proportion of automobile-related advertising holds particular significance due to its extreme volatility and rapid acceleration during the 1965 - 1976 period, both of which are reflected in the trends and quarter-to-quarter changes in the level of total advertising revenue of each class.

The automotive, sports, and men's magazine classes also tend to have more concentrated advertising bases than those of the five relatively slower-growing magazine classes. A Herfindahl index covering the share of advertising revenue comprised of the three largest product categories in the advertising base of each class, respectively, was calculated for

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[12] All growth rates are compound annual rates of the average annual levels of seasonally adjusted magazine advertising revenue over the 1965 - 1976 period.

[13] Men and women ages 18 - 49 years comprise the largest target for advertisers, regardless of medium.

the year 1976.[14] As shown in Table 8, the levels of the Herfindahl index for products advertised in automotive, sports, and men's magazines are among the four highest recorded. Based on a possible range from zero to unity the three-product Herfindahl index for the automotive magazine advertising base is .173; for sports, the index is.102; and for men's, the index is .097. (The advertising base of business magazines is also relatively concentrated; its three-product Herfindahl index is .120.)

The relatively higher concentration of the leading product categories in the advertising bases of the fastest growing magazine classes reflects the relatively narrow editorial approach of their component magazines. Automotive and sports magazines typically restrict their focus to one major sport, activity, or function, rather than attempting to cover a full range of topics of potential but not universal interest to segments of their audiences; men's magazines cover a broader range of editorial material, but tend to focus only toward limited segments of the adult male population. Advertisers of products purchased only by a limited number of consumers (such as participants in a particular sport) take advantage of the specialized contents of automotive and sports magazines (and men's magazines to a lesser extent) to promote their products and services directly to the narrowly defined readerships most likely to purchase or

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[14] A Herfindahl index measures relative concentration by focusing on the distribution of shares (of a total) held by a set of n firms or components. The index is defined by the sum of the squared shares held by the n components. In our case, $H = \sum_{i=1}^{n} S_{ij}$, where S_{ij} = the share of the ith product category in the advertising base of the jth magazine class. Concentration could also have been measured by a simple concentration ratio, but that measure would not capture variation in the shares among the leading product categories.

repeat-purchase their goods. For example, advertisements for high viscosity motor oil tend to be inserted in automobile racing magazines; tennis sneakers promotions cluster in tennis magazines; and after-shave lotions are advertised in men's magazines. This practice has particular appeal to advertisers with relatively small budgets and/or specialized products for which the minimization of audience leakage has high priority. This is so, even though more general types of magazines typically have lower CPMs.[15]

The relatively specialized editorial appeal of the three magazine classes with the highest advertising revenue growth rates means that they appeal to a more limited audience and so, despite their rapid growth rate, they have a lower share of total magazine medium advertising revenue relative to the shares held by mass-market magazine classes. In 1965, automotive magazines earned only 1.4 percent of total magazine advertising revenue; sports magazines earned 4.9 percent; and men's magazines earned 4.4 percent. In 1976, their respective shares were, of course, higher (see Table 7). Another common characteristic of automotive, sports, and men's magazines is that the three are among the four classes with the highest quarterly average deviation of their seasonally adjusted revenue levels from their respective long-run trend values. (The fourth class, business magazines, is dominated by a relatively large proportion of investment-type and goodwill advertising in its collective advertising base, both of which tend to fluctuate strongly at all stages of the

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[15] For CPM calculations, by magazine, see Magazine Circulation and Rate Trends: 1940 - 1974 (New York: Association of National Advertisers, 1976).

business cycle.)[16]

The magazine classes with the lowest relative advertising revenue growth rates may also be identified by their common qualitative and quantitative characteristics. General editorial magazines, home magazines, and women's magazines all have low growth rates, respectively, 5.9 percent, 6.4 percent, and 6.7 percent per year. (See Table 7.) For the most part, their editorial approaches -- and, indirectly, their product mix of advertising -- tend to be addressed toward women and/or the home and family living. Similarly, for these magazine classes the product categories that comprised the largest proportion of their advertising bases are all generally associated with consumption or use by women and/or in the home. For two of these three classes (home magazines and women's magazines) the food and food products category ranks among the three largest product categories in their respective advertising bases (16.0 percent of home magazine advertising and 21.6 percent of women's magazine advertising). In general editorial magazines, the three largest product categories deal with entertainment (publishing and media comprised 11.5 percent of advertising), miscellaneous general goods (10.8 percent), and retail store promotions (8.4 percent). (See Table 8.)

General editorial, home, and women's magazines are generally designed to be read by general or so-called "mass" audiences. The heterogeneity of their readerships had a major impact on the composition and concentration

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[16] The sensitivity of investment-type advertising to business cycles is discussed by Julian L. Simon, Issues in the Economics of Advertising (Urbana, Illinois: University of Illinois Press, 1970), pp. 73-74.

of products in their respective advertising bases. Each of these three magazine classes rank among the four classes with the least concentrated advertising bases. The three-product Herfindahl index for general editorial magazines is .032; for home magazines, .057; and for women's magazines, .090. (For the fourth class, news magazines -- which also appeal to a broad spectrum of readers -- the three-product Herfindahl index is .067.) In short, the magazine classes with editorial contents designed to appeal to widely divergent or heterogeneous audiences all tend to have the widest distribution of products in their respective advertising bases.

The magazine classes that experienced the lowest relative advertising revenue growth rates have several other characteristics in common. First, each of the four magazine classes with the lowest relative growth rates ranks among the five magazine classes with the largest shares of total magazine medium advertising revenue. The combined share of total magazine medium advertising revenue earned by magazines in these classes totalled 63.1 percent in 1965 and 53.8 percent in 1976. Moreover, each of these classes ranks among the five classes with the most stable quarter-to-quarter advertising revenue growth; the mean absolute deviation of their respective seasonally adjusted advertising revenue levels from their trend values ranged from 8.5 percentage points for general editorial magazines down to 5.1 percentage points for women's magazones. Furthermore, each of the lowest-growth magazine classes is made up of a relatively large number of magazines, an average of 15 magazines per class in 1976. This condition contributes to a stable growth trend by encouraging intraclass substitutions by advertisers and by spreading the effects of structural changes, such as

the demise of a major magazine, among a large number of magazines. (See Chapter 2, Table 6, p.45.) Finally, the relatively lowest-growth classes were typically composed of a number of "mature" magazines with long publication histories and established reputations and readerships. Such magazines are neither likely to grow substantially nor to decline substantially regardless of cyclical conditions.

In summary, by ranking the eight magazine classes according to their respective advertising revenue growth rates, several characteristics can be observed that distinguish relatively higher-growth classes from relatively lower-growth classes. The three magazine classes with advertising revenue growth rates higher than the growth rate of GNP hold the following general attributes in common:

(1) editorial contents aimed primarily at adult men;

(2) relatively narrow editorial foci and, therefore, substantially homogeneous audiences;

(3) a relatively concentrated product mix of advertising;

(4) heavy representation of automotive, automotive accessories and equipment products in the advertising base;

(5) editorial and advertisement emphasis on leisure-time activities outside of the home;

(6) a small over-all share of total magazine medium advertising revenue.

The magazine classes with the lowest average annual average growth rates also have several quantitative and qualitative similarities. These include:

(1) editorial contents aimed at women and/or the home and family life;

(2) broad, general editorial approaches aimed at relatively heterogeneous audiences;

(3) advertising bases consisting of a broad range of products and services, with the heaviest representation from products traditionally purchased by women for their personal or home consumption;

(4) substantial volumes of food and food products advertisements;

(5) relatively large dollar volumes of advertising and shares of total magazine medium advertising revenue.

Cyclical Tendencies of Magazine Advertising Growth

The identification of magazine classes with similar qualitative and quantitative characteristics enables us to undertake a more rigorous analysis of magazine advertising revenue cycles. Cyclical patterns of magazines with different editorial approaches have never been analyzed before. Indeed, advertising revenue data organized by editorial class has either been lacking or has never been used before in a systematic study of advertising cycles.

From 1965 to 1976, each of the eight magazine classes experienced three cyclical peaks and three cyclical troughs in advertising revenues.[17] Measured either from peak to peak or from trough to trough, therefore, two complete advertising revenue cycles could be identified for each

[17] Statistically, a sub-cycle trough in 1974/1 was identified for women's magazines, but we decided to disregard this finding as a statistical artifact of little consequence to women's magazine advertising cycles.

magazine advertising revenue series.

Determination of turning points in the broad reference series of GNP and IIP proved to be a formidable task. This was because of the relative smallness of the deviations of the quarterly reference-series from their respective long-run trend values. The problem proved particularly troublesome for the years 1966 - 1969 when GNP and the IIP experienced cyclical fluctuations too small to qualify as bona fide contractions and expansions according to traditional National Bureau rules. Faced with this circumstance, we decided to label 1967/2 and 1967/3 as growth-recession troughs of the GNP and industrial production cyclical indexes, respectively. There were two reasons for choosing these dates: (1) Mintz identified a growth-cycle as having reached a peak in June, 1966 and a trough in October, 1967; and (2) identification of a growth-recession trough in both GNP and IIP cyclical indexes at about the same time provided an additional reference-cycle versus specific-cycle turning point comparison.[18] Thus, for both reference-series -- as well as all eight magazine advertising revenue series -- we identified three cyclical peaks and three cyclical troughs that are economically sensible and generally conform to the modified National Bureau procedures described earlier in this chapter.

Timing of Cyclical Turning Points

The dates of the cyclical turning points of the two reference-series chosen for the present study -- GNP and the IIP -- closely match the NBER

[18] See Ilse Mintz, "Growth Cycles," Table 7, p. 59.

chronology of reference-cycle turning points -- i.e., what is generally understood as "the" business cycle. Turning points of GNP and IIP cycles coincided with each other on three of the four dates officially recognized by the National Bureau as business cycle turning points -- 1970/4 (trough), 1973/4 (peak), 1975/1 (trough).[19] (At the 1969/4 business cycles peak, the turning point of the GNP and the IIP cycles led by 3 quarters and 2 quarters, respectively.) The turning point of the GNP cyclical index and the general business cycle coincided at the 1966/2 growth-cycle peak identified by Mintz; at the 1967/2 growth-cycle trough, the GNP cyclical index led by 2 quarters. The industrial production cyclical index, on the other hand, lagged by 1 quarter at the 1966 growth-cycle peak and led by 1 quarter at the 1967 growth-cycle trough. The turning points in the IIP thus tended to lag behind those in GNP, a factor to be kept in mind in later interpretations of the timing of magazine advertising revenue cycles.

The turning point dates of the advertising revenue cyclical index of each magazine class and both reference-series are presented in Table 9. Table 10, which is based on Table 9, shows the number of quarters by which turns of the magazine cyclical indexes lagged or led at corresponding GNP-cycle turns. The data in Table 10 reveal that the eight magazine classes' advertising revenue cycles tended to lag at the cyclical turning points of GNP (the primary reference series), especially at GNP-cycle troughs. On the average, specific-cycle turning points lagged behind corresponding

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[19] For a complete listing of National Bureau turning points since 1854, see U.S. Department of Commerce, Bureau of Economic Analysis, Business Conditions Digest 18 (June 1978): 103.

TABLE 9

TURNING POINTS IN GNP, IIP, AND
MAGAZINE ADVERTISING CYCLES, 1965 - 1976

	P	T	P	T	P	T
Reference Cycles						
GNP	1966/2	1967/2	1969/1	1979.4	1973/4	1975/1
IIP	1966/3	1967/3	1969/3	1970/4	1973/4	1975/1
Specific Cycles						
Automotive	1966/1	1968/3	1970/1	1970/4	1973/2	1975/3
Business	1966/3	1968/3	1969/3	1971/3	1974/4	1975/3
General Editorial	1966/4	1967/4	1968/3	1970/4	1973/4	1975/2
Home	1966/2	1968/1	1970/1	1970/4	1973/2	1975/2
Men's	1966/3	1968/1	1969/2	1970/4	1973/4	1975/4
News	1966/3	1968/2	1969/3	1970/4	1973/4	1975/2
Sports	1966/2	1967/4	1969/4	1970/3	1973/2	1975/2
Women's	1966/4	1968/1	1969/2	1970/4	1972/3	1975/3

P = Peak

T = Trough

TABLE 10

DURATION OF LEAD (-) OR LAG (+) OF MAGAZINE ADVERTISING CYCLICAL TURNS AT GNP CYCLE TURNING POINTS, 1965 - 1976 (Quarters)

	P 1966/2	T 1967/2	P 1969/1	T 1970/4	P 1973/4	T 1975/1	6-Turning Points Average
Automotive	-1	+5	+4	0	-2	+2	+1.5
Business	+1	+5	+2	+3	+4	+2	+2.7
General Editorial	+2	+2	-2	0	0	+1	+0.5
Home	0	+3	+4	0	-2	+1	+1.0
Men's	+1	+3	+1	0	0	+3	+1.3
News	+1	+4	+2	0	0	+1	+1.3
Sports	0	+2	+3	-1	-2	+1	+0.5
Women's	+2	+3	+1	0	-5	+2	+0.5
8-Class Average	+0.8	+3.4	+1.9	+0.3	-0.9	+1.6	+1.2

P = Peak

T = Trough

SOURCE: Table 9.

reference-cycle turns at all three reference-cycle troughs and at two of the three reference-cycle peaks. Of the 48 specific advertising revenue cycle turns, 30 lagged, 7 led, and 11 were coincident with corresponding reference-cycle turns (see Table 11).[20] Over-all, specific-cycle turning points lagged behind reference-cycle turns by an average of 1.2 quarters.

The relative timing of specific-cycle turning points across the eight magazine classes appears to be systematically related to the relative ranking of the classes' average annual advertising revenue growth rate. Specifically, turning points of specific-cycles of magazine classes that had the highest average annual advertising revenue growth rates between 1965 and 1976 tended, on the average, to lag turns in the primary reference-cycle by the largest number of quarters (see Table 12). Three of the four magazine classes whose cyclical turns lagged, on the average, by the greatest number of quarters (automotive, men's, and news) were among the four classes with the highest average annual advertising revenue growth rates. On the other hand, three of the four classes whose cyclical turning points lagged GNP-cycle turns by the fewest number of quarters (general editorial, home, and women's) ranked among the four classes with the lowest average annual advertising revenue growth rates. Thus, the timing of specific-cycle turns, on the average, generally appears to vary directly with the respective advertising revenue growth rates of the magazine classes.

Somewhat the same pattern of cyclical lags in magazine advertising may be observed when the cyclical index of industrial production is employed

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[20] The number of (collective) advertising cycle turns was derived from the 6 cyclical turns for each of the 8 magazine classes.

TABLE 11

THE NUMBER OF MAGAZINE ADVERTISING CYCLICAL TURNS THAT LEAD AND LAG AT GNP-CYCLE TURNING POINTS, 1965 - 1976

1. By Magazine Class

Magazine Classes	Number of GNP-Cycle Turns at Which Magazine Advertising: Leads	Coincides	Lags	Total	Average Lead (-) or Lag (+) (Quarters)
Automotive	2	1	3	6	+1.3
Business	0	0	6	6	+2.8
General Editorial	1	2	3	6	+0.5
Home	1	2	3	6	+1.0
Men's	0	2	4	6	+1.3
News	0	2	4	6	+1.3
Sports	2	1	3	6	+0.5
Women's	1	1	4	6	+0.5
Total	7	11	30	48	

2. By Date of GNP-Cycle Turns

	Leads	Coincides	Lags	Average Lead (-) or Lag (+) (Quarters)
Peaks				
1966/2	1	2	5	+0.8
1969/1	1	0	7	+1.9
1973/4	4	3	1	-0.9
Troughs				
1967/2	0	0	8	+3.4
1970/4	1	6	1	+0.3
1975/1	0	0	8	+1.6

TABLE 12

MAGAZINE ADVERTISING GROWTH RATES
AND TIMING AT REFERENCE-CYCLE TURNING POINTS

	Annual Growth Rate (Percent)	Average Lead (-) or Lag (+) at GNP Turning Points (Quarters)	Average Lead (-) or Lag (+) at IIP Turning Points (Quarters)
Automotive	17.3	+1.5	+0.7
Business	8.4	+2.7	+2.2
General Editorial	5.9	+0.5	-0.2
Home	6.4	+1.0	+0.3
Men's	10.0	+1.3	+0.7
News	9.0	+1.3	+0.7
Sports	14.7	+0.5	-0.2
Women's	6.7	+0.5	-0.2

SOURCES: Tables 7, 11, and 13.

as the reference-series. (See Tables 13 and 14.) Over-all, specific-cycle turning points lagged behind industrial production cycle turns by an average of 0.6 quarters, one-half the average lag experienced at turns in GNP cycles. Of the 48 specific-cycle turns, 23 lagged, 12 led, and 13 were coincident with corresponding turns in the industrial production index. Furthermore, on the average, specific-cycle turning points lagged behind industrial production turns at all three IIP-cycle troughs and they led at all three IIP-cycle peaks; and for three magazine classes (general editorial, women's, and sports) specific-cycle turning points, on the average, led corresponding turns in industrial production reference cycles. Thus, the tendency for specific-cycle turns to lag turns in the reference cycle appears to be less pronounced when the IIP is the reference series.

These facts suggest that turning point dates of magazine advertising revenue cycles, though still showing a lag, on balance, correspond somewhat more closely to the timing of industrial production turning points than to the timing of GNP cycle turning points. According to Yang, "the tendency for advertising cycles to have followed industrial production more closely than GNP is understandable in view of the fact that most national advertisers are engaged in manufacturing activity."[21] However, as stated above, cycles in industrial production showed a somewhat less close timing relationship to the business cycle than did cycles in GNP. It seems clear, therefore, that GNP and the set of economic aggregates used by the NBER to identify "the" business cycle measure economic

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[21] See Yang, A Theoretical and Empirical Investigation of Advertising Cycles, pp. 137 - 144.

TABLE 13

DURATION OF LEAD (-) OR LAG (+) OF MAGAZINE ADVERTISING CYCLICAL TURNS AT IIP TURNING POINTS, 1965 - 1976 (Quarters)

	P 1966/3	T 1967/3	P 1969/3	T 1970/4	P 1973/4	T 1975/1	6-Turning Points Average
Automotive	-2	+4	+2	0	-2	+2	+0.7
Business	0	+4	0	+3	+4	+2	+2.2
General Editorial	+1	+1	-4	0	0	+1	-0.2
Home	-1	+2	+2	0	-2	+1	+0.3
Men's	0	+2	-1	0	0	+3	+0.7
News	0	+3	0	0	0	+1	+0.7
Sports	-1	+1	+1	-1	-2	+1	-0.2
Women's	+1	+2	-1	0	-5	+2	-0.2
8-Class Average	-0.3	+2.4	-0.1	+0.3	-0.9	+1.6	+0.6

P = Peak

T = Trough

TABLE 14

THE NUMBER OF MAGAZINE ADVERTISING CYCLICAL TURNS THAT LEAD AND LAG AT IIP-CYCLE TURNING POINTS, 1965 - 1976

1. By Magazine Class

Magazine Classes	Number of IIP-Cycle Turns at Which Magazine Advertising Revenue: Leads	Coincides	Lags	Average Lead (-) or Lag (+) (Quarters)
Automotive	2	1	3	+0.7
Business	0	2	4	+2.2
General Editorial	1	2	3	-0.2
Home	2	1	3	+0.3
Men's	1	3	2	+0.7
News	0	4	2	+0.7
Sports	3	0	3	-0.2
Women's	2	1	3	-0.2
Total	11	14	23	

2. By Date of IIP-Cycle Turns

	Lead	Coincide	Lag	Average Lead (-) or Lag (+) (Quarters)
Peaks				
1966/3	3	3	2	-0.3
1969/3	3	2	3	-0.1
1973/4	4	3	1	-0.9
Troughs				
1967/3	0	0	8	2.4
1970/4	1	6	1	0.3
1975/1	0	0	8	1.6

activities in sectors that do not advertise heavily in consumer magazines and whose economic conditions do not vary in any important way with magazine advertising (e.g., government purchases of goods and services, private services, and exports).

Length of Cyclical Expansions and Contractions

Since, on the average, advertising revenue-cycle troughs tend to lag at reference-cycle troughs and to lag less at reference-cycle peaks, the average advertising revenue-cycle contraction tends to be longer, and the average expansion shorter, than those of the respective reference-series (see Table 15). The average duration of the three reference-cycle contractions were 5.3 quarters for GNP and 4.7 quarters for industrial production; the two (fully measured) GNP expansions lasted an average 9.5 quarters, and industrial production expansions, on average, lasted 10.0 quarters. For the eight magazine advertising revenue series, however, the average contraction lasted 6.5 quarters and the average expansion lasted 8.0 quarters. In fact, the duration of <u>each</u> magazine advertising revenue cycle contraction, on the average exceeded that of all three corresponding industrial production contractions and two out of three GNP cyclical contractions; and the duration of <u>each</u> magazine advertising revenue-cycle expansion, on the average, was shorter than that of all corresponding industrial production and GNP reference-cycle expansions.

Diffusion of Cyclical Expansions and Contractions

Over-all tendencies for the various specific-cycles to expand and contract concurrently may also be indicated by a diffusion index. According

TABLE 15

DURATION OF PHASES OF REFERENCE-CYCLES AND SPECIFIC-CYCLES [a]
(Quarters)

Reference-Cycles and Specific Cycles	Sequence of Cyclical Phases					Average:	
	C_1	E_1	C_2	E_2	C_3	3 Contractions	2 Expansions
Reference-Cycles:							
GNP	4	7	7	12	5	5.3	9.5
IIP	4	8	5	12	5	4.7	10.0
Specific-Cycles:							
Automotive	10	6	3	10	9	6.0	8.0
Business	8	4	8	13	3	6.3	8.5
General Editorial	4	3	9	12	6	6.3	7.5
Home	7	8	3	6	8	6.0	7.0
Men's	6	5	6	12	8	6.7	8.5
News	7	5	5	12	6	6.0	8.5
Sports	6	8	3	11	8	5.7	9.5
Women's	5	5	6	7	12	7.7	6.0
Average:	6.6	5.5	5.4	10.4	7.5	6.5	8.0

C = Contraction

E = Expansion

[a] Based on Table

to Geoffrey H. Moore, "diffusion indexes tell us how widespread an expansion or contraction is at any time, and can therefore help us to judge whether the movement is of cyclical dimensions. Moreover, if a general contraction (or expansion) is under way, diffusion indexes show whether it has been spreading among other activities...or whether it has been shrinking in scope."[22] Diffusion indexes take into account only the direction of change in their component series, without regard for the magnitude of change. Thus, diffusion indexes are designed principally to measure the coincidence of movement among a group of series and to provide a means of rapid identification and confirmation of cyclical turning points in a group of economic series.

For the present study, a weighted diffusion index was computed based upon the quarter-to-quarter direction of change in our eight magazine advertising cyclical indexes. Quarterly changes in each series were recorded as increasing, stationary, or decreasing and assigned a value of 1.0, 0.5, or 0.0, respectively. These values were then added for each quarter and a four-quarter moving total was computed, with the values assigned to the latest quarter. Each of the eight series received equal weight in this total, but the quarters were given descending weights from 4 in the latest quarter to 1 in the earliest quarter of the 4-quarter interval. The weighted total, therefore, had a possible range from 0 to 80, with the upper limit of the range possible only if all 8 series increased for 4 consecutive quarters. In the final conversion to diffusion

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[22] Geoffrey H. Moore, ed., Business Cycle Indicators, vol. 1: Contributions to the Analysis of Current Business Conditions (Princeton, N.J., Princeton University Press, 1961) pp. 280 - 281.

index form, the range was expanded to run from 0 to 100 by dividing the moving totals through by a constant, 0.8.[23]

Interpretation of the diffusion index for the purpose of identifying magazine advertising revenue cycle turning points depends upon a clear understanding of values surrounding the "mid-line" or "50-line." For our weighted diffusion index, a value of 50 denotes separation between rising and falling cyclical phases; it does not necessarily denote an equal number of rising and falling cyclical indexes. For example, if 4 of the 8 magazine advertising series had increased and 4 had decreased in each of the last 4 quarters, the current diffusion index would register a value of 50. But, because of weighting, the index would be considerably greater than 50 (but less than 100) if all 8 series had increased in the last two quarters after having fallen in the two previous quarters.

The mid-line attains economic significance only when the diffusion index crosses it in an upward or downward direction. Thus, the first quarter after a generally rising diffusion index crosses the mid-line marks the beginning of a cyclical expansion (i.e., a cyclical trough); and the first quarter after a generally declining diffusion index crosses the mid-line marks the start of a cyclical contraction (i.e., a cyclical peak). (See Chart 2.) In this context, the mid-line marks the separation between rising and falling cyclical phases.

The turning point dates of the magazine advertising revenue diffusion

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[23] For a complete description of this and similar diffusion indexes, see Leo B. Shohan, The Conference Board's New Diffusion Indexes, Technical Paper no. 13, National Industrial Conference Board, New York, 1963. See especially pp. 11 - 25.

CHART 2

WEIGHTED DIFFUSION INDEX OF MAGAZINE ADVERTISING

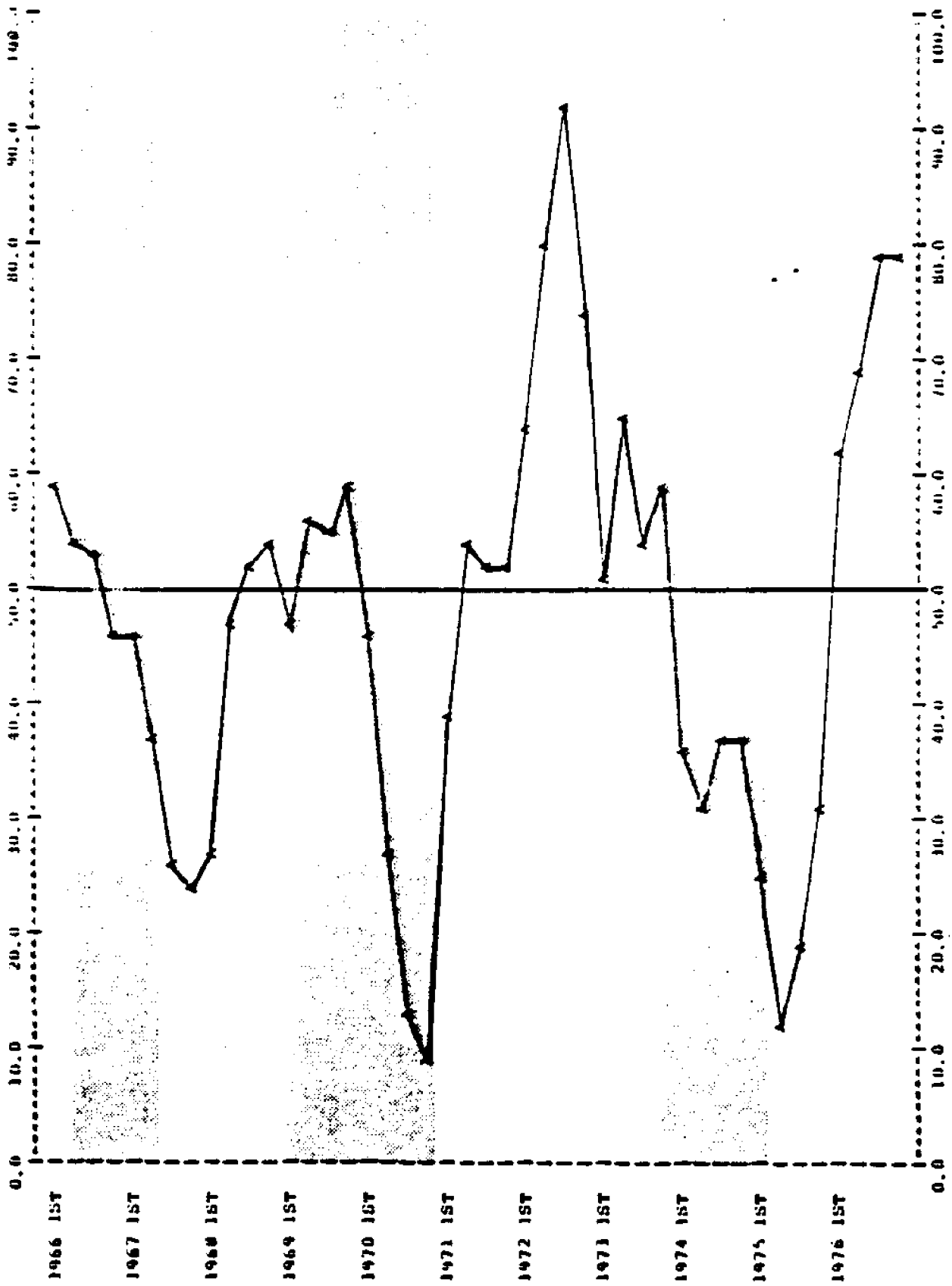


TABLE 16

COMPARING THE TURNING POINTS IN THE DIFFUSION INDEX AND REFERENCE-CYCLES 1965 - 1976

	Diffusion Index Turning Points	GNP Cyclical Index Turning Points	IIP Cyclical Index Turning Points	Number of Quarters Lead (-) or Lag (+) of Diffusion Index at Turning Points of: GNP Cyclical Index	IIP Cyclical Index
Peaks:	1966/4	1966/2	1966/3	+2 -	+1
	1970/1	1969/1	1969/3	+4	+2
	1974/1	1973/4	1973/4	+1	+1
Average:				$+2^{1}/3$	$+1^{1}/3$
Troughs:	1968/3	1967/2	1967/3	+5	+4
	1971/2	1970/4	1970/4	+2	+2
	1976/1	1975/1	1975/1	+4	+4
Average:				$+3^{2}/3$	$+3^{1}/3$

index and the two reference-series are presented in Table 16. Turning points of the diffusion index show a consistent tendency to lag those of the two reference-series both at reference-cycle peaks and at reference-cycle troughs. On the average, turning points in the diffusion index lagged GNP cyclical turning points by 2-1/3 quarters at GNP peaks and by 3-2/3 quarters at GNP troughs. Relative to industrial production cyclical peaks, the diffusion index lagged by an average 1-1/3 quarters; at industrial production troughs, the average lag was 3-1/3 quarters. These findings reaffirm the strong tendency discussed earlier in this chapter (based on specific-cycle turning points) for magazine advertising revenue cycles to lag at reference-cycle troughs; these findings also provide additional evidence to suggest a more mild general (though certainly not unanimous) tendency for magazine advertising revenue to lag, as well, at business cycle peaks.

Cyclical Amplitudes

We next turn to an examination of the relative amplitudes of magazine advertising revenue cycles as this is revealed by the nine-stage specific-cycle format, the interpretation of which was explained earlier in the present chapter. As shown in Chart 3, the cyclical patterns of the eight magazine advertising revenue series showed considerable variation over the course of their successive cycles. This variation contrasts with the tendency noted above for magazine classes with relatively similar advertising revenue growth rates to exhibit similar editorial content, advertising content, and cyclical timing characteristics. The variation

CHART 3

SPECIFIC-CYCLE PATTERNS OF MAGAZINE ADVERTISING, GROSS NATIONAL PRODUCT, AND THE INDEX OF INDUSTRIAL PRODUCTION, 1965-1976 (Positive Plan)

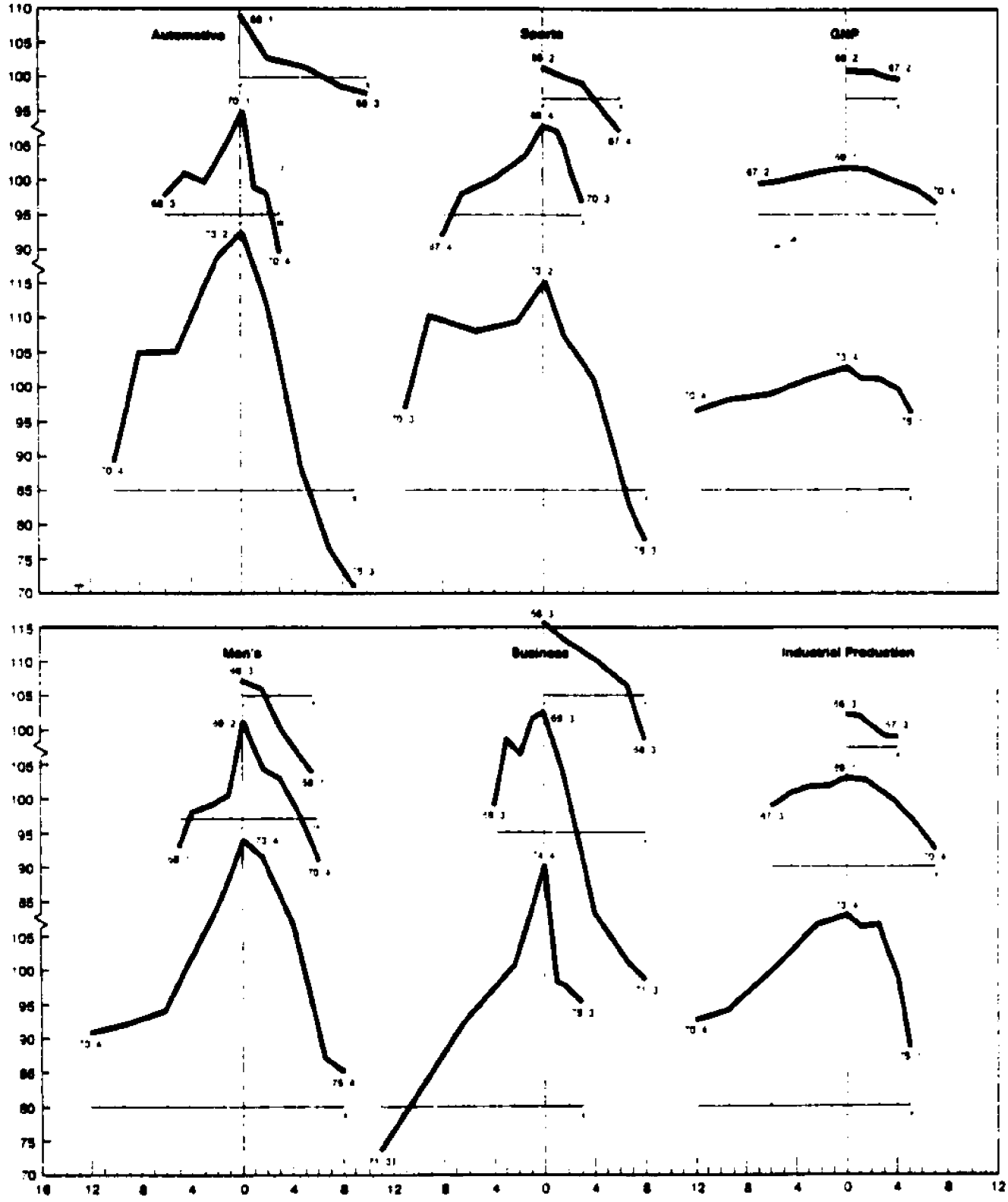
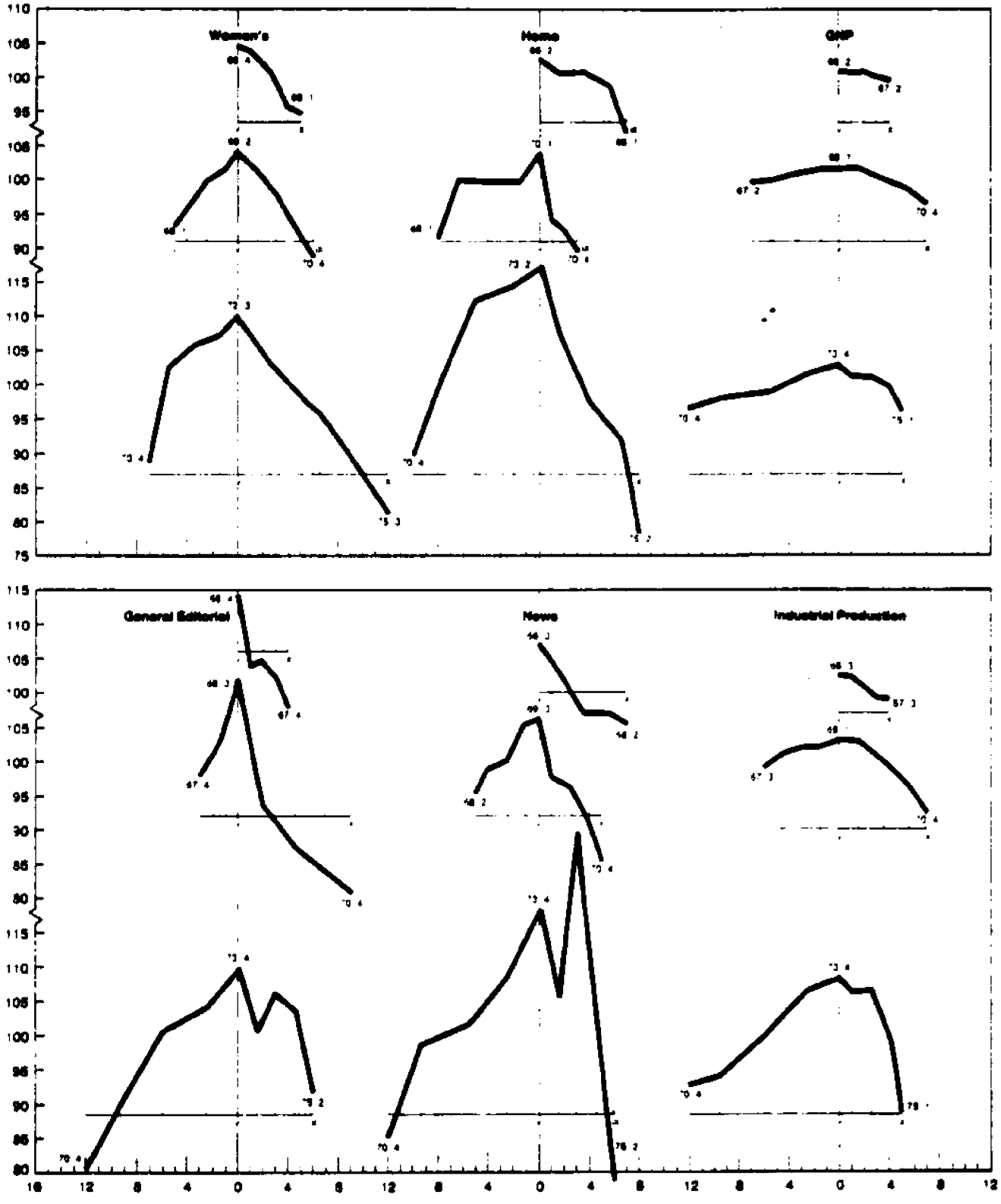


CHART 3 -- Continued



Notes: According to the ... stages I and IX measure the troughs, stage V the peak, stages II–IV the three thirds of the expansion, stages VI–VIII the three thirds of the contraction. All values are expressed as cyclical indexes, i.e. as percentages of the quarterly standings of the series from their respective long-term trend values.

Sources: U.S. Department of Commerce, Federal Reserve Board, Magazine Publishers Association

in cyclical patterns, however, suggests that factors other than the growth rate of advertising revenue (for example, the product mix of advertising) determine the over-all cyclical characteristics of advertising revenue volume of each magazine class. (These determinants will be analyzed extensively in Chapters 4 and 5.

A comparison of the cyclical patterns of magazine advertising revenue reveals important differences in their shapes and timing between the two complete cycles identified in the 1965 - 1976 period. During the first complete cycle, the magazine advertising revenue series generally experienced a mild, short expansion followed by a similarly short, but somewhat sharper, contraction. The respective expansion and contraction phases of the second complete cycle, on the whole, were longer and steeper than comparable phases of the first complete cycle. Generally speaking, the advertising revenue pattern of the various magazine classes during the second complete cycle consisted of a moderate and extended expansion followed by a relatively shorter, but much more rapid, contraction. During both complete cycles, expansions in the magazine advertising revenue series were generally shorter and steeper, and contractions longer and steeper, than comparable phases of either the GNP or the IIP reference series.

A more precise description of the magnitude of cyclical swings by each specific-series and reference-series is provided by numerical amplitude measures. Table 17 lists the amplitudes of cyclical contractions, expansions, and total cyclical fluctuations, as well as the per-quarter amplitudes (all measured as first differences in the respective cyclical indexes between successive turning points) of each magazine class. The data in

TABLE 17

REFERENCE-CYCLE AND SPECIFIC-CYCLE AMPLITUDES,
1965 - 1976 (Percentage Points)

Reference-Cycles and Specific-Cycles	Specific-Cycle Dates			Amplitude of:			Per-Quarter Amplitude of:		
	Trough	Peak	Trough	Rise	Fall	Rise + Fall	Rise	Fall	Rise + Fall
Reference-Cycles:									
GNP		66/2	67/2		- 1.4			-0.4	
	67/2	69/1	70/4	2.0	- 4.9	6.9	0.3	-0.7	0.5
	70/4	73/4	75/1	6.1	- 6.5	12.6	0.5	-1.3	0.7
	75/1	76/4[a]		3.0			0.4		
IIP		66/3	67/3		- 3.2			-0.8	
	67/3	69/3	70/4	3.9	-10.2	14.1	0.5	-2.0	1.1
	70/4	73/4	75/1	15.3	-19.5	34.8	1.3	-3.9	2.0
	75/1	76/4[a]		14.4			2.1		
Specific-Cycles:									
Automotive		66/1	68/3		-10.5			-1.1	
	68/3	70/1	70/4	11.5	-20.8	32.3	1.9	-6.9	3.6
	70/4	73/2	75/3	33.3	-51.7	85.0	3.3	-5.7	4.5
	75/3	76/4[a]		51.4			10.3		
Business		66/3	68/3		-16.6			-2.1	
	68/3	71/3	71/3	13.8	-39.1	52.9	3.5	-4.9	4.4
	71/3	74/4	75/3	41.9	-20.4	62.3	3.2	-6.8	3.9
	75/3	76/4[a]		47.2			7.9		
General Editorial		66/4	67/4		-16.4			-4.1	
	67/4	68/3	70/4	13.8	-31.0	44.8	4.6	-3.4	3.7
	70/4	73/4	75/2	28.7	-17.7	46.4	2.4	-3.0	2.6
	75/2	76/4[a]		41.4			6.9		
Home		66/2	68/1		-11.2			-1.1	
	68/1	70/1	70/4	11.6	-13.6	25.2	1.5	-4.5	2.3
	70/4	73/2	75/2	27.3	-38.2	65.5	2.7	-4.3	3.6
	75/2	76/4[a]		33.3			5.6		
Men's		66/3	68/1		-13.0			-2.2	
	68/1	69/2	70/4	17.5	-20.3	37.8	3.5	-3.4	3.4
	70/4	73/4	75/4	27.6	-33.4	61.0	2.3	-4.2	3.1
	75/4	76/4[a]		22.5			5.6		
News		66/3	68/2		-11.5			-1.6	
	68/2	69/3	70/4	10.8	-20.9	31.7	2.2	-4.2	3.2
	70/4	73/4	75/2	32.7	-39.1	71.8	2.7	-6.5	4.0
	75/2	76/4[a]		23.4			3.9		
Sports		66/2	67/4		- 9.5			-1.6	
	67/4	69/4	70/3	16.0	-10.6	26.6	2.0	-3.5	2.4
	70/3	73/2	75/2	18.0	-37.3	55.3	1.6	-4.7	2.9
	75/2	76/4[a]		14.0			2.3		
Women's		66/4	68/1		- 9.7			-1.9	
	68/1	69/2	70/4	9.6	-15.2	24.8	1.9	-2.5	2.3
	70/4	72/3	75/3	21.1	-28.6	49.7	3.0	-2.4	2.6
	75/3	76/4[a]		41.4			8.3		

[a] Incomplete rise through the terminal date of the study.

Table 17 confirm the finding -- based upon the nine-stage format -- that the cyclical swings (expansions and contractions) over the course of the second full-cycle were generally larger than those experienced in the first cycle. Measured from trough to trough, the average amplitude of the second cycle was 62.1 percentage points, or 80 percent greater than the 34.5 percentage points average amplitude during the first full-cycle. More important, the average amplitude of each cycle phase tended to exceed the average amplitude of the phase immediately preceding it. Thus, for example, not only was the average amplitude of the second expansion greater than the amplitude of the first expansion, it was also generally greater than the average amplitude of the first contraction, the contraction immediately preceding it. (This tendency appears to have continued during the respective expansions following the 1975 troughs of each specific-cycle; by the end of 1976, most of the cyclical indexes had already risen to at least their 1973 peak levels, with no indication that the over-all expansion of magazine advertising was about to abate.)

Across the eight specific cyclical indexes, the average full-cycle amplitude varied considerably, from 37.3 percentage points (or 40.4 percent of the average quarterly standing over the two full-cycles) for women's magazines to 58.7 percentage points (or 67.2 percent of the average standing) for automotive magazines.[24] These specific-cycle amplitudes were substantially higher than the average full-cycle amplitudes of GNP (9.8 percentage points) and of industrial production (24.5 percentage points).

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[24] Figures for average quarterly standings are based upon cycle-relatives.

Each of the four magazine classes with the lowest average full-cycle amplitude (women's, sports, home, and general editorial) also ranked among the four classes whose cyclical turning points, on the average, lagged the turns in the reference-cycles by the smallest number of quarters (see Table 14). On the other hand, the four magazine classes with the highest average full-cycle amplitude (automotive, business, news, and men's) ranked among the four classes whose specific-cycle turning points had the greatest average lag at reference-cycle peaks and troughs.

These relative rankings remained the same regardless of whether the amplitude measures were expressed as simple first differences of on a per-quarter basis (see Table 17). However, the per-quarter amplitude measures modify the earlier finding that successive cyclical phases of all eight specific-series routinely experienced ever-greater amplitudes. The per-quarter amplitude of the second specific-cycle expansion exceeded that of the first expansion for only four magazine classes; the second contraction had a higher per-quarter amplitude than that of the first contraction for only five classes. Therefore, while the amplitude experienced during the second full-cycle was generally higher than that experienced during the first full-cycle -- for all eight specific-series and both reference-series -- there was no systematic tendency for ever-expanding cyclical amplitudes among successive cyclical phases when amplitude measures are expressed on a per-quarter basis.

The per-quarter amplitude measures also reaffirm that, for both the reference-series and the specific-series, contractions were somewhat

sharper than their respective expansions (see Chart 3). For GNP, the per-quarter amplitude during expansions and contractions averaged 0.4 percentage points and 0.8 percentage points, respectively; for industrial production, per-quarter amplitudes averaged 0.9 percentage points during expansions and 1.6 percentage points during contractions. The specific-series were more volatile than the reference-series -- especially GNP -- during both expansions and contractions. On the average, the per-quarter specific-cycle amplitude was 2.6 percentage points (or 2.6 percent of the average quarterly standing over the course of the two full-cycles) during expansions and 3.7 percentage points (or 3.7 percent of the average quarterly standing) during contractions.

Amplitudes of cyclical expansions, contractions, and total cyclical fluctuations, as well as per-quarter amplitudes, were next measured on a GNP reference-cycle basis (see Table 18). Measured in this way, cycles in each magazine advertising series (with the exception on women's magazines) experienced noticeably greater fluctuation during the second full-cycle than during the first full-cycle. Full-cycle amplitudes ranged from -4.5 percentage points for sports magazines to +22.7 percentage points for business magazines during the first full-cycle; the range widened to +12.8 percentage points for women's magazines and to +72.8 percentage points for automotive magazines over the course of the second full-cycle. In general, the full-cycle amplitudes of the magazine advertising series were greater than those of the reference-series during both cycles; and amplitudes of the partial expansion in each magazine advertising series after the 1975/1 GNP trough continued in this pattern. These general

TABLE 18

REFERENCE-CYCLE AND SPECIFIC-CYCLE AMPLITUDES ON GNP-REFERENCE-CYCLE BASIS (POSITIVE PLAN), 1965 - 1976 (Percentage Points)

Reference-Cycles and Specific-Cycles	Specific-Cycle Dates: Trough	Peak	Trough	Amplitude of: Rise	Fall	Rise + Fall	Per-Quarter Amplitude of: Rise	Fall	Rise + Fall
Reference-Cycles:									
GNP		66/2	67/2		- 1.4			-0.1	
	67/2	69/1	70/4	2.0	- 4.9	6.9	0.1	-1.8	1.0
	70/4	73/4	75/1	6.1	- 6.5	12.6	0.6	-1.1	0.8
	75/1	76/4		3.0			0.4		
Specific-Cycles:									
Automotive		66/2	67/2		- 2.1			-0.4	
	67/2	69/1	70/4	- 0.7	-11.4	10.3	-0.1	-1.6	0.7
	70/4	73/4	75/1	29.2	-43.6	72.3	2.4	-8.7	4.3
	75/1	76/4		47.5			6.8		
Business		66/2	67/2		9.1		2.3		
	67/2	69/1	70/4	- 7.7	-30.4	22.7	-1.1	-4.3	1.6
	70/4	73/4	75/1	25.6	- 3.9	29.5	2.1	-0.8	1.7
	75/1	76/4		44.7			6.3		
General Editorial		66/2	67/2		- 6.5			-1.6	
	67/2	69/1	70/4	- 5.9	-18.2	12.3	-0.8	-2.6	0.9
	70/4	73/4	75/1	28.7	- 7.2	35.9	2.4	-1.4	2.1
	75/1	76/4		31.0			4.4		
Home		66/2	67/2		- 2.9			-0.7	
	67/2	69/1	70/4	- 1.3	- 9.9	7.6	-0.2	-1.3	0.5
	70/4	73/4	75/1	11.5	-17.3	28.8	1.0	-3.5	1.7
	75/1	76/4		28.1			4.0		
Men's		66/2	67/2		- 2.2			-0.6	
	67/2	69/1	70/4	- 0.5	- 9.7	9.2	-0.1	-1.4	0.7
	70/4	73/4	75/1	27.6	-14.5	42.1	2.3	-2.9	2.5
	75/1	76/4		3.5			0.5		
News		66/2	67/2		- 4.0			-1.0	
	67/2	69/1	70/4	5.1	-16.6	21.7	0.7	-2.4	1.6
	70/4	73/4	75/1	32.7	-20.5	53.2	2.7	-4.1	3.1
	75/1	76/4		4.3			0.7		
Sports		66/2	67/2		- 4.9			-1.2	
	67/2	69/1	76/4	4.5	9.0	- 4.5	0.6	1.3	-0.3
	70/4	73/4	75/1	- 1.4	-28.2	26.8	-0.1	-5.6	1.6
	75/1	76/4		11.6			1.7		
Women's		66.2	67/2		- 0.4			-0.1	
	67/2	69/1	70/4	0.5	-12.8	13.3	0.1	-1.8	1.0
	70/4	73/4	75/1	7.5	- 5.3	12.8	0.6	-1.1	0.8
	75/1	76/4		31.7			4.5		

findings concur with those of our earlier analysis of full-cycle amplitudes measured on a specific-cycle basis.

Examination of Table 19 reveals that GNP reference-cycles and magazine advertising revenue cycles measured on a GNP reference-cycle basis did not uniformly experience congruent movements. For example, during the 1967/2 - 1969/1 reference-cycle expansion there was mild inverse conformity (i.e., mild countercyclicality) between magazine advertising cycles and the GNP cycle. During that GNP-cycle expansion, only 3 magazine advertising cyclical indexes increased (5 decreased) in level. On the whole, however, there was strong positive conformity (i.e., procyclicality) between GNP-cycles and magazine advertising cycles during corresponding expansions and contractions. At least 7 of the 8 magazine advertising cycles moved procyclically during each reference-cycle phase (with the exception of the aforementioned 1967/2 - 1969/1 GNP-cycle expansion); and during two reference-cycle phases there was perfect positive conformity between the reference-cycle and the magazine advertising cycles.

The generally positive conformity between cyclical phases of the reference-series and the various specific-series expressed on a reference-cycle basis can also be seen in the nine-stage cyclical patterns presented in Chart 4. These cyclical patterns graphically reaffirm that, with the exception of the 1967/2 - 1969/1 reference-cycle expansion, specific-cycles generally conformed positively to GNP reference-cycles. (See Table 18.) Although sports magazine advertising revenue, and business magazine advertising to a lesser extent, indicated some tendency toward inverse conformity, the evidence in Table 19 and Chart 4 lead to the determination that their fluctuations over the two-and-a-half cycles were procyclical.

TABLE 19

INDEXES OF EXPANSION, CONTRACTION, AND FULL-CYCLE CONFORMITY

Reference-Cycle Phase	Conformity Index [a]
1966/2 - 1967/2 Contraction	75
First Full-Cycle:	
1967/2 - 1969/1 Expansion [b]	-25
1969/1 - 1970/4 Contraction [c]	75
1967/2 - 1970/4 Full-Cycle [d]	75
Second Full-Cycle:	
1970/4 - 1973/4 Expansion	75
1973/4 - 1975/1 Contraction	100
1970/4 - 1975/1 Full-Cycle	100

[a] Ranges from +100 for perfect positive conformity to -100 for perfect inverse conformity.

[b] Expansion conformity index computed by counting the number of magazine classes whose revenues increased during the reference expansion, subtracting the number whose revenue decreased, and expressing the difference as a percent of the total number of magazine classes (8).

[c] Contraction conformity index computed by deducting the number of classes with revenue increases during the reference-cycle contraction from the number of classes whose revenue decreased and expressing this difference as a percent of the total number of magazine classes (8).

[d] Full-cycle conformity measures based on the difference between the average quarterly changes during contraction and during the preceding expansion.

CHART 4

REFERENCE-CYCLE PATTERNS OF MAGAZINE ADVERTISING, GROSS NATIONAL PRODUCT, AND THE INDEX OF INDUSTRIAL PRODUCTION, 1965–1976 (Positive Plan)

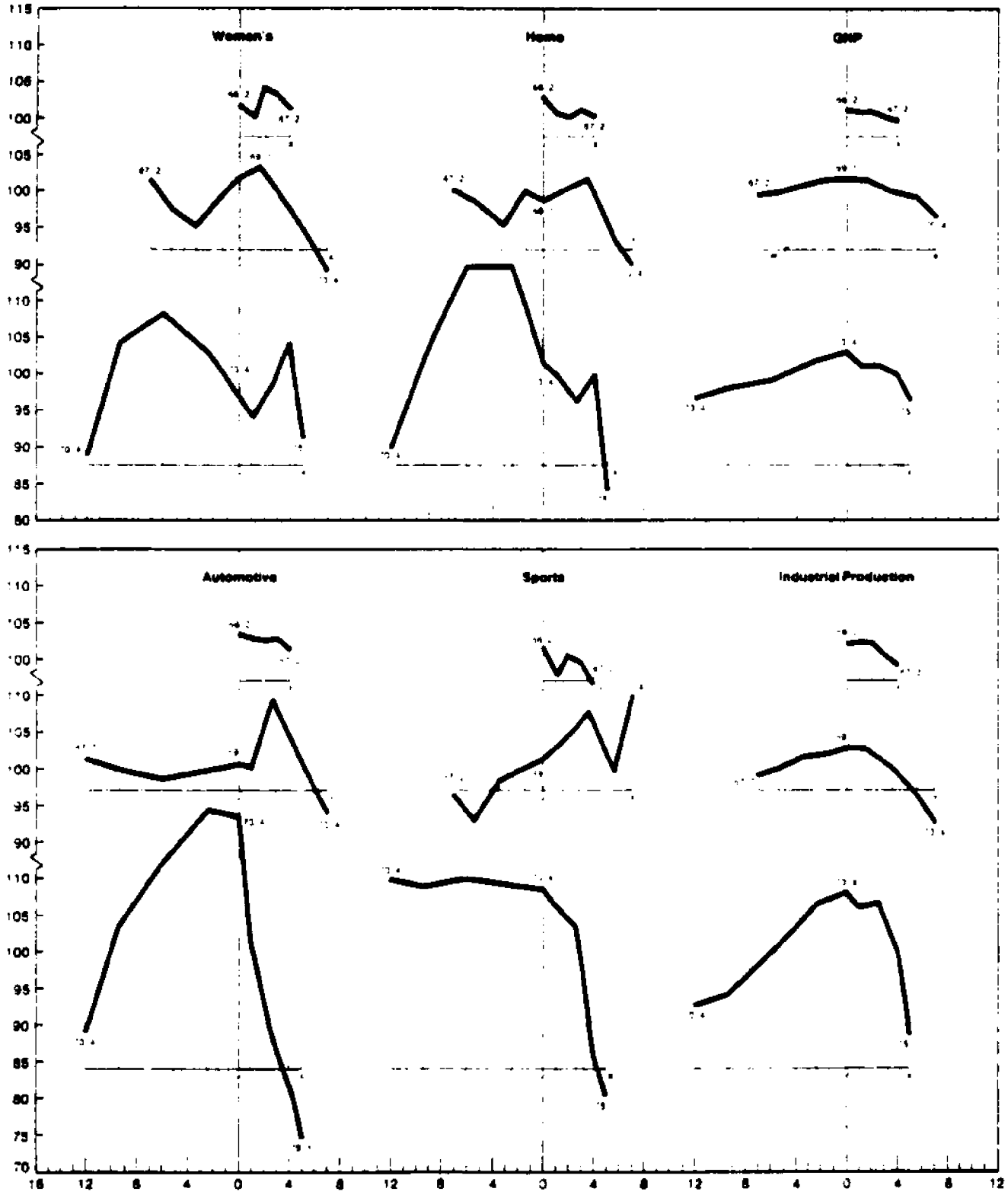
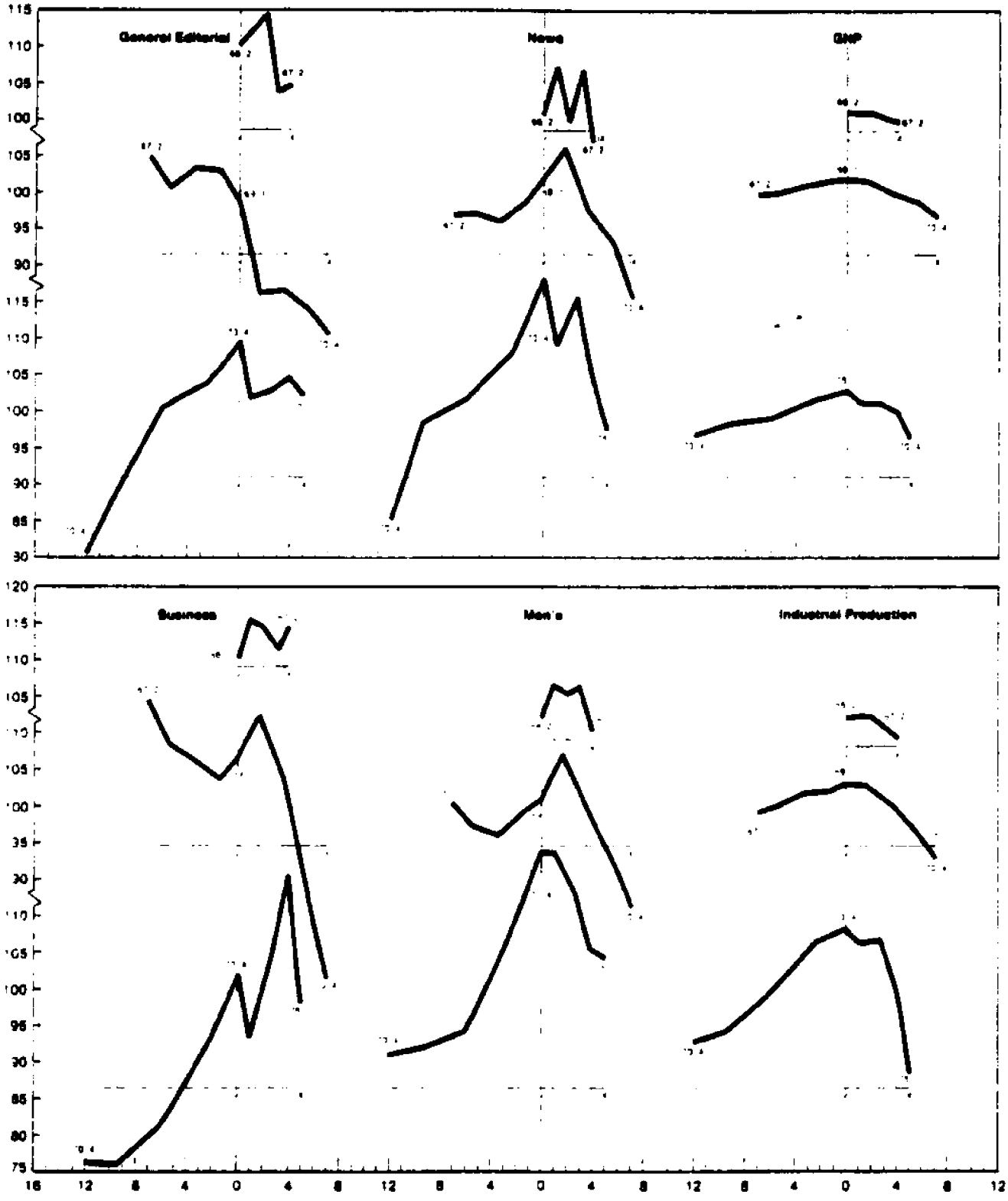


CHART 4 -- Continued



Notes. According to the "peak-trough plan," stages I and IX measure the reference-cycle troughs, stage V the peak, stages II–IV the three thirds of the expansion, stages VI–VIII the three thirds of the contraction of the GNP reference-cycle. All values are expressed as "cyclical indexes" (i.e., as percentages of the quarterly patterings of the series from their respective long-term trend values).

Sources. U.S. Department of Commerce, Federal Reserve Board, Magazine Publishers Association

The exceptional patterns during the 1967/2 - 1969/1 GNP-cycle expansion can be explained by two unusual circumstances: (1) the genreal business cycle growth-recession during which the Federal Reserve deliberately tightened the availability of loanable funds for business investments, including advertising; and (2) relatively large differences between the timing of the respective reference-cycle and specific-cycle trough and subsequent upturn.

Summary

While the limited number of cycles covered by the present study precludes broad generalizations about magazine advertising revenue cycles, several tentative conclusions emerge from the above examination of cyclical patterns. The data and descriptions presented in this chapter show that each magazine class experienced its own unique growth trend and cyclical pattern. Furthermore, those unique secular and cyclical patterns were shown to be associated with various qualitative and quantitative attributes of the magazines in each class. Among the attributes examined was the composition and concentration of products in the advertising bases of each magazine class, which were shown to be strongly associated with its editorial direction. Magazine classes with the most similar editorial approaches also tended to have the most similar advertising revenue growth rates.

All comparisons of magazine advertising revenue series with the GNP and IIP series used to represent the general business cycle suggest that magazine advertising revenue fluctuates procyclically. With the exception of the cyclical growth pattern of one GNP expansion, magazine advertising revenue cyclical patterns generally conformed strongly and positively to

those of the two reference series. The amplitude of magazine advertising revenue cycles, on the average, increased with each successive cyclical phase and consistently exceeded the amplitude of the two reference series. On a per-quarter basis as well, the general tendency for increasingly sharp cyclical swings could be seen for all specific magazine and reference series. Timing analysis indicated that turning points of the magazine advertising revenue cycles tend to lag at business cycle troughs; while the evidence was less pronounced at business cycle peaks, there are indications that, on balance, they lag at business cycle peaks as well.

The results presented here point the direction to be taken in the detailed analysis of the cyclical determinants of magazine advertising spending decisions developed in Chapter 4. The degree to which the composition of the advertising base of each magazine class influences the level and growth of advertising revenue will be analyzed with reference to the finding of a tendency for the turning points in specific magazine advertising revenue cycles to lag turning points in economic activity. Among the behavioral processes which this lag may reflect, and which will be analyzed, are: (1) the propensity of advertisers to determine future advertising expenditures on the basis of past sales; (2) the fixed or semi-fixed character of advertising space insertions; and (3) the inability of advertisers to fully anticipate turning points in their sales cycles which cause them to maintain increases or decreases in advertising outlays past these turning points.

CHAPTER IV

AD-BUDGETING POLICIES AND BUSINESS CONDITIONS: THEIR IMPACT ON MAGAZINE ADVERTISING CYCLES

The Level of Advertising Expenditures

"We have no miraculous way of determining our advertising and promotion budget," declared the merchandising vice president of a large, well-known manufacturing company. "I believe we are quite orthodox. Our approach stems from historical records, from the observed efforts of the competition, and from a decision as to how much of the sales dollar is affordable for advertising and promotion."[1]

This comment sums up the thoughts of many of the 267 senior marketing executives who responded to a 1967 Conference Board survey on organization and promotion budget-setting. Advertising budget policies reported in the survey showed that corporate executives are governed by a mixture of rational and intuitive policies. Levels of advertising expenditure are rarely determined on the basis of market theory or research. Several factors are usually taken into account before advertising budgets are set.

A body of economic literature has attempted to model the advertising budget process, but these models are valid only when rational behavior governs business decisions. In theory, it may be argued that advertising

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[1] David L. Hurwood, "How Companies Set Advertising Budgets," The Conference Board Record 5 (March 1968): 34.

expenditures would fluctuate along with general business activity, because (a) the price and income elasticities of demand for goods and services are generally positive, and (b) the promotional elasticity of advertising is, in most cases, subject to the law of diminishing returns.[2] Advertisers, however, do not always behave rationally under real world conditions of cyclical expansions and contractions complicated by a stubborn inflation that defies the business cycle. It is worthwhile, therefore, to carefully examine and analyze actual advertising budget practices and their probable relation to cyclical fluctuations in advertising expenditures.

Advertising Budget Determination Policies

Advertisers weigh various combinations of criteria before establishing their advertising budgets. Sometimes, their decisions are based upon fairly simple rules-of-thumb; at other times, combinations of factors contribute to the budget decision. The ultimate result of the budget process is an advertising expenditure level usually based on one or more of the following criteria: (1) the past year's sales; (2) anticipated sales; (3) desired advertising dollars per unit of sales; (4) the past year's profits; (5) anticipated profits; (6) advertising expenditures by major competitors; (7) desired appropriation per wholesale and/or retail outlet; (8) desire to build goodwill; (9) need to achieve a stated market objective; and (10) general economic conditions.

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[2] See Julian L. Simon, Issues in the Economics of Advertising (Urbana, Illinois: University of Illinois Press, 1970), pp. 126 - 138.

Of course, no one, or combination, of these factors will automatically lead advertisers to a sound budget appropriation. Most of these criteria represent statistical descriptions, or accounting ratios, that relate arithmetically to a host of market and economic conditions pertinent to a given company. Advertising policies, then, could be expected to vary considerably among firms and, from time to time, within a firm, depending on the type of products, market conditions, the company's financial condition, the stability of profits, and other relevant economic factors. Whether an advertiser chooses to base budget decisions on one criterion or several, none of these criteria can automatically lead the advertiser to the "right" expenditure level.

The various criteria that determine advertising expenditures could be summarized by four distinct budget approaches: (1) competitive parity approach; (2) all-you-can-afford; (3) task-and-objective approach; and (4) percentage-of-sales approach.[3] Whichever of these approaches companies favor, they generally provide themselves with room to maneuver and avoid being locked into an inalterable budget. Companies generally adjust their budgets -- with periodic reviews and contingency funds -- for changes in demand, new product possibilities developing later in the budget year, and shifting competitive pressures.

The foundations for these various budget approaches obviously depend upon prevailing economic conditions at the firm level, industry level, and in the national marketplace. This is not difficult to understand in view

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[3] These approaches were first described in detail in Joel Dean, Managerial Economics (Englewood Cliffs, N.J.: Prentice-Hall, 1951). See especially p. 353.

of the common reliance on rules-of-thumb that focus on sales, profits, and economic aggregates. The degree of advertising expenditure fluctuation for a given product, however, varies with the type of advertising policy a company adopts. For example, advertising budgets set strictly on a percentage-of-sales basis are likely to be more susceptible to business fluctuations than budgets set under task methods, which contain long-term objectives. Given these distinctive traits among advertising budget approaches, it is necessary to analyze the extent to which business fluctuations influence the variability of advertising outlays under the various budgeting approaches.

Competitive-Parity

The competitive-parity approach to ad-budgeting represents a defensive approach to the appropriation process. The advertising outlays of major competitive rivals is the primary criterion on which advertising expenditure levels are set. This approach is rationalized by the belief that competitors' advertising intensity influences the productivity of the firm's own advertising. Generally, firms that employ this approach will attempt to spend an amount set in a fixed proportion to spending of major competitors, especially the industry leader. This practice has particular appeal to relatively small firms that lack independence of action in the marketplace and that cannot afford an "advertising war." For larger companies -- those able to exert some influence on the market -- this practice is less satisfactory than an independent budget approach.

Since the competitive-parity approach centers around the advertising policies of larger firms, the fulcrum of any cyclical analysis must also center around these firms. The degree to which advertising policies of large firms conform to over-all business cycles will determine the closeness of small firms' advertising expenditure fluctuations to fluctuations in general economic conditions. For the 1956 - 1959 period, Charles Yang analyzed the advertising levels of the top 30 national advertisers of 1958.[4] Yang noted that the rate of increase of advertising expenditures for these large advertisers delcined strongly in the 1958 recession year and then rebounded sharply in the 1959 recovery year. This evidence led to the tentative conclusion that budgets of large advertisers fluctuate with the business cycle. Inferentially, then, the ad-spending patterns of small firms that followed their industry leaders during this period showed resemblance to the business cycle as well, though perhaps with a lag.

All-You-Can-Afford

Perhaps the least structured advertising budget policy arises when a firm spends whatever it thinks it can afford. A firm with a conservative management or with limited working capital and sources of financing may adopt this approach, because it links advertising expenditures directly to earnings. The major delimiting factor in determining a company's advertising outlay is likely to be the need for satisfactory profits in the

[4] Charles Yang, A Theoretical and Empirical Investigation of Advertising Cycles," (Ph.D. dissertation, New York University, Graduate School of Business Administration, 1962), p. 117.

current year (even if this denies the role of current advertising in building future earnings).

Firms that adopt the "all-you-can-afford" approach trade off advertising expenditures against one or more other activities. Taplin found that advertising appropriations are commonly set as a "joint residuum" with profits so that one can be increased only at the expense of the other.[5] According to Taplin, the reasons for this practice range from sheer shortsightedness to a deliberate decision on how much to venture on an activity whose results are deemed to be a matter of pure uncertainty. Sellers with no faith whatsoever in the power of advertising to promote sales, for example, commonly terminate advertising after a bad year in order to budget for a healthier profit in the next year. (These sellers, obviously, do not believe in the concept of advertising capital stocks.) At the opposite extreme, sellers who believe that anything could be sold if it is advertised heavily enough -- at the expense of current profits -- do not accept the argument that, in certain circumstances (e.g., a recession), increased advertising expenditures may be ineffective.

Among small firms, the "all-you-can-afford" approach can lead to a profit-advertising spiral. A successful advertising campaign could increase the joint residuum; this in turn could lead to further advertising and further profits. Thus, the "all-you-can-afford" approach may be rationalized by the belief that advertising has some effect upon sales

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[5] Walter Taplin, "Advertising Appropriation Policy," Economica 26 (August 1959): 235 - 238.

for which no precise measurement has been possible. In such cases, however, the probability persists that the expansion of sales in the later stages might be achieved anyway, even without additional advertising.

The cyclical consequences of this budget method are rather clear. Profits, which themselves vary pro-cyclically, pivotally determine advertising expenditure levels for sellers using this approach. For firms that adopt a joint residuum approach, profit levels and advertising levels will fluctuate similarly. In a small minority of cases, advertisers may spend more than is warranted by economic conditions because of their faith in the ability of advertising to increase sales. On the whole, however, only highly profitable companies will be able to spend liberally on advertising when a sales decline leads them into a profit squeeze -- as during a depression. Thus, the magnitude of advertising fluctuation under this method is closely related to firms' earning stability (i.e., the more unstable a company's earnings, the wider the fluctuations in advertising outlay.) Advertising fluctuations, moreover, will likely lag behind fluctuations in general business activity, as a decline in earnings will not be recognized by firms until some time after it has actually occurred.

Task and Objective

Advertising to fulfill a particular task is one of the two most common approaches to the advertising appropriation question, according to corporate executives surveyed by the Conference Board.[6] For product

[6] David L. Hurwood, Advertising Budgets, p. 36.

or service advertising, the objective most frequently mentioned relates to marketing plans or expectations expressed in terms of volume, revenue, support for newly introduced products, income, profits, earnings, market shares, or otherwise. These short-run foci contrast with long-run objectives captured in corporate, institutional, or "public relations" advertising that center on image, reputation, or identity for a brand, firm, or other entity.

For firms that use the task approach, setting appropriate objectives is only the necessary first step. Only after objectives have been set do these firms think about an advertising program and an appropriation to carry it out. Most firms define their advertising tasks on a product-by-product or market-by-market basis. Considerations that frequently go into an assessment of individual product advertising needs include: (1) market share; (2) distribution pattern and depth; (3) customer prospect categories; (4) scheduled trade shows and sales meetings; (5) susceptibility of the product to successful advertising treatment; (6) general market data; and (7) general economic conditions.

Robert S. Weinberg has developed a model of advertising appropriations for firms whose task is to reach or hold a particular market share.[7] For firms that wish to hold their market share, an optimum allocation of advertising budgets can be attained by using the company's historic relation

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[7] Robert S. Weinberg, "Developing an Advertising Planning Procedure -- An Econometric Approach," in Malcolm A. McNiven, ed., How Much to Spend for Advertising?: Methods for Determining Advertising Expenditure Levels (New York: Association of National Advertisers, 1969), pp. 47-66.

between changes in its market share and the ratio of the company's advertising outlay to that of the rest of the industry. Once this relationship is established, the company will be able to compute the exact advertising appropriation size to reach any other given desired market share, provided the volume of the total industry sales and advertising expenditures of the rest of the industry are known. Necessarily, then, if market share objectives are pursued, the firm's -- as well as the industry's -- advertising expenditures will fluctuate directly with sales levels and indirectly with general business cycle conditions. (If, of course, a firm and/or the rest of its industry try to increase their market shares during a recession, advertising could vary counter-cyclically. This scenario, however, would be unlikely.) This adjustment could take place with a lag because of the so-called "advertising ratchet effect," whereby rivals quickly match advertising increases but only hesitantly, and incompletely, follow advertising reductions.[8]

Various criteria are employed for deciding on the intensity of support for a given product. One such criterion is the product's share in the company's total dollar volume. Some firms, however, have so many products that it is not feasible to allocate a strictly proportional share of the advertising budget to each one. Present, or potential, profit contribution is even more frequently cited as a criterion. Often, products which make the greatest contribution to company profits are most favored for advertising support. Other companies choose to strongly support

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[8] P. Doyle, "Advertising Expenditure and Consumer Demand," Oxford Economic Papers 20 (November 1968): 404.

products that have sagging volume or market share.

The introduction of new products is another short-run advertising objective, especially in expanding industries. Since there is no sales record to guide advertising appropriations for a new product, and since competition is difficult to measure, the task method is a logical approach to the determination of the advertising outlay. In deciding how much to spend for promotion of a new product, advertisers must consider the potential volume to be realized and their vulnerability to competitive retaliation.

Promotional expenses for a new product usually run many times higher than expenditures on established products. Indeed, W.K. Kellogg, when asked what was necessary to get into the cornflakes business, said: "To build production facilities, X million dollars; to get consumer acceptance, three times as much."[9] Fluctuations in advertising expenditures, therefore, are significantly influenced by the number of new products introduced into the market. Over the business cycle, the chance of successfully marketing a new product weakens during a recession when demand is sluggish and tight funds discourage expensive new ventures. Thus, the introduction of new products seems to respond to general business conditions, with expected corresponding responses in advertising.

Other task objectives also have definite implications for the time-path of advertising over the cycle. If sales volume levels are the foremost consideration, firms have several options. A sales quota may be set in

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[9] Cited by Nariman K. Dhalla, "Assessing the Long-Term Value of Advertising," Harvard Business Review 56 (January-February 1978): 87.

accordance with changing business conditions (i.e., a low sales quota in recession years and a high one in prosperous years). In this case, advertising budgets will rise and fall directly with the sales quota and, at one step removed, with general business activity -- and perhaps at a lag. In principle, a firm may set a sales quota independently of general business conditions, but this practice is usually avoided to escape wide profit fluctuations. (Promotion to achieve high sales levels can be very expensive, especially during recessions; this may result in unbearably low profit margins, especially for items, such as durable goods, with a high income elasticity of demand.)

Longer-run objectives, such as intensifying brand acceptability or strengthening the company's image, are often as critical as short-run objectives. However, they often can be postponed. It is, therefore, unlikely that expenditures to reach these objectives will remain as high in a recession as in more prosperous times. When funds are tight, firms often concentrate on their most immediate needs, such as preservation of sales and profit levels. If long-term advertising objectives reflect the firm's changing sales and profit levels, then total advertising expenditures could be expected to fluctuate with the business cycle; if funds are shifted to satisfy shorter-run objectives, total advertising volume could remain the same.

Percentage-of-Sales

Several surveys of large advertisers of national brands indicate that the most common approach to ad-expenditure determination is the percentage-

of-sales approach. For many companies, this method entails setting a predetermined ceiling on advertising expenditures based upon a customary ratio between total advertising expenditures and some measure of current, past, or anticipated sales. Most commonly, these rule-of-thumb ratios are simple, flexible benchmarks rather than rigid constraints. The ratios are typically checked against industry averages as well as those of other companies with similar marketing complexities.

Competition between similar products tends to lead to similar percentages of advertising-to-sales for each of the competitors, especially in oligopolistic markets. Advertisers in these markets fear that lower advertising expenditures expose them to lost sales to competitors. At the same time, additional advertising could touch off retaliatory advertising expenditures by competitors that lead to high advertising-to-sales ratios for all competing firms. Since additional advertising generally cannot expand total demand for mature products, firms often leave their established expenditure percentage undisturbed and concentrate on achieving higher sales through more efficient advertising.

Although the practice of maintaining established advertising-to-sales (A/S) ratios appears *prima facie* to be illogical, there are defensible reasons for it:

(1) Predetermined A/S ratios are helpful where advertising forms a "large" proportion of total cost and where economies from larger scale production are not expected. Any large increase in advertising expenditures in this restricted environment could be made only by altering production and distribution processes. This problem is less severe when advertising

expenditures are decreased, but firms are reluctant to do this for fear of losing sales.

(2) When other costs are inflexible, changes in advertising expenditures could likewise upset the production function.

(3) Variations in advertising appropriations are unlikely to break product loyalty rooted in conservative consumption habits, and, therefore, may have little effect on brand or product sales. For firms already in such markets, the temptation to reduce advertising expenditures is dulled by inertia and fear that competitors will attempt to grab larger market shares.

In light of the prevailing rationale for using fixed A/S ratios, it was not surprising that two-thirds of all companies surveyed in 1961 reported their advertising outlays on the basis of anticipated sales and the remaining companies on past or current sales.[10] However, such a budget practice requires accurate forecasts of anticipated sales. Overly or unduly optimistic sales forecasts cause advertisers to continue to expand their promotional efforts after their sales cycle has turned downward, or to increase their promotional efforts before their sales cycle has turned upward. The result of this malcalculation is a tendency for advertising cycle turning points to lag at business cycle peaks and to lead at business cycle troughs. Overly or unduly pessimistic sales forecasts, on the other hand, cause advertising cycle turning points to lead at business cycle peaks and to lag at business cycle troughs. Finally,

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[10] See H. Jay Bullen, "1961 Industrial Ad Budgets -- How Big, What Goes Into Them," Industrial Marketing, January 1961, pp. 31 - 39.

advertisers that base their promotion schedules on past sales trends are constrained by lags in the processing and analysis of sufficient information to recognize turning points in sales cycles. Consequently, promotion decisions based on past sales trends result in advertising cycle turning points that lag at both business cycle peaks and business cycle troughs.

According to a Department of Commerce survey, business executives tend to overstate the ebullience of a prospering economy and the slump of a declining economy.[11] This tendency would have the effect of generating advertising fluctuations that lag at both cyclical peaks and cyclical troughs.

Even if specific decision variables used in determining the size of advertising expenditures do not always directly include general business conditions indicators, the business cycle indirectly plays a role in all ad-budgeting. The various rule-of-thumb criteria rely on past, present, or anticipated sales or profits to comprise the denominator of the respective advertising ratios; these accounting statistics are all intimately affected by the business cycle. Advertisers who choose various task approaches and the all-you-can-afford approach must keep a watchful eye on the complementarity of their objectives or approach to national marketplace conditions. Even firms that follow the competitive-parity approach must be cognizant of business conditions when predicting the advertising

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[11] "Manufacturers' Inventory and Sales Expectations: A Progress Report on a New Survey," U.S. Department of Commerce Survey of Current Business 41 (August 1961): 27 - 31.

strategies of industry leaders.

Relating Magazine Advertising to Business Conditions

While general descriptions of ad-budgeting approaches can suggest total advertising expenditure patterns under different economic conditions, they may not describe these patterns for individual media. Indeed, it is likely that changing economic conditions tend to alter the advertising mix not only among media, but across advertising vehicles within a medium. During business downturns, for example, advertisers might economize on goodwill or "investment-type" advertising and on their bookings in marginally effective media or vehicles. During expansions, on the other hand, advertisers can more easily pursue longer-term advertising goals and gamble on advertisements with otherwise uneconomically high proportions of leakage. These factors become important particularly for advertisers of products with high income elasticities of demand and for the media that typically serve them.

This section will present empirical results that suggest a statistical relationship between various business conditions indicators and levels of advertising expenditures in magazines. Although a broad analysis of changes in media shares over the business cycle would contribute to our understanding of budgeting practices, such an analysis would go far beyond the scope of this study. Instead, we analyze the relationship between magazine advertising and general business conditions, with the implicit assumption that media shares remain constant. This simplifying assumption facilitates comparisons between magazine advertising fluctuations and macro-economic

fluctuations.

The results presented in this chapter will extend and bring up to date earlier studies of the correlation between advertising levels and aggregate business conditions. Economic indicators selected for comparisons in this study generally match comparable indicators used by Louis C. Wagner is a similar study published in 1941.[12] Wagner compared cyclical fluctuations of a composite index of "total" advertising with cyclical fluctuations of several business conditions indicators. These indicators included: (1) Index of Income Payments; (2) Federal Reserve Index of Industrial Production; (3) Corporation Profits; and (4) Department Store Sales.

In the present study, cyclical fluctuations in indicators of business conditions will be contrasted with a cyclical index of total magazine advertising. This index was constructed in the same way as the cyclical indexes of each of the magazine classes. (See Chapter 3, pages 69-75 .) Life and Look magazines, which were excluded from the cyclical index of advertising in general editorial magazines, were likewise excluded from the seasonally adjusted and cyclical indexes of total magazine advertising used here. (See Chapter 2, pages 46-49 for an explanation of these exclusions.)

Wagner's study in 1941 was a fairly comprehensive attempt to relate

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[12] Louis C. Wagner, "Advertising and the Business Cycle," Journal of Marketing 6 (October 1941): 124-125.

fluctuations in total advertising to fluctuations of business conditions indicators. Wagner concluded that "during the thirties it appears that it was a wise policy from the short-term point of view for most companies to follow the business cycle in determining their advertising appropriation, increasing their efforts when sales were easy to obtain and decreasing their efforts when sales were difficult to obtain."[13]

David M. Blank arrived at similar conclusions in his 1962 study. Blank examined cyclical fluctuations in Gross National Product. These comparisons led Blank to the following conclusions:

> Although annual data on national advertising expenditures do not suggest much cyclical variability, examination of quarterly data shows that advertising is quite responsive to swings in general business activity. For the post-war period, in fact, conformity between business cycles and cycles in advertising is very close.
>
> There is a general tendency for peaks in national advertising to follow business cycle peaks by several months, although the amount of this lag has shortened in recent years. On the other hand, troughs in national advertising cycles seem to have preceded troughs in business in earlier periods, but this response has slowed somewhat in the most recent period and is now about the same at cycle troughs and at cycle peaks.[14]

Based on quarterly adjusted data, Blank also determined that magazine advertising cycles lagged behind GNP at cyclical peaks and at cyclical troughs over three postwar cycles.

Charles Y. Yang, in his 1962 doctoral dissertation, confirmed Blank's findings, although he employed a slightly different method for computing

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[13] Ibid., p. 135.

[14] David M. Blank, "Cyclical Behavior of National Advertising," Journal of Business 35 (Januray 1962): 14.

cyclical indexes.[15]

The three studies cited above cover the period between 1930 and 1960. Over much of this period, the print media and radio were the leading media. Even as late as 1960, television was still an "infant industry" whose best years were still to come. Despite continued acceleration of the growth rate of television advertising through the 1970s the underlying economic forces that contribute to ad-budgeting decisions probably did not change. Therefore, we hypothesized that advertising fluctuations in general, and magazine advertising fluctuations in particular, continued to follow the business cycle in the 1960s and 1970s, though perhaps with a lag at cyclical peaks and troughs.

Magazine Advertising and the Gross National Product

Comparisons between magazine advertising cycles and GNP cycles are significant because of the widespread use of GNP as a comprehensive business conditions indicator. (See the discussion of this point in Chapter 3, pages 73-75 .) Both Blank and Yang used GNP cycles as the focal point of their studies. Although Wagner did not have comparable GNP data when he wrote his study (in 1941), he did use an Index of Income Payments. Thus, it is appropriate in the present study to retrace the findings in earlier articles and to extend these empirical results through 1976.

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[15] Charles Yang, "Advertising Cycles," pp. 137 - 144.

Wagner's analysis of advertising and income cycles in the 1930s led him to conclude that total advertising "seems to lag behind changes in income payments."[16] Two decades later, Blank determined that magazine advertising cycles lagged behind GNP cycles by an average of 1.3 quarters at cyclical peaks and by an average 0.3 quarters at cyclical troughs. The length of the lag at cyclical turns in the latter two of the four cycles between 1948 and 1960 was shorter than those in the first two years.

Yang, whose study covered the same time period as Blank's study, generally arrived at the same conclusions as Blank. With one exception, magazine advertising cycles were found either to lag GNP cycles by a single quarter at cyclical turns or to coincide with them. In contradiction to Blank, Yang found that the lag in magazine advertising cycles at his two most recent troughs did not decrease; rather it showed a slight increase.

Cyclical comparisons constructed in the present study for the 1965 - 1976 period tend to confirm the pattern of the earlier published findings. At three out of four turning points examined, the cyclical index of magazine advertising lagged behind the GNP cyclical index; at one cyclical turn the two indexes coincided. At the 1968/3 GNP cyclical peak, the magazine advertising cycle lagged behind the GNP cycle by 5 quarters; at the subsequent peak in 1973/4, the lag was somewhat shorter, only 2 quarters. The two cyclical indexes coincided at the 1970/4 GNP trough, but the magazine advertising cycle lagged behind the cycle in the economic aggregate by a single quarter at the 1975/1 GNP cyclical trough. Based upon the comparative

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[16] Louis C. Wagner, "Advertising and the Business Cycle," p. 129.

cyclical timing at the four turning points, the tendency for magazine advertising cycles to lag behind GNP cycles appears to have persisted through the 1965 - 1976 period.

In order to statistically capture the length of the magazine advertising cyclical lag, simple rank correlations were run between the quarterly seasonally adjusted index of magazine advertising and an index of GNP for several arbitrary lead and lag specifications. The results of this rough test (presented below) indicate that magazine advertising cycles tend to lag behind GNP cycles by between 0 and 1 quarters. Although all

Rank Correlation: Magazine Advertising Revenue vs. GNP Under Selected Lead-Lag Specifications

	Lead						Lag				
No. of Quarters	+8	+6	+4	+2	+1	0	-1	-2	-4	-6	-8
Rank Correlation	.965	.973	.976	.976	.977	.979	.979	.978	.971	.965	.965

of the correlations shown were high -- including those specifications in which magazine advertising leads GNP -- the indication, mild though it may be, is that magazine advertising fluctuations tend to lag slightly behind GNP fluctuations. This tentative finding thus tends to corroborate results in earlier empirical studies.

Magazine Advertising and the Index of Industrial Production

Although the Federal Reserve Index of Industrial Production is a less comprehensive indicator of general business conditions than is GNP, it has

been used in various economic studies that report comparative cyclical fluctuations. (See the discussion of the strengths and weaknesses of the Industrial Production Index as a cyclical indicator, found in Chapter 3, pages 88-89 .) As early as 1941, Wagner included comparisons of national advertising cycles and the Industrial Production Index. Yang used the Industrial Production Index as a secondary indication of the reference cycle in his 1962 study.

The results of Wagner's study for the 1930 - 1939 period mark a useful starting point for determining conformity of magazine advertising cycles to industrial production cycles. Wagner found that fluctuations in total national advertising tend to lag behind fluctuations in industrial production in the timing of cyclical recoveries as well as in the timing of cyclical downturns. Advertising cycles lagged by an average of 1.3 quarters at the four cyclical troughs measured and by an average 0.5 quarter at the four peaks.

Yang, in his analysis of magazine advertising, determined that their cycles, on the whole, tend to lag very slightly behind cycles in industrial production. In three of four industrial production cycles analyzed, the cyclical index of magazine advertising lagged by a single quarter at cyclical peaks; in another cycle, they coincided at the peak. At three of the four cyclical troughs, however, the cyclical indexes coincided; at the other trough the magazine advertising cycle was found to have lagged behind the industrial production cycle. On average, then, Yang found that magazine advertising cycles tend to lag behind industrial production cycles by an average of less than a single quarter at both cyclical peaks and cyclical troughs.

Cyclical analysis of magazine advertising and industrial production over the 1965 - 1976 period reveals that magazine advertising cycles no longer tend to lag behind industrial production cycles at both cyclical troughs and cyclical peaks. The magazine advertising cyclical index reached its cyclical troughs in 1970/4 and in 1975/2, coincident with troughs in the industrial production cyclical index. However, the advertising series reached cyclical peaks in 1969/2 and in 1973/2, one quarter ahead of cyclical peaks in industrial production. These findings, therefore contrast with those of Wagner (for total national advertising) and Yang (for magazine advertising).

In order to further verify these results, simple rank correlations were estimated between the seasonally adjusted index of magazine advertising and the Industrial Production Index for several alternative lead and lag specifications. The results (presented below) indicate that variations in

Rank Correlation: Magazine Advertising Revenue vs. Index of Industrial Production Under Selected Lead-Lag Specifications

	Lead						Lag				
No. of Quarters	+8	+6	+4	+2	+1	0	-1	-2	-4	-6	-8
Rank Correlation	.776	.817	.871	.905	.909	.916	.908	.885	.798	.781	.764

magazine advertising are most closely correlated with variations in industrial production of the concurrent time period. This result closely resembles our earlier conclusion that magazine advertising tends to lag behind industrial production cycles by less than one quarter, if at all. Tentatively, then,

it appears that magazine advertising cycles and industrial production cycles are roughly coincident at cyclical turning points, although minor variations in this relationship appear from time to time. (However, any comparison between the two series must be tempered by recognition that fluctuations in magazine advertising are measured in current dollars and will be affected by inflation; industrial production, on the other hand, measures volume in physical units and is not, therefore, directly influenced by price changes which could alter its cyclical pattern.) ..

Magazine Advertising and Corporation Profits

Past, current, and anticipated profit streams and levels play important roles in ad-budgeting decisions of many large and small companies. The reliance on rule-of-thumb budgets, which set advertising as a ratio to some measure of profits, recurrently appear in surveys of corporate decision-makers. Other advertisers view profits as a joint residuum with advertising expenditures so that one can be increased only at the expense of the other.

Corporate profits respond sensitively to general business conditions. Generally, corporate profits are considered a leading indicator of changes in general economic conditions. Thus, if advertisers tend to base their expenditures on past profits, the magazine advertising cycle could be expected to lag the profits cycle by even more than it lags the GNP cycle (roughly one quarter). If, however, the advertising ratio is dominantly set as a percentage of future profits, magazine advertising cycles could have a shorter lag than -- or even lead -- the profits cycle.

Wagner compared the cyclical timing of corporation after-tax profits and national advertising expenditures over the 1930s. National advertising

was found to lag the profits cycle by an average of about one quarter at cyclical troughs and by about 0.8 quarter at cyclical peaks. Magazine advertising cycles estimated for the current study, on the other hand, appeared to lag behind the profits cycle by an average of about 0.5 quarter at cyclical troughs and 2.5 quarters at cyclical peaks. These findings suggest that past profits are more strongly associated with current magazine advertising levels than are anticipated profits.

Simple rank correlations between magazine advertising and corporate profits did not, however, confirm this result. As shown below, seasonally adjusted magazine advertising expenditures that lead the profits series by 8 quarters showed the highest correlation. The length of the lead time

Rank Correlation: Magazine Advertising Revenue vs. Corporate Profits Under Selected Lead-Lag Specifications

	Lead						Lag				
No. of Quarters	+8	+6	+4	+2	+1	0	-1	-2	-4	-6	-8
Rank Correlation	.934	.913	.894	.868	.859	.866	.864	.847	.757	.689	.684

bears no *a priori* economic significance (i.e., it is only a statistical artifact), but it could suggest that advertisers view advertising expenditures in magazines in much the same way as other investments that yield a delayed, long-term payoff. This tentative conclusion contradicts the finding, based on cyclical turning points, that suggested the dominance of ad-budgeting based on past profits.

The great volatility of profits over business cycles relative to fluctuations in magazine advertising, however, makes any attempt to draw firm

conclusions based upon this evidence a very slippery art. Thus, based upon the crude tests performed in this study, we are unable to determine the approximate true length of the lead or the lag of magazine advertising cycles relative to corporate profits cycles.

Magazine Advertising and Department Store Sales

The stimulation of retail sales is the overwhelming ultimate objective of advertising in consumer magazines. For the most part, consumer magazine advertising appeals to audiences that purchase consumer durable and non-durable goods and, to a lesser degree, consumer services. Some industrial advertising appears in consumer magazines, but only in select publications and editions. In light of this advertising composition, cycles in department store sales were analyzed relative to magazine advertising cycles.

On the surface, cyclical comparisons based on department store sales might seem to have limited significance as department store sales comprise only a protion of total retail sales (13 percent in 1976). Yet, a disproportionate share of department store sales consist of those items most heavily advertised in consumer magazines, namely, consumer durable goods with national brand labels, a pattern which validates the cyclical comparison of magazine advertising and department store sales.[17]

Comparison of turning points of the two cyclical indexes between 1965 and 1976 suggests that magazine advertising lagged behind department store sales at both cyclical peaks and cyclical troughs. At cyclical peaks,

[17] Wagner's results and conclusions for department store sales are not presented here because procedural errors render them meaningless.

magazine advertising lagged by an average of 2 quarters; at cyclical troughs, the average lag was 1 quarter. Simple rank correlations between the seasonally adjusted indexes of magazine advertising and department store sales confirmed this finding. Correlations for various lead and lag specifications are presented below. The results show that the correlation

Rank Correlation: Magazine Advertising vs. Department Store Sales Under Selected Lead-Lag Specifications

	Lead						Lag				
No. of Quarters	+8	+6	+4	+2	+1	0	-1	-2	-4	-6	-8
Rank Correlation	.963	.962	.964	.975	.978	.980	.930	.977	.966	.953	.950

between the two indexes is at its highest when current magazine advertising is associated with current department store sales or department store sales of the previous quarter. Since a great deal of department store advertising would be effective as a sales stimulant for only a few days at most (i.e., it is highly perishable), the relative strength of the concurrent correlation was the expected outcome.

Magazine Advertising and Business Conditions: Some Tentative Conclusions

The results presented in this section support only tentative inferences. Since they are based on crude tests, a great deal of weight should not be attached to them. However, they do suggest several tendencies that require further investigation:

(1) Magazine advertising volume tends to correlate highly with aggregated sales, profits, income, and production levels.

(2) The cyclical relationship between magazine advertising and business

indicators has been fairly stable throughout the postwar period.

(3) Magazine advertising cycles usually tend to follow cycles in various business conditions indicators with a brief lag.

(4) Evidence that magazine advertising tends to lag at cyclical turning points of business indicators suggests that advertisers do not immediately adjust their expenditure levels to changing marketplace conditions.

Measuring the Ratio of Magazine Advertising-to-Sales

These tentative findings point to the need for a more rigorous analysis of the relation between magazine advertising outlays and the general business cycle. As a first step, we will investigate the ratio of magazine advertising to personal expenditures on consumer goods.[18]

The economic interpretation of the ratio of advertising-to-sales (A/S) has generated interest among economists and the business community. For one thing, the A/S ratio describes how much of consumer spending can be considered to be absorbed by advertising. For another, interest in the A/S ratio emanates from the belief that firms interested in sales and/or profit maximization strive to find the optimal A/S ratio for each of their goods and services. Business decision-makers, who often determine their advertising budgets as a percentage of some sales measure, obviously consider

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[18] Personal consumption expenditures (PCE) and retail sales data are computed by different procedures. Retail sales data are based upon establishment surveys. PCE measures movements of products into the hands of consumers. However, retail sales and PCE data are close substitutes for each other in most contexts. Thus, PCE henceforth will be referred to as "sales."

the A/S ratio a highly relevant statistic.

The advertising-to-sales ratio has not gained universal acceptance as a relevant behavioral variable. Julian Simon has claimed that misleading conclusions may be drawn when based upon these statistics:

> Advertising ratio data alone are not competent to serve as the basis for any general investigation of the economics of advertising. The behavior of advertising expenditures in the depression of the 1930's is an example of how advertising data can be misleading. If one looks at the proportion of net sales spent for advertising by department (and specialty) stores from, say, 1929 to 1944, the highest ratio occurred in 1932. This suggests that advertising intensity rose in the depths of the depression. But if one looks at the absolute amount spent for advertising by department stores, one sees that it dropped sharply from a high in 1929 to a low in 1933, and was almost as low in 1932 as in 1933. This shows that the use of ratio data alone would almost surely lead a researcher to the wrong conclusion.[19]

Nevertheless, a number of cross-sectional and time series investigations have attempted to capture the relationship between advertising and sales.[20] As early as 1931, Cover et. al. examined newspaper advertising space and sales for Chicago department stores and uncovered seasonal and cyclical relations between sales and advertising.[21] In 1942, Borden showed that 54 percent of the firms he surveyed during the 1930s set advertising appropriations as a percentage of past or current sales levels; another 16 percent were partially steered by sales levels.[22] Jastram, in 1949,

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[19] Julian L. Simon, Issues, p. 310.

[20] An excellent bibliography of studies concerned with advertising-sales relationships can be found in Dhalla, "Long-Term Value of Advertising," pp. 90 - 91.

[21] J.M. Cover et. al., "Department Store Sales and Advertising," Journal of Business 4 (July 1931): 227 - 244.

[22] Neil H. Borden, The Economic Effects of Advertising (Chicago: R.D. Irwin, 1942), pp. 716 - 722, 734 - 736.

reported that 75 percent of large firms he surveyed in the 1930s budgeted their advertisements according to pre-determined advertising-to-planned sales ratios.[23]

In 1969, Melrose attempted to explain advertising outlays of the Lydia Pinkham medicine company with sales data generated by Palda.[24] In Melrose's regression equations, sales explained 80 percent of the variation in Piknham's advertising expenditures over the 1908 - 1960 period. Schmalensee, in 1972, analyzed the same data, but made statistical adjustments for the Great Depression; his equation, based solely on current sales, found sales accounting for 87 percent of the variance in Pinkham's advertising outlays.[25] Schmalensee also found evidence of a strong causal relationship between consumer goods sales and national advertising.[26] In a study published in 1976, Grabowski confirmed Schmalensee's conclusion that the direction of proximate, if not ultimate, causality runs more strongly from sales to advertising than from advertising to sales, regardless of the lag structure.[27]

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[23] Roy W. Jastram, "Advertising Ratios Planned by Large-Scale Advertisers," Journal of Marketing 14 (July 1949): 13 - 21.

[24] K.B. Melrose, "An Empirical Study on Optimizing Advertising Policy," Journal of Business 42 (July 1969): 282 - 292. Also see Kristian S. Palda, The Measurement of Cumulative Advertising Effects (Englewood Cliffs, N.J.: Prentice-Hall, 1964).

[25] Richard Schmalensee, The Economics of Advertising (New York: American Elsevier, 1972), pp. 48 - 58.

[26] A comprehensive definition and application of causality testing in distributed lag models can be found in Peter I. Berman, Inflation and the Money Supply in the United States, 1956 - 1977 (Boston: Lexington Books, 1978), pp. 33, 74 - 76, 82, 84, 90.

[27] Henry G. Grabowski, "The Effects of Advertising on the Interindustry Distribution of Demand," NBER Explorations in Economic Research 3 (Winter 1976): 59 - 70.

Theoretical Considerations on the A/S Ratio

Although the A/S ratio has earned widespread -- if not universal -- acceptance as a meaningful business statistic, few economic analyses have attempted to model the advertising-sales relationship in terms of static and dynamic theoretical constructs. Most of the results of economic studies consider the relationship a unique empirical finding rather than an affirmation (or refutation) of hypotheses based on theory. It is not surprising, then, that few studies have attempted to explain the A/S ratio as a rational, dynamic outgrowth of profit-maximizing behavior. Although a marginalist approach has long existed (it states that firms will advertise up to the point where the marginal value product and marginal cost of advertising are equal) it has been unable to capture the process by which the A/S ratio adjusts over time to changing business conditions.

In his 1976 study, Grabowski summarized the major contributions to the theory behind the advertising-sales relationship.[28] This excellent summary (abridged below for simplicity) stresses the inability of economic literature (through 1976) to capture all of the dynamic adjustment processes underlying the level of the A/S ratio at any instant.

Studies by Rasmussen and by Dorfman and Steiner pioneered in the development of theoretical analyses of advertising-sales relationships.[29]

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[28] Grabowski's excellent summary of theoretical developments on the advertising-sales relationship can be found in Grabowski, "Interindustry Distribution of Demand," pp. 56 - 59.

[29] Arne Rasmussen, "The Determination of Advertising Expenditures," Journal of Marketing 16 (April 1952): 439 - 446. Also see Robert Dorfman and Peter Steiner, "Optimal Advertising and Optimal Quality," American Economic Review 44 (December 1954): 826 - 836.

Rasmussen investigated optimal advertising expenditure levels for a profit maximizing monopoly with a static model. Profits in this model were expressed by the following equation:

(Eq. A) $\pi = PQ(A,P) - C[Q(A,P)] - AT,$

where A = real advertising expenditures, or the number of "viewer-messages"; T = advertising cost per viewer-message; P = product price; Q(A,P) = demand function; and (C(Q)) = cost function. The optimality condition could assume the following formulation if advertising expenditures and price are the decision variables:

(Eq. B) $$\frac{AT}{PQ} = \alpha \frac{P - C'(Q)}{P},$$

where α = advertising elasticity of demand; $C'(Q)$ = marginal cost of a unit of production; and $\frac{P - C'(Q)}{P}$ = the Lerner index of monopoly power. Thus, the advertising-to-sales ratio $\frac{AT}{PQ}$ varies directly with the advertising elasticity of demand (α) and the profit margin on marginal output $\frac{P - C'(Q)}{P}$.[30] Rasmussen shows, however that the percentage-of-sales method of ad-budgeting does not guarantee that optimum level of advertising will take place -- that level, according to Rasmussen, must be somewhere in the elastic portion of the advertising demand (response) curve.

Dorfman and Steiner generalized Rasmussen's simple static monopoly model to allow price and product quality, as well as advertising expenditures,

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[30] In an earlier draft of the present chapter, Professor Michael Grossman pointed out that the optimal ratio of advertising-to-sales for a monopolist equals the ratio of the advertising expenditures elasticity-to-the price elasticity of demand. If the demand function has a constant elasticity, the advertising-to-sales would be stable over time only if both elasticities are stable over time.

to be endogenously determined. Nerlove and Arrow, Gould, Grabowski and Schmalensee further generalized the Dorfman-Steiner analysis to include both dynamic and oligopolistic considerations.[31]

Schmalensee analyzed the advertising-sales relationship for a monopolist under both static and dynamic conditions. If certain demand elasticities are constant, a constant advertising-to-sales ratio could not be ruled out as the optimal decision rule. In particular, Schmalensee determined that under fully dynamic conditions the correct decision rule involves the level of sales, not the change in sales.

More specifically, Schmalensee demonstrated that Rasmussen's formulation of the advertising-to-sales ratio (Equation B) could be generalized in a dynamic oligopolistic framework to the following condition.

(Eq. C) $$\frac{AT}{PQ} = \frac{f(r)\ P-C'(Q)}{P} \quad \alpha' \ ,$$

where r = the firm's discount rate and α' = the firm's net advertising elasticity of demand (i.e., allowing for competitive reactions to its own advertising.) This equation assumes a demand function with a general first-order dynamic degenerative lag structure (i.e., such as a Koyck lag). Under static conditions, optimal advertising-to-sales ratios depend on advertising effectiveness, price mark-up and anticipated competitive advertising responses. This construct, and a Cournot-like model also developed by Schmalensee (in which each firm's advertising expenditure is independent of competitors' expenditures) tend to support the rationality of percentage-of-sales decision rules. However, Schmalensee was unable to completely

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[31] See Henry Grabowski, "Interindustry Distribution of Demand," pp. 56 - 59.

establish the rationality of decision rules for oligopolists under dynamic conditions. He observed that if certain long-run elasticities were constant, and if oligopoly prices responded in the same way as monopoly prices under dynamic conditions, the optimal advertising-to-sales ratio would be a constant.

Grabowski attempted to explain this quirk by generalizing Equation (C) to account for interdependencies between advertising and other decision variables, such as prices or product quality. If oligopolists are assumed to treat prices as exogenously determined and to compete by nonprice means, then the optimality condition may be viewed as denoting the firm's desired level of advertising, AT*, in any period. Rearranging terms, Equation (C) -- the optimality condition -- becomes the following:

(Eq. D) $$AT^* = f(r)\,\frac{P-C'(Q)}{P}\,\alpha' S,$$

where S = current dollar sales by the firm. This reformulation has an important implication: if firms that use a constant $\frac{AT}{PQ}$ ratio gradually adjust their optimal advertising level, the impact of advertising on sales can be estimated only by a simultaneous equation model that captures the feedback between sales and advertising.

Simultaneous Equation Bias in the Advertising-Sales Relationship

Since the 1930s, empirical studies have attempted to evaluate the effect of advertising on sales at both the firm and the industry level. The earliest studies used simple linear regression models and static

formulations; later models progressed to a multiple regression framework which, by the 1970s, became dynamic in nature. Until about 1972, almost all of these studies focused on sales determination equations for either a single industry of for a small group of industries.[32] Estimation of most of the sales determination equations clearly demonstrated that fluctuations in advertising have a positive and significant effect on market shares and firm sales within particular industries. For example, in a study of the effects of advertising on market shares in 5 industries -- cigareetes, soft drinks, cereals, beer, and gasoline -- Grabowski found (1) that advertising significantly influences current and future market shares in all industries except gasoline; and (2) calculated advertising-to-sales ratios correspond closely with actual ratios in 3 of the 5 industries -- cigarettes, soft drinks, and cereals.[33] However, the evidence presented in all of the studies did not unanimously concur. Schmalensee, for example, found little evidence that total cigarette advertising has a significant effect on the total consumption of cigarettes.[34] However, this apparent contradiction of Grabowski's findings is not disturbing; researchers have often used such different models, samples, and time periods that it is difficult -- if not impossible -- to compare or

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[32] An excellent summary of the results of studies of the immediate and cumulative effects of advertising for various products appears in Nariman Dhalla, "Long-Term Value of Advertising," pp. 90 - 91.

[33] See Henry G. Grabowski, "The Effects of Advertising on Intraindustry Shifts in Demand," NBER Explorations in Economic Research 4 (Winter 1977/ Spring 1978): 675 - 701.

[34] Richard Schmalensee, Economics of Advertising, p. 213.

check the consistency of their findings.

Nevertheless, economists and marketing experts in general have long recognized that simple single-equation reduced form models that incorporate advertising and sales variables could generate biased coefficients and misleading estimates.[35] In spite of this, most of the relevant literature has used simple ordinary least squares methods. During the 1970s, however, several studies tested for simultaneous equation bias in sales determination equations that utilized an advertising variable. A critical analysis of these studies, and a further extension of their results to questions of simultaneity in the effects of advertising on the intraindustry distribution of demand, are beyond the scope of the present study. Instead, we will briefly review the evidence from several studies that examined the impact of advertising on the interindustry distribution of demand. These studies, which generally used highly aggregated IRS or personal consumption expenditures data, as well as relatively less aggregated data at the 3-digit SIC-code level, serve as tests of Galbraith's postulate that "If advertising affects the demand between sellers of a particular product, it must also be supposed that it affects distribution as between products."[36]

In 1974, Comanor and Wilson estimated industry demand functions that included advertising, income, and price variables in a dynamic state, or

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[35] The problems with the use of single equation reduced form models are discussed in Frank M. Bass, "A Simultaneous Regression Study of Advertising and Sales of Cigarettes," Journal of Marketing Research 6 (August 1969): 291 - 300.

[36] John K. Galbraith, The New Industrial State (Boston: Houghton Mifflin, 1967), p. 205.

stock adjustment, model.[37] Comanor and Wilson's estimations, for about 30 manufacturing classes at roughly the 3-digit SIC-code level, covered the 1946 - 64 period. While the impact of the explanatory variables differed significantly across industry classes, the estimations generally revealed that the advertising variable outperformed the other variables both in terms of statistical significance and explanatory power. These results suggest that, for the most part, advertising has a far greater impact on the level of industry demand than relative prices and, thus, is likely to be a more important determinant of the interindustry allocation of resources.

The results of the Comanor and Wilson study, however, have not been universally accepted. For example, Grabowski has found (1) evidence of compositional errors in their sample that bias the direction of their results; (2) possible deficiencies in the formulation and interpretation of their model; and (3) results that contradict consistent findings reported in other studies.[38] (Indeed, most empirical studies have been unable to report evidence that advertising has a significant impact on the inter-industry distribution of demand.)

In his 1972 book, Richard Schmalensee tested for simultaneity in the relationship between personal consumption expenditures on goods and national advertising in major media. Schmalensee structured his tests around 4 standard consumption functions in which advertising expenditures were

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[37] William S. Comanor and Thomas A. Wilson, Advertising and Market Power (Cambridge, Mass.: Harvard University Press, 1974). See especially pp. 64 - 109.

[38] Henry G. Grabowski, "Interindustry Distribution of Demand," pp. 23 - 27.

alternately specified as both an independent variable and as an endogenous variable. On the basis of these tests, Schmalensee concluded that the "findings conflict with the hypothesis that advertising has a persistent impact on consumption spending. They suggest, rather, that aggregate consumption influences advertising with a short lag....These conclusions are in no way inconsistent with the private profitability of advertising. Advertising cannot be praised for booms, damned for recessions, or blamed for keeping funds from the public treasury."[39]

In 1974, Ronald P. Wilder used IRS data (at the three-digit SIC level) to test Galbraith's hypothesis that advertising affects the composition of interindustry demand.[40] The test was performed with a simultaneous equation model in which both advertising and sales were specified as endogenous variables, and the sales equation included a measure of relative industry advertising. (Wilder ruled out single-equation models that specify sales as dependent on advertising and other variables because he felt they would result in a biased regression coefficient for the advertising variable, especially if percentage-of-sales budgeting makes A/S ratios stable over time.) For 10 out of 17 industries tested with the simultaneous equation model, the estimated coefficient on the relative advertising variable had the expected positive sign, but it was positive and significant in only one industry. Of the seven industries for which the relative advertising

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[39] Richard Schmalensee, Economics of Advertising, pp. 54, 58.

[40] Ronald P. Wilder, "Advertising and Interindustry Competition," Journal of Industrial Economics 22 (March 1974): 215 - 226.

variable had a negative sign, it was again statistically significant in only one industry. Wilder concluded that "These findings suggest that total industry sales for most of the consumer goods industries studied here are not significantly responsive either to industry advertising relative to advertising outlays of other consumer goods industries or to industry advertising in absolute dollar terms."[41]

Like Wilder, Henry Grabowski tested the effects of total national advertising (measured by trade data) on the interindustry distribution of demand.[42] Grabowski used both an ordinary least squares (OLS) equation and a simultaneous equation model that employed an industry demand (measured by disaggregated personal consumption expenditures series) equation and an advertising determination equation. Results of careful two-stage least squares testing led to the following conclusion:

> The main result emerging from the empirical analysis performed here is the qualitatively different behavior of the advertising-consumption relationship in the determinant and demand equations. In almost all consumption categories considered, sales was a strong explanatory variable of advertising outlays. On the other hand, with the exception of a few advertising intensive categories, advertising had an insignificant effect on consumer demand, after adjustments for external advertising and simultaneous equation effects were made.[43]

When Grabowski used OLS, the estimated coefficient on the advertising variable in the demand equation was significant in one-third or fewer of

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41 Ibid., p. 220.

42 Henry G. Grabowski, "Interindustry Distribution of Demand," pp. 59 - 70.

43 Ibid., p. 65.

the consumption categories measured and had a very low t-statistic (less than 1.0), or the wrong sign, in a majority of industry classes. For the advertising determination equation, by contrast, the estimated coefficient on sales (PCE) was significant in 10 out of 15 consumption categories and had a t-statistic over 1.0 in four of the other five categories.

The results of the studies by Schmalensee, Wilder, and Grabowski do not support Galbraith's postulate, and Comanor and Wilson's findings, that (1) advertising has a significant causal impact on the interindustry distribution of demand; or (2) that the advertising-to-sales ratio must be estimated with a simultaneous equation model. Instead, the results of the three studies suggest the presence of unidirectional causality from changes in sales levels to changes in advertising levels, perhaps with a short lag. This evidence lends further credibility to our earlier analyses which similarly suggested that changes in advertising levels are most highly correlated with cyclically sensitive business indicators (including sales) after a brief lag. Given the popularity of rule-of-thumb advertising methods that rely on past sales levels (whose trend often influences expectations of future sales), these conclusions point to the great importance of the ad-budgeting process in conditioning this important component in the behavior of business decision-makers.

Finding the Relationship Between Magazine Advertising and Sales

In most studies of advertising-sales relationships, the advertising variable measures aggregate expenditures in all media combined. This

specification is not unreasonable. Total advertising was (is) still generally believed to significantly affect sales. Analyses of the ad-budgeting process focus on the size of the budget, not media mix. Available data, such as those published in the IRS Sourcebook of Statistics of Income, only report total advertising expenditures at the three-digit SIC industry level. Intra-media data from trade sources are generally difficult to obtain. Thus, advertising variables usually relate to total spending in all media.

There is, however, no reason to believe that advertising media are economic clones of each other. Business conditions that affect expenditures in one medium may not affect another medium to the same degree, if at all. Indeed, expenditures in an individual medium may not even respond proportionately to changes in total aggregate advertising expenditures. It is worthwhile, then, to investigate determinants of advertising expenditures in an individual medium -- in the present study, consumer magazines.

The empirical investigation of consumer magazine advertising draws upon the body of seasonally adjusted magazine advertising data developed in this study for specifically defined industry categories. (See Chapter 2, pages 17-19.)

The measures of sales used in the advertising-sales relation reflect the procedures used to classify the raw magazine advertising data and are most similar in structure to those used in the national income accounts of personal consumption expenditures (PCE).[44] Accordingly, the present

[44] According to an unpublished statistic from CBS, Inc., magazine advertising for consumer services constitutes less than 10 percent of total magazine advertising volume. Therefore, the sales variable selected for the analysis in this chapter and in Chapter 5 is defined by personal consumption expenditures on goods only.

study utilizes the data on PCE as the most comparable measure of sales. For most durable and non-durable goods categories, the magazine advertising data tend to be more narrowly defined than PCE data (except for service categories where the advertising data are very sparse or nonexistent). The product classifications were therefore constructed using PCE definitions, with re-aggregated advertising data where the latter were available on a comparable basis.

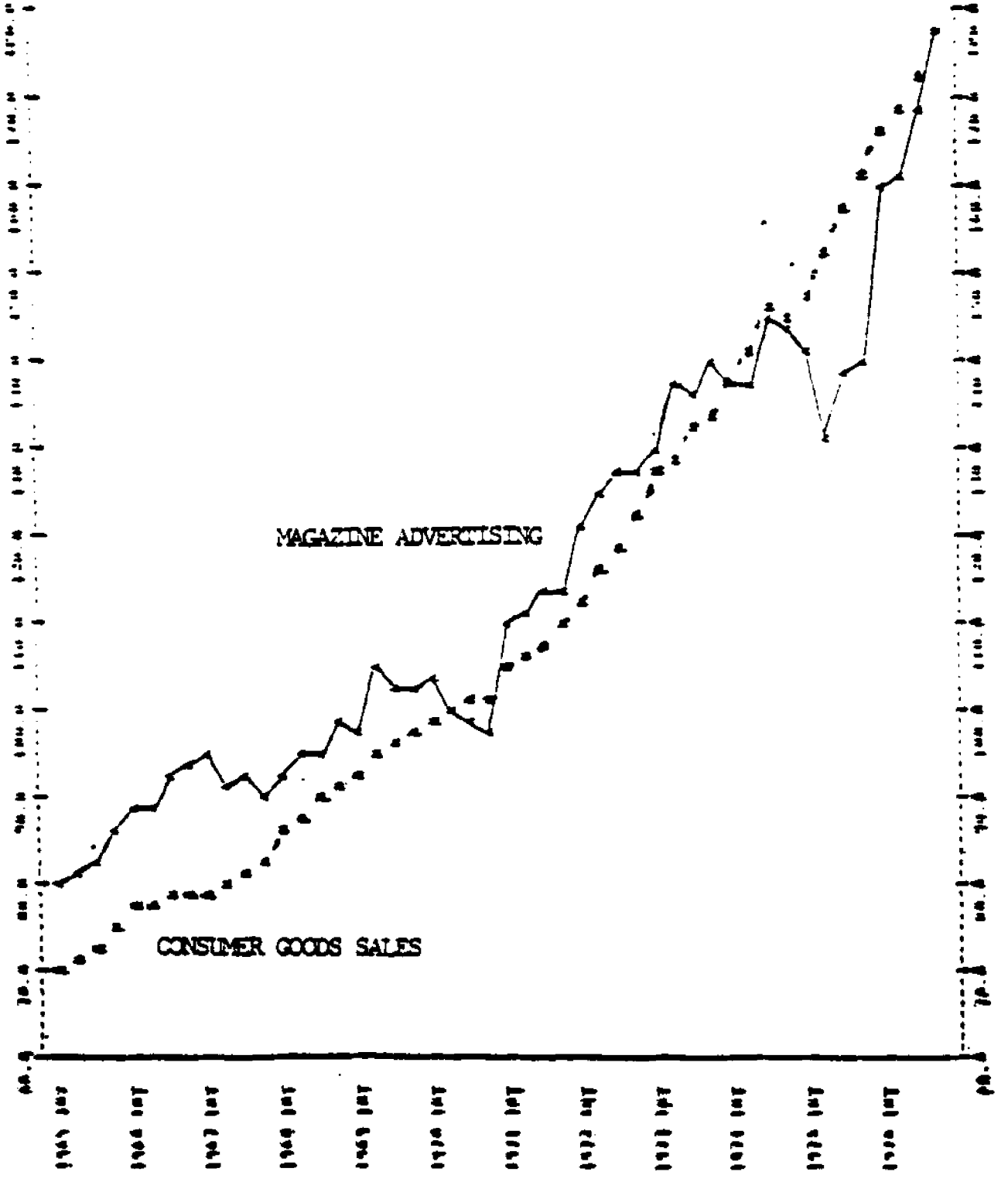
Comparison of the growth rates of magazine advertising (MA) and personal consumption expenditures on goods (SG) for the 1965 - 1976 period indicates that their average growth rates were almost identical. Magazine advertising dollar volume increased at an average rate of 2.1 percent per quarter, while SG rose by 2.0 percent per quarter. Although magazine advertising volume fluctuated more vigorously that did SG, both series must be considered relatively stable over the 48 quarter period. (See Chart 5.)

Cyclical turning points of the two series cannot easily be compared. The cyclical index of personal consumption expenditures had very mild cyclical fluctuation and recorded too few statistically measurable cycle turning points to make such a comparison worthwhile. However, the raw series suggest, albeit very tentatively, the probability of a tendency for magazine advertising cycles to lag behind SG cycles, particularly before 1971.

Simple rank correlations between magazine advertising levels and SG were calculated for various lead and lag specifications to more explicitly identify their cyclical timing relationship. The results of these estimations

CHART 5

INDEXES OF SEASONALLY ADJUSTED MAGAZINE ADVERTISING VOLUME AND CONSUMER GOODS SALES



are presented below. Two facts become immediately apparent: (1) the two series are very highly correlated under a variety of lag specifications; and (2) the highest correlation between the two series was estimated between magazine advertising and SG of either the same quarter or leading by one

Rank Correlation: Magazine Advertising Expenditures vs. Consumer Goods Sales Under Selected Lead-Lag Specifications

	Lead						Lag				
No. of Quarters	+8	+6	+4	+2	+1	0	1	2	4	-6	-8
Rank Correlation	.961	.970	.965	.974	.975	.977	.977	.976	.970	.963	.959

quarter. Stated differently, fluctuations in magazine advertising in time period t were most closely associated with SG in either time period t or SG in time period t-1. This evidence, though weak, suggests again that the direction of causality in the magazine advertising-sales relationship runs from sales to advertising. It is worthwhile, therefore, to examine the process by which advertisers adjust their magazine advertising expenditures to changes in product sales.

Analysis of the Magazine Advertising-to-Sales Ratio Using a Partial Adjustment Model[45]

The empirical and theoretical evidence presented above suggest that advertisers tend to adjust their promotional expenditures toward a "target" level that will maintain a stable relationship, over time, between dollar

[45] Many of the ideas for this section were borrowed from Schmalensee's The Economics of Advertising, Chapters 2 and 3. Schmalensee tested several of the techniques used here. Credit for those tests must be directed to Schmalensee and not to the present author.

advertising volume and dollar sales volume (i.e., a fixed ratio of dollar advertising expenditures per dollar of sales). This does not mean, however, that advertisers are willing and/or able to completely and instantaneously adjust their expenditures, or that their advertising-to-sales ratio is invariant over time. For the following reasons, advertisers adjust their expenditure levels gradually, over extended periods of time, toward their "target" levels: (1) advertising budgets are generally adjusted annually and are generally inflexible within the year; (2) space contract requirements that lock-in advertisements well in advance of their publicaiton date build rigidity into advertising budgets; and (3) lags in the processing of up-to-date sales data delay the determination of the "target" level of advertising. Thus, the advertising-to-sales ratios of individual advertisers may differ from their "target" (desired) ratios in the short-run.

In the analysis that follows, the adjustment process of advertising expenditures toward their "target" levels will be estimated through the use of a "partial adjustment" model. This type of model, which is a direct application of the Koyck transformation of distributed lags, has general applicability wherever lag structures are required to explain informational, technological, and/or institutional barriers to instantaneous adjustment by one variable to changes in another variable. In order to simplify estimation of the model, two assumptions were required: (1) dollar expenditures for advertising space (A) adjust over time to a "target" level (A*) that maintains a fixed, chosen ratio of advertising-to-sales (defined by

$\delta = A^*/S$); and (2) advertising expenditures of the previous period (t-1) are used to guide advertisers in determining the appropriate level of expenditures in the current period (t).

Based upon these assumptions, the adjustment process may be described by the following model:

(Eq. 1) $$A_t - A_{t-1} = \rho(A_t^* - A_{t-1}) + U_t ,$$

where $0 < \rho \leq 1$.

By expanding and rearranging Equation 1, and substituting for A*, the model may be transformed as follows:

(Eq. 2) $$A_t = \rho\delta S_t + (1-\rho) A_{t-1} + U_t$$

If $B = \rho\delta$ and $\lambda = 1-\rho$, the following advertising determination equation is obtained:

(Eq. 3) $$A_t = \beta S_t + \lambda A_{t-1} + U_t$$

The partial adjustment model (Equation 1), transformed into an autoregressive advertising determination equation, requires analysis of not only the level of advertising expenditures in any time period, but also the changes in that level over time. Apparently, however, advertising expenditure levels of the largest advertisers are relatively stable compared to to other investment expenditures. Julian Simon found that for 63 firms among the 100 largest advertisers each year between 1957 and 1962, the weighted mean percentage change in total advertising expenditures was 15.4 percent, "which certainly indicates remarkably slight variability from year to year. And this variability would be considerably smaller if adjusted

for secular trend."[46]

The lower variability of advertising expenditures relative to, say, capital investment, implies that an "inertia" or "habit" variable (such as A_{t-1}) would be a good predictor of A_t. (For magazine advertising, the simple rank correlation between current advertising and advertising lagged one quarter was .982 over the 1965/2 - 1976/4 period.) Simon justifies the use of a "habit" variable in an advertising determinant equation by stating the following:

> It is not unlikely that in a discussion of an advertising appropriation the decision-makers might actually utter such words as: 'Let's increase last year's budget by 8 percent because this is going to be a good year.' If such conversations really precede and influence a firm's decision, then one can reasonably consider last year's expenditure is a 'true' structural (behavioral) variable, and not a proxy for other variables, or 'mere autocorrelation.'[47]

Estimation of Equation 3, therefore, can be expected to generate a significant positive coefficient on A_{t-1}, with some of the variation in A_t explained by a linear time trend.

Despite the autoregressive specification of partial adjustment model, "there is no reason to automatically assume the presence of autocorrelation.... The disturbance terms (U_t) can be expected to fulfill the condition of mutual independence in this model."[48] Ordinary least squares estimation of Equation 3 can therefore be expected to generate consistent and efficient

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[46] Julian L. Simon, Issues, p. 127.

[47] Ibid., p. 130.

[48] M. Dutta, Econometric Methods (Cincinnati, Ohio: South-Western Publishing Co., 1975), p. 193.

estimates of β and λ. These estimates may then be used to calculate the long-run "target" ratio of advertising-to-sales over the estimation period, which is defined by $A^*/S = \beta/1-\lambda$. In addition, various measurements of the timing of the process of adjustment to new "target" levels of advertising expenditures may be calculated, including the following:

(1) the mean lag -- the expected number of periods by which changes in current advertising levels lag changes in the "target" level of advertising -- is defined by $\lambda/1-\lambda$;

(2) the median lag -- the number of periods required to complete one-half of the adjustment to a new target level -- is defined by log $0.5/\log\lambda$; and

(3) the percentage of the adjustment process completed after T quarters, equals $1-\lambda^T$.

Estimates of β and λ play important roles in the empirical investigation of the determinants of magazine advertising expenditures that follows. The advertising determination equation (Equation 3) was estimated over the 1965/2 - 1976/4 period. The result of that estimation (with the constant term suppressed) was the following:

(Eq. 4) $$MA_t = \underset{(0.08)}{0.27}\ SG_t + \underset{(0.11)}{0.66}\ MA_{t-1},$$
$$\begin{matrix} 3.32 & 5.77 \end{matrix}$$

$CR^2 = .97$
$DW = 1.90$
$SEE = 3.30$

where MA = the index of magazine advertising expenditures; SG = the index of personal consumption expenditures ("sales") of goods; the statistic DW indicates the Durbin-Watson statistic; and the statistic SEE is the standard

error of estimate.[49] (Estimated standard errors and associated t-statistics are shown directly beneath the estimated coefficients.)

The timing of the adjustment process captured by Equation 4 is broadly similar to the timing estimated by Schmalensee for farm and general magazines over the 1949/3 - 1967/4 period.[50] For the 1965/2 - 1976/4 period covered by Equation 4, the target ratio of magazine advertising-to-sales was 0.8 percent, with mean and median lags of 1.9 and 1.7 quarters, respectively. Schmalensee, on the other hand, calculated a target ratio of 0.5 percent, with mean and median lags of 2.6 and 3.3 quarters, respectively. Thus, while the target ratio increased and the mean and median lags shortened over time, the timing of the adjustment process was roughly comparable between the two estimation periods (1943/3 - 1967/4 and 1965/2 - 1976/4).

Despite the high level of significance of the estimated coefficients and the high CR^2(.97), the low level of the Durbin-Watson statistic (1.90)

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[49] Equation 4, and all other equations in the present chapter, was estimated both with, and without, a constant term. In none of the equations was the constant term found to be statistically significant. The constant term may be interpreted structurally as the average expenditure magazine advertisers consider their floor or minimum -- a kind of threshold. Yet, no such floor is likely to remain the same over an extended period of time. Therefore, it is sensitive to the length of the estimation period, a characteristic of a variable rather than a real parameter. Even if such a floor had meaning, it would have no use in the present context because we assume no autonomous advertising (i.e., if sales are zero in the long run, advertising will be zero). For an excellent discussion of the meaning of a constant term in a distributed lag estimation, see Peter I. Berman, Inflation, pp. 116 - 117.

[50] Schmalensee's estimated equation was:

$$MA_t = \underset{(.03)\ 3.36}{.11SG_t} + \underset{(.07)\ 10.61}{.77MA_{t-1}};\ R^2 = .99,\ DW = 1.84,\ SEE = 2.61.$$

casts some doubt on the strength of the estimation.[51] A high CR^2 resulting from estimation of this autoregressive model could be due either to a distributed lag adjustment by the magazine advertising index to changes in the sales index or to an instantaneous response by the magazine advertising index coupled with serial correlation of the error terms (U_t). However, because the Durbin-Watson statistic is biased in the presence of a lagged dependent variable, in this case MA_{t-1}, this regression statistic cannot reliably uncover serial correlation. Consequently, the source of the strong regression statistics is not immediately obvious without further testing.

To test for the presence of serial correlation of the error terms, Equation 3 was re-estimated using the method of Hildreth-Lu, which involves searching for the value of the first-order serial correlation coefficient that minimizes the standard error of estimate.[52] The results of Hildreth-Lu estimations of Equation 3 revealed no evidence of serial correlation.[53] These results led to the tentative conclusion that strong regression statistics, particularly the high CR^2, were not due to the combination of

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[51] For an explanation of the interpretation of the Durbin-Watson statistic in the estimation of a partial adjustment model, see Richard Schmalensee, Economics of Advertising, pp. 67, 69.

[52] See G. Hildreth and J. Y. Lu, Demand Relations with Autocorrelated Disturbances, Technical Bulletin, no. 276 (East Lansing, Michigan: Michigan State University, November 1960).

[53] Every equation in this section was estimated for first-order serial correlation by the Hildreth-Lu method. None of the Hildreth-Lu estimations provided evidence of serial correlation among error terms. Therefore, only direct estimation results will be presented in this chapter and in Chapter 5.

instantaneous adjustment and serially correlated error terms.

Nevertheless, the low Durbin-Watson statistic (1.9) warrants further investigation because it could be an indication that the advertising determination equation omitted one or more variables that systematically affect magazine advertising expenditures over time. To test for this possibility, Schmalensee recommends additional estimations of the equation (Equation 3) that include the following variables, both individually and in tandem: (1) TSG_t, an interaction term between a simple linear time trend and sales of consumer goods that would pick up any tendency, over time, for the ratio of advertising-to-sales to rise or fall; and (2) SG_tSG_t', interaction between sales in period t and the percentage change in sales between period t-1 and period t, that would capture cyclical differences in the distribution of advertising over phases of the product life cycle. Variable SG_tSG_t' is based on two assumptions about firm behavior: (a) that firms introduce more new products in booms than in recessions; and (b) when consumption increases autonomously, advertising is more likely to influence how the additional dollars are spent than to redistribute previous spending over products and brands.

Estimations that incorporated these variables into Equation 1 resulted in the regression statistics shown in Table 20. None of the estimations that included TSG_t or SG_tSG_t' improved upon the results from Equation 4. The non-significance of TSG_t is due largely to the presence of the lagged dependent variable, which picks up much the same tendency as TSG_t for magazine advertising in any quarter to reflect the level of advertising in the previous quarter (inertia). Since MA_{t-1} and TSG_t are, therefore,

TABLE 20

ESTIMATION EQUATIONS: DETERMINANTS
OF TOTAL MAGAZINE ADVERTISING
(1965/1 - 1976/4)

Equation	Estimated Coefficient				Regression Statistics		
	SG	MA_{t-1}	TSG	SGSG′	CR^2	SEE	DW
3	0.27*	0.66*			.97	4.30	1.90
4	0.22	0.66*	0.00		.97	4.35	1.91
5	0.19	0.72*		0.00	.97	4.24	1.96
6	0.37	0.72*	0.00	0.00	.97	4.29	1.98

*Significant at 5 percent level.

multicollinear, the coefficient on each of these variables is biased; in a stepwise regression only the first of these two variables to be specified in the equation would be significant.

The nonsignificance of SG_tSG_t' indicates that the magazine advertising-to-sales ratio does not vary cyclically. This result is hardly surprising. Since at least some portion of advertising budgets are often set on a percentage-of-sales basis, advertising expenditures must show, before all else, a persistent proportionality to sales. Moreover, because the timing of the process of advertisement insertion in magazines is relatively flexible, the lag time between changes in sales volume and changes in the target level of advertising are generally brief; the result is a stable ratio of magazine advertising expenditures-to-sales of consumer goods over the cycle. We conclude, therefore, that the strong regression results from estimation of the advertising determination model indicate that the adjustment of magazine advertising toward its "target" level is, in fact, a distributed lag process.

However, there is no reason to believe that the mean target ratio of advertising-to-sales and the timing of the adjustment process are the same for each individual magazine class. Since the product mix of advertising differs from class to class, the differing sales patterns for individual products over time and over the business cycle are likely to be manifest in different adjustment process characteristics for each class. In order to test this hypothesis, the partial adjustment model (as expressed by Equation 3) was respecified to include the seasonally adjusted advertising revenue index for each magazine class. Under this revised specification, the

basic estimation equation was the following:

(Eq. 7) $$MA_{it} = \beta_{it} SG_t + \lambda_{it} MA_{it-1},$$

where the subscript i represents the individual magazine class. A constant term was included in a set of estimations, but it was consistently found to be neither statistically significant nor economically sensible. An additional set of estimations tested for trend and cyclicality in the mean advertising-to-sales ratio, but the results of those tests were consistently negative for each magazine class.

The results of the estimation of Equation 7 for each magazine class are presented in Table 21. In each of those estimations, the coefficients on the consumer goods sales variable and on the lagged dependent variable were significant and of the proper sign. However, the values of these coefficients varied widely across magazine classes. Consequently, the mean target ratio of advertising-to-sales, as well as the timing and lags in the adjustment process, are substantially different for the products advertised in each magazine class. (See Table 22.) The mean target ratio of advertising-to-sales, for example, ranges from 0.6 percent in home and women's magazines to 1.8 percent in automotive magazines; the mean adjustment lag ranges from a low of 1.2 quarters in news magazines to 10.1 quarters in men's and business magazines. Thus, given the persistent proportionality of advertising expenditures-to-sales, the different sales growth patterns of individual products is manifest in their different advertising expenditure levels and changes and, ultimately, in the characteristics of the adjustment process of each magazine class.

TABLE 21

ESTIMATION EQUATIONS: DETERMINANTS OF
MAGAZINE ADVERTISING BY CLASS, 1965/2 - 1976/4

Classes	Regression Coefficient on:				Regression Statistics		
	SG	MA_{t-1}	TSG	SGSG	CR^2	SEE	DW
Automotive	.59*	.68*			.97	9.49	1.90
	1.04	.66*	.06		.97	9.59	1.85
	2.79	.78*		.11*	.97	8.96	1.88
	- .12	.80*	.00	.11*	.97	9.05	1.91
Business	.12*	.91*			.94	6.64	1.83
	- .68	.88*	.11		.94	6.64	1.85
	.08	.93*		.00	.94	6.66	1.94
	- .71	.90*	.11	.00	.94	6.66	1.95
General Editorial	.18*	.80*			.94	5.92	2.18
	- .87	.73*	.14		.94	5.85	2.21
	.10	.82*		.00	.94	5.76	2.21
	-1.00	.75	.15	.00	.94	5.66	2.23
Home	.10*	.83*			.93	5.23	1.88
	- .17	.85*	.04		.95	5.23	1.92
	.10	.83*		.00	.92	5.29	1.90
	- .21	.85*	.04	.00	.92	5.34	1.95
Men's	.07	.91*			.97	5.29	1.89
	2.07*	.76*	-.27*		.97	5.07	1.86
	.09	.90*		.00	.97	5.34	1.89
	2.76*	.71*	-.33*	.03	.97	5.01	1.80
News	.48*	.54*			.96	7.14	2.03
	1.54	.51*	-.14		.96	7.10	1.98
	.33*	.62*		.05	.96	7.05	2.03
	1.23	.59*	-.11	.04	.96	7.04	2.00
Sports	.30*	.79*			.98	5.73	2.36
	.87	.75*	-.07		.98	5.77	2.32
	.34*	.78*		-.02	.98	5.74	2.28
	1.03	.73*	-.08	-.03	.98	5.77	2.21
Women's	.20*	.69*			.92	5.44	1.89
	- .71	.71*	-.12		.92	5.38	2.03
	.13	.73*		.03	.92	5.37	1.96
	- .88	.75*	.13	.04	.92	5.28	2.11

* Significant at 5 percent.

TABLE 22

ESTIMATED ADJUSTMENTS OF ACTUAL TO TARGET ADVERTISING-TO-SALES RATIOS, BY MAGAZINE CLASS, 1965/2 - 1976/4 [a/]

Class	Ratio (percent)	Mean Lag (quarters)	Median Lag (quarters)	Percent Adjustment After 1 Quarter	Percent Adjustment After 4 Quarters
Total (All Classes Combined)	0.8	1.9	1.7	33.9	81.0
Automotive	1.8	2.1	1.8	21.8	78.6
Business	1.4	10.1	7.4	8.6	31.4
General Editorial	0.9	4.0	3.1	20.2	59.0
Home	0.6	4.9	3.7	16.8	52.5
Men's	0.7	10.1	7.4	8.6	31.4
News	1.0	1.2	1.1	46.0	91.5
Sports	1.4	3.8	2.9	21.2	61.0
Women's	0.6	2.2	1.9	30.7	77.3

[a/] Based on the advertising determinant equation given by:

$$MA_{i_t} = \beta_{i_t} SG_t + \lambda_t MA_{i_{t-1}}.$$

Summary

Despite its ultimate and possibly significant role in altering consumer demand consumers, ad-budgeting is an inexact science that relies predominantly on a mixture of rational and intuitive decisions by business executives. In any year, a firm's advertising budget could be based on one or more fixed or flexible criteria such as sales, profits, economic conditions in the marketplace, or a stated objective. Most of these criteria represent accounting ratios -- rules-of-thumb -- that cannot guarantee a sound budget appropriation. With these criteria at hand, advertising budgets are set by one of the following approaches: (1) competitive parity; (2) all-you-can-afford; (3) task and objective; and (4) percentage of sales. It follows that the process of ad-budgeting has a large impact on the level and adjustment of magazine advertising expenditures at different phases of the business cycle.

Each approach to ad-budgeting is based on some reference value or criterion that directly or indirectly varies with the business cycle. In the post-war period especially, documented evidence shows that magazine advertising has fluctuated in close parallel to various business conditions indicators, though perhaps with a brief lag. This tentative conclusion suggests that, for a proximate cause, magazine advertising fluctuations depend on fluctuations in the economy and in the national marketplace.

According to surveys among advertising decision-makers, the most common ad-budgeting policy follows the "percentage of sales" approach. Under this approach, the ultimate advertising expenditure level is set as

a quasi-fixed percentage of some measure of (past) sales. However, the ratio of advertising-to-sales adjusts, or changes, when marketplace conditions warrant. For each advertiser, the adjustment mechanism differs depending on the qualitative characteristics, income elasticity, past sales, selling price, durability, and reputability of the product, as well as its advertising media mix. Nerlove and Arrow, Gould, Grabowski, and Schmalensee have developed dynamic adjustment models for oligopolists that capture the adjustment of advertising levels to some new target level.

This study employs a technique for capturing the dynamic adjustment of magazine advertising levels to target levels based upon a partial-adjustment model having properties similar to a Koyck distributed lag model. The basic functional form for this model specifies current period magazine advertising as a function of some aggregate sales measure and a lagged dependent variable. Estimations of this model reveal that total magazine advertising expenditure levels adjust slowly to changes in the target ratio of magazine advertising-to-sales.

The partial adjustment model may also be used to describe the characteristics of the adjustment process, for products advertised in each magazine class, toward a target ratio of advertising-to-sales. None of the estimations for the individual magazine classes indicated a tendency for the mean magazine advertising-to-sales ratio to systematically rise or fall over time or over the cycle. However, the results of the estimations do reveal that the mean target ratio, median and mean adjustment lags, and the rate of adjustment vary widely across magazine classes.

The differences in the target ratios and other characteristics of the adjustment process derive from differences in the product mix of

advertising in each magazine class. Advertising in magazines for each product could be expected to differ in volume and cyclical sensitivity depending primarily on the level and cyclicality of product sales and the desired ratio of advertising-to-sales. Thus, the product mix of advertising in each magazine class has a direct influence on the level and change in that class's mean target ratio of advertising-to-sales.

In Chapter 5, we examine in detail the relationship between the qualitative attributes of products and the resultant magazine advertising-to-sales ratios. This is done for both total magazine advertising and for advertising in individual magazine classes. The analysis will attempt to show how the comparative advantage of magazines in transmitting information about particular types of products determines the product mix of magazine advertising and, through this, the over-all level of the ratio of magazine advertising-to-sales relative to other media.

CHAPTER V

CHARACTERISTICS OF ADVERTISED PRODUCTS AND THE LEVEL OF MAGAZINE ADVERTISING

A number of studies of the economics of advertising have attempted to estimate the relationship between changes in the level of total advertising expenditures for one or more products and changes in the level of some economic aggregate, such as GNP, the IIP, profits, or sales. For the most part, these studies have used highly aggregated advertising variables because data for individual media were either unavailable or unreliable. However, there is no reason to believe that the relationship between the general business cycle and advertising revenue volume is either the same for each individual medium or comparable to that of the total advertising aggregate. Because each medium tends to convey a different type of product information to consumers and has a unique mix of products in its advertising base, the impact of economic fluctuations on advertising volume differs from medium to medium.

The original data developed for the present study permit us to examine a number of economic and non-economic determinants of the level of magazine advertising volume. In Chapter 3 we showed that the timing, duration, and amplitude of magazine advertising cycles are related to cyclical fluctuations in two broad economic aggregates, GNP and the IIP. Chapter 4 presented

evidence that changes in the level of magazine advertising are related to the ad-budgeting practices used for consumer goods. Estimates of the mean target ratio of advertising-to-sales for products advertised in each magazine class were presented in Chapter 4 and shown to be stable over the 1965/2 - 1976/4 estimation period.

In the present chapter, we shall examine several qualitative characteristics of advertised consumer goods, of magazine audiences and of magazine advertisements that influence the advertising-to-sales ratios for products advertised in eight individual magazine classes. Several hypotheses will be tested that purport to explain how the qualitative characteristics of the class influence its product mix of advertising and, therefore, the cyclical characteristics of its revenue stream. Results of these tests will provide a basis for respecification of the partial adjustment model presented in Chapter 4 and for improved estimates of the mean target ratio of advertising-to-sales for goods advertised in each magazine class.

The Volume of Search and Experience Goods Advertising

The advertising process is designed to reinforce and expand consumers' stock of knowledge about various qualitative attributes of competing products and brands (for example, their brand image, style, service availability, and reliability). Each information source used in this process (e.g., previous advertising messages, word-of-mouth, sales personnel, shopping trips, experience with the product) informs the consumer about a different set of product attributes. However, as terms of sale change, as new products

surface and old ones disappear or change, as tastes alter or memory fades, the stock of product information acquired by consumers becomes obsolete. Thus, consumers willingly bear the time and pecuniary expenses of seeking out and acquiring the stream of information supplied by advertisers. The magnitude of these expenses varies according to the information sources utilized by the consumer and the product attributes focused upon by the messages. For example, reception of a magazine advertisement, which requires complete visual attention and precludes the reader from participation in other activities, may be considered to have a higher time cost than a radio advertisement that can be received while the listener engages in other activities. Consumers can be expected to expend more resources to acquire information about products with relatively higher prices and higher utility (i.e., products from which the preceived benefits of an informed choice are high) than about relatively lower priced, lower utility products.[1]

In 1974, Phillip Nelson published a study that related the information content of advertising to what the author called "search" attributes and "experience" attributes of goods and services. Nelson defined search attributes as "qualities of a brand that the consumer can determine by inspection prior to purchase of the brand." Thus, advertisements about search attributes must predominantly transmit factual, detailed, and <u>direct</u> information, since consumers can immediately detect differences between advertised and actual

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[1] This concept was developed by Phillip Nelson in "Advertising as Information," <u>Journal of Political Economy</u>, Vol. 82 (July-August, 1974), pp. 729-754.

search attributes. Experience attributes, on the other hand, are defined as "qualities that are not determined prior to purchase."[2] Advertisements about experience attributes focus upon brand recognition and reputability and provide general, indirect information designed to stimulate repeat-purchases of the brand.

Nelson summarizes the characteristics of advertisements about experience and search attributes in the following way:

> The miniscule amount of direct information from advertising for experience qualities gives the consumer an incentive to extract any conceivable indirect information that would help. Such indirect information is available from advertising. The consumer can learn that the brand advertises. I contend that this is the useful information that the consumer absorbs....These and other advertisements for experience goods have no informational content. Their total informational role -- beyond the relation of brand to function -- is simply contained in their existence. The consumer believes that the more a brand advertises, the more likely it is to be a better buy. In consequence, the more advertisements of a brand the consumer encounters, the more likely he is to try the brand....
>
> The same analysis can be used to show that advertising also increases the reputability of brands which are dominantly search goods. However, reputability will play a much smaller role in the advertising of search qualities, because the consumer can obtain so much direct information about these qualities from advertisements and direct inspection. The possession of this direct information reduces the payoff to both consumers and advertisers of advertisements' increasing the reputability of a brand.[3]

These differences in advertising emphasis led Nelson to hypothesize that the overall volume of advertising for products with predominantly experience attributes ("experience goods") would be larger than for products with predominantly search attributes ("search goods"). Nelson calculated

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[2] Ibid., p. 730.

[3] Ibid., p. 732.

the difference in the mean advertising-to-sales ratio of experience and search goods and tested for statistical significance of that difference. The result of that test confirmed that the mean advertising-to-sales ratio for experience goods was indeed higher than the mean ratio for search goods, and by a statistically significant amount. Nelson concluded, however, that if advertising were solely concerned with distribution of direct information, there would be more advertising for search goods than for experience goods, simply because there is more direct information that can be conveyed about search qualities; but the data in his study produce results contrary to this prediction.

Nelson's data pertained to <u>total</u> advertising volume, in all media combined, for experience and search goods. However, each individual advertising medium attracts a different audience and has unique attributes that make it especially conducive to the promotion of particular types of goods. It is worthwhile, therefore, to examine the relative distribution of advertising of search and experience goods not only in all media combined, but in individual media as well. Specifically, we will focus upon the interaction between qualitative characteristics of magazines, magazine audiences and magazine advertisements in determining the level of advertising for search and experience goods and, ultimately, the level of total magazine advertising.

The print and picture format of consumer magazines is the single most important determinant of the quality of information supplied by advertisements in magazines and demanded by magazine audiences. Magazine audiences -- which,

on the whole, are generally older, better educated, and more affluent than, say, television audiences -- are prepared to ingest certain kinds of facts and ideas presented in an accustomed manner. Advertisements, such as those inserted in women's fashion magazines, are part of the total configuration of what magazine audiences expect to see and seek out. Although they are designed to be read at leisure -- perhaps over and over again -- consumer magazines require inputs (e.g., purchase of magazines, or concentration on words or pictures) by their audiences who, having initiated these motions, are expected to be interested in buying the products advertised. Especially where advertisements can borrow prestige from the magazine itself (as with the proverbial "Good Housekeeping seal of approval"), magazines provide an authoritative voice that stimulates the readers' interest in advertised products.

The characteristics of consumer magazines listed above are particularly conducive to search goods advertising. The print and picture format affords advertisers great latitude in determining the amount of direct information they choose to transmit for examination by their audiences. And because magazine audiences bear greater time and pecuniary costs to acquire information than do audiences of other media, they demand the relatively larger amount of direct information generally associated with search goods advertising. This by no means implies that the advertising of experience goods is out-of-place in consumer magazines; brand recognition and reputability can certainly be enhanced by magazine advertisements. However, consumer magazines appear to be especially well-suited to transmitting the kind of direct information required for search attributes. Consequently, the mean advertising-to-sales ratio for search goods advertised in magazines could be expected to be higher -- in absolute terms and relative to the mean ratio for experience

TABLE 23

MAGAZINE ADVERTISING-TO-SALES RATIOS BY INFORMATION CLASSIFICATIONS (1965, 1971, and 1976) [a]

Products by Information Classification	Magazine Advertising-to-Sales Ratios		
	1965	1971	1976
Experience Durable Goods:			
Books	0.710	1.087	1.184
Tires	0.277	0.243	0.070
Appliances	0.342	0.158	0.213
Motor Cycles and Bicycles	0.057	0.042	0.035
Motor Vehicles	0.647	0.181	0.284
Motor Vehicle Parts and Accessories	0.493	0.515	0.626
Communications Equipment	0.425	0.395	0.311
Weighted Average	0.422	0.374	0.389
Experience Non-Durable Goods:			
Periodicals	0.164	0.176	0.190
Alcohol	0.329	0.382	0.416
Dairy Products	0.034	0.024	0.017
Bakery Products	0.067	0.057	0.031
Tobacco	0.246	0.710	0.990
Drugs	0.641	0.450	0.380
Meats	0.040	0.017	0.013
Perfume	1.231	1.502	1.181
Petroleum Refining	0.045	0.042	0.038
Weighted Average	0.311	0.373	0.362
Average: All Experience Goods	0.359	0.374	0.374
Search Goods:			
Jewelry	0.211	0.220	0.240
Carpets	0.290	0.217	0.156
Men's Clothing	0.174	0.108	0.083
Women's Clothing	0.160	0.072	0.057
Furniture	0.130	0.112	0.084
Footwear	0.183	0.092	0.088
Leather Goods	0.359	0.224	0.117
Average	0.215	0.149	0.118

[a] Product classifications taken from Phillip Nelson, "Advertising as Information."

goods -- than the mean ratio for search goods advertised in other media.

To verify this hypothesis, three separate tests were performed for 22 of the 40 experience and search goods categorized by Nelson for which comparable magazine advertising and sales (personal consumption expenditures) data were available. For the first test, the ratio of magazine advertising-to-sales in 1965, 1971, and 1976 was computed for each of the 22 products and the difference in the mean ratio for goods in the experience and search categories was tested for statistical significance. (See Table 23.) The result of that test indicates that the difference between the mean ratios of magazine advertising-to-sales for search and experience goods was not significant in any of the three sample years. Moreover, the mean ratio of magazine advertising-to-sales for search goods was larger than the mean ratio for experience goods in each sample year. (See table below.) These findings, as anticipated, contrast with the results of Nelson's tests, indicating that the mean ratio of advertising-to-sales for search goods is relatively higher in magazines than in all media combined.

TABLE 24
Difference in the Mean Magazine Advertising-to-Sales Ratio, Experience Goods and Search Goods (1965, 1971, 1976)

Year	Mean Magazine Advertising-to-Sales Ratio (Percent)		Difference in Means	t-Statistics
	Experience Goods	Search Goods		
1965	.36	.22	.14	1.1
1971	.37	.15	.22	1.4
1976	.37	.12	.26	1.6

The second test attempts to reinforce these findings by means of analysis of variance for the magazine advertising-to-sales ratios of the 22 experience and search goods. As shown in the table below, the ratio of the variances of the magazine advertising-to-sales ratios for the two categories of goods was not found to be statistically significant in any of the three sample years. This result is consistent with the finding above that the difference in the mean advertising-to-sales ratios for experience and search goods advertised in magazines is not statistically significant.

TABLE 25
Analysis of Variance:
Magazine Advertising-to-Sales Ratios,
Experience Goods and Search Goods
(1965, 1971, 1976)

Year	Degrees of Freedom			Mean Squared Variance		F-Ratio	Critical F-Ratio	
	Total	Between	Within	Between	Within		1%	5%
1965	22	1	21	10.1	8.0	1.3	8.0	4.3
1971	22	1	21	24.5	12.7	1.9	8.0	4.3
1976	22	1	21	31.9	11.9	2.7	8.0	4.3

The third test compares the relative magnitudes of magazine and network television advertising for search goods versus experience goods. (See Table 26.) This comparison seems particularly worthwhile because the qualitative characteristics of network television, unlike those of magazines, make that medium particularly well-suited to transmission of the kind of indirect information required for advertisements about experience goods.[4]

[4] Relative to magazine audiences, television audiences, on the average, tend to be younger, less educated, and less affluent. The medium is generally seen more as an entertainment medium than as a source of useful product information. Advertising messages impose little, if any, direct pecuniary costs on viewers; time costs are alleviated somewhat because audiences may listen to commercial messages while engaging in other activities.

TABLE 26

RATIOS OF MAGAZINE ADVERTISING-TO-NETWORK TELEVISION ADVERTISING, BY INFORMATION CLASSIFICATIONS (1974)

Products by Information Classification	Ratio of Magazine Advertising-to-Network Television Advertising
Experience Goods:[a]	
Tires	0.18
Appliances	0.50
Motor Cycles and Bicycles	0.85
Motor Vehicles	0.50
Motor Vehicle Parts and Accessories	0.30
Communications Equipment	1.43
Periodicals	1.13
Dairy Products	0.48
Bakery Products	0.07
Drugs	0.13
Meats	0.29
Perfume	0.28
Petroleum Refining	0.63
Average: Experience Goods	0.33
Search Goods:	
Jewelry	0.88
Carpets	2.93
Men's Clothing	0.93
Women's Clothing	0.76
Furniture	2.09
Footwear	0.86
Leather Goods	2.56
Average: Search Goods	1.05

[a] Excludes books, which have an unusually high ratio of magazine advertising-to-network television advertising (24.25). Also excludes alcoholic beverages and tobacco, the advertisements for which are largely banned on television.

SOURCES: Leading National Advertisers; Publishers' Information Bureau.

Comparison of the mean ratio of magazine advertising expenditures-to-network television expenditures in 1974 for experience and search goods, respectively, indicates the following:

(1) On the average, magazine advertising for experience goods is only one-third as large as network television advertising for experience goods.

(2) On the average, magazine advertising expenditures for search goods is 5 percent larger than network advertising expenditures for search goods. Thus, given the much greater base of total network television advertising expenditures, the share of total magazine advertising volume is substantially larger for search goods than for experience goods.[5]

(3) These results suggest that magazines' comparative advantage in the transmission of direct information not only tends to increase the share of search goods in their total advertising base, but increases in the level of their search goods advertising volume relative to experience goods advertising volume.

The Volume of Consumer Durable and Non-Durable Goods Advertising

A commonly used basis for the economic classification of goods is that which distinguishes between consumer goods broadly identified as durable and non-durable. For present purposes, it is useful to distinguish between durable and non-durable consumer goods for two reasons: (1) National Income Accounts data on personal consumption expenditures, which are readily

[5] The difference in the ratios of magazine advertising expenditures-to-television advertising expenditures for experience and search goods is significant at the 1 percent level, $t=3.57$.

available and widely used in economic analyses, distinguish between consumer durable and non-durable goods; and (2) product classifications in the PIB magazine data base have roughly the same composition as product classifications of consumer durable and non-durable goods in the National Income Accounts.

Differences in the level and media mix of advertising for consumer durable and non-durable goods could be expected to reflect the distinct -- and long-recognized -- differences in their economic characteristics. Consumer durable goods typically have the following characteristics: (1) high unit prices; (2) high income and price elasticities of demand; (3) long product life; (4) low purchase frequency; and (5) a tendency to be purchased only after the consumer has engaged in search and planning. For consumer durables, unconscious motivations, impressions, and brand associations built up by advertising are not likely to be decisive in stimulating sales. Thus, advertising in this field is generally restricted to making the consumer aware of the existence of the product and to inducing potential buyers to examine the product (or some attribute of it) in the course of choosing among alternative purchases.

Consumer non-durable goods, on the other hand, are typically characterized by their low unit price; low income and price elasticities of demand; short product life; high purchase frequency; and their tendency to be purchased impulsively or by habit. Because the consequences to consumers of unsatisfactory purchases on non-durable goods usually are easily correctible, advertisements for these goods transmit little direct information beyond the association of a brand with its function. The impressions built

up by such advertising copy are likely to play an active role in consumers' purchase decisions.

From the above, it follows that the total volume of advertising for consumer non-durable goods -- both in terms of its dollar level and relative to sales -- could be expected to be larger than the total volume of advertising for consumer durable goods. Indeed, this expectation is verified by Table 27 which shows that both the simple average and weighted average advertising-to-sales ratios for consumer non-durable goods are higher than the corresponding averages for consumer durable goods.

In a classic study published in 1949, Roy W. Jastram investigated the planned (ex ante) ratio of advertising-to-sales as it relates to the product classification of firms that advertise.[6] Jastram selected the ex ante ratio of (total) advertising-to-sales because "it appears to be the most acceptable single criterion of the extent to which individual firms plan to use advertising as a selling force....It is a better measure than absolute outlays since it takes into account, firm by firm, the varying size of the revenue stream from which the advertising expenditure is drawn."[7] By means of analysis of variance, Jastram examined the variation in the average advertising-to-sales ratio planned by firms in his sample survey. The results of Jastram's tests indicated that for each of the years covered by his study (1930, 1935, and 1939), the mean level of the planned advertising-to-sales ratio was greater for consumer non-durable goods than for consumer

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[6] Roy W. Jastram, "Advertising Ratios Planned by Large-Scale Advertisers," Journal of Marketing, Vol. 14 (July, 1949), pp. 13-21.

[7] Ibid., p. 13.

TABLE 27

TOTAL ADVERTISING-TO-SALES RATIOS BY PRODUCT CLASSIFICATIONS (1976)

Products by Product Classifications [a]	Total National Advertising [b] (in $ millions)	Sales [c] (in $ millions)	Advertising-to-Sales Ratio (Percent)
Consumer Non-Durable Goods:			
Pork, Beef, Poultry, and Fish	$ 71.565	$46,715.0	0.153%
Eggs and Dairy	71.837	22,965.0	0.313
Fats and Oils	71.846	4,638.0	1.549
Alcoholic Beverages	338.932	26,670.0	1.271
Fruits and Vegetables	58.598	31,426.0	0.186
Bakery Products	117.038	12,006.0	0.975
Food in Purchased Meals and Beverages	240.394	46,210.0	0.520
Shoes and Other Footwear	24.013	11,261.0	0.213
Women's and Men's Clothing	204.575	62,993.0	0.325
Newspapers and Periodicals	68.185	8,143.0	0.837
Luggage	4.945	1,327.0	0.373
Gasoline and Oil	114.053	4,283.0	2.663
Tobacco	293.433	16,213.0	1.810
Semidurable Housefurnishings	16.975	9,183.0	0.185
Drug Preparations and Sundries	464.312	10,474.0	4.433
Toilet Articles and Preparations	829.772	10,582.0	7.841
Stationery and Writing Supplies	16.591	3,646.0	0.455
Nondurable Toys and Sports Equipment	209.189	9,404.0	2.224
Lighting Supplies	3.654	1,205.0	0.303
Cleaning Preparations	427.131	7,929.0	5.387
Household Paper Products	79.447	4,697.0	1.691
Weighted Average	$117.452	$16,760.0	1.059%
Simple Average			1.606%

TABLE 27 -- Continued

	Total National Advertising b/ (in $ millions)	Sales c/ (in $ millions)	Advertising-to-Sales Ratio (Percent)
Consumer Durable Goods:			
New Domestic Cars	$290.717	$32,270.0	0.901%
New Foreign Cars	161.078	6,935.0	2.323
New and Used Trucks	44.280	7,383.0	0.600
Recreational Vehicles	4.971	1,361.0	0.365
Tires and Tubes	50.266	5,804.0	0.866
Auto Accessories and Parts	83.306	2,406.0	3.462
Furniture	27.935	13,739.0	0.203
Kitchen and Other Household Appliances	150.890	11,230.0	1.344
Glassware, Tableware, and Utensils	11.912	6,342.0	0.188
Radios, TVs, and Musical Instruments	198.570	16,470.0	1.206
Floor Coverings	19.019	6,875.0	0.277
Other Durable Housefurnishings	8.759	6,181.0	0.142
Hand Tools	13.504	1,824.0	0.740
Jewelry	45.260	7,054.0	0.642
Opthalmic and Orthopedic Appliances	12.162	1,868.0	0.651
Books and Maps	58.428	3,698.0	1.580
Wheel Goods	17.347	8,740.0	0.198
Boats	6.935	1,513.0	0.458
Weighted Average	$ 66.963	$ 7,872.0	0.851%
Simple Average			0.897%

a/ Product classifications based on National Income Accounts.

b/ Total national advertising in 6 media: (1) consumer magazines; (2) network television; (3) spot television; (4) network radio; (5) outdoor; and (6) newspaper supplements.

c/ Sales defined by personal consumption expenditures in National Income Accounts.

SOURCES: Leading National Advertisers; U.S. Department of Commerce.

durable goods. These findings led Jastram to conclude that "plans of large-scale advertisers in the durable and non-durable consumer fields are distinct with regard to the average ratio between total advertising outlay and sales."[8]

Despite the tendency for total advertising-to-sales ratios to be higher for non-durable goods than for durable goods, there are a number of reasons to believe that the converse would be true for magazine advertising-to-sales ratios. As explained earlier in the present chapter, magazine advertisements have a comparative advantage over advertisements in other media in the transmission of direct, factual information about products and product attributes. Magazine audiences, which tend to be better educated and more affluent than audiences of other meida, turn to magazines for authoritative reference information when planning purchases. The print and picture format of magazine advertisements permit their audiences to examine and re-examine information about products and product attributes. These characteristics of magazines, their ads, and their audiences are conducive to the promotion of consumer durable goods, the purchases of which tend to be based on informed choice. Consequently, the share of magazine advertising for durable goods could be expected to be higher than the share for non-durable goods or the share of durable goods advertising in other media.

Table 28 presents the magazine advertising-to-sales ratios of 18 consumer durable goods and 22 consumer non-durable goods for which comparable magazine advertising and personal consumption expenditures (sales) data

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[8] Ibid., p. 15.

TABLE 28

MAGAZINE ADVERTISING-TO-SALES RATIOS BY PRODUCT CLASSIFICATIONS (1965, 1971, 1976)

Products by Product Classification	Magazine Advertising-to-Sales Ratios a/		
	1965	1971	1976
Consumer Non-Durable Goods:			
Pork, Beef, Poultry, and Fish	0.040%	0.017%	0.013%
Eggs and Dairy	0.034	0.024	0.017
Fats and Oils	0.196	0.128	0.103
Alcoholic Beverages	0.329	0.382	0.416
Fruits and Vegetables	0.014	0.046	0.050
Bakery Products	0.067	0.057	0.031
Food in Purchased Meals and Beverages	0.011	0.011	0.008
Shoes and Other Footwear	0.183	0.092	0.088
Women's Clothing	0.160	0.072	0.057
Men's Clothing	0.174	0.108	0.083
Luggage	0.359	0.224	0.117
Gasoline and Oil	0.045	0.042	0.038
Tobacco	0.246	0.710 b/	0.990 b/
Semidurable Housefurnishings	0.124	0.078	0.112
Drug Preparations and Sundries	0.641	0.450	0.380
Toilet Articles and Preparations	1.231	1.502	1.181
Stationery and Writing Supplies	0.210	0.220	0.147
Nondurable Toys and Sports Equipment	0.331	0.328	0.303
Lighting Supplies	0.486	0.102	0.144
Cleaning Preparations	0.628	0.367	0.328
Household Paper Products	0.564	0.237	0.097
Newspapers and Periodicals	0.164	0.178	0.190
Simple Average	0.283	0.244	0.238
Weighted Average	0.177	0.179	0.163

TABLE 28 -- Continued

Products by Product Classification	Magazine Advertising-to-Sales Ratios [a]		
	1965	1971	1976
Consumer Durable Goods:			
New Domestic Cars	0.198%	0.126%	0.197%
New Foreign Cars	0.715	0.506	0.688
New and Used Trucks	0.570	0.246	0.103
Recreational Vehicles	n.a.	0.151	0.194
Tires and Tubes	0.277	0.243	0.070
Auto Accessories and Parts	0.493	0.515	0.626
Furniture	0.130	0.112	0.084
Kitchen and Other Household Supplies	0.342	0.158	0.213
China, Glassware, Tableware, and Utensils	0.298	0.171	0.155
Radios, TVs, and Musical Instruments	0.425	0.395	0.311
Floor Coverings	0.290	0.217	0.156
Other Durable Housefurnishings	0.074	0.036	0.080
Hand Tools	n.a.	0.130	0.162
Jewelry	0.211	0.220	0.240
Opthalmic and Orthopedic Appliances	0.145	0.180	0.234
Books and Maps	0.710	1.087	1.184
Wheel Goods	0.057	0.042	0.035
Boats	1.006	0.032	0.345
Simple Average	0.371	0.270	0.282
Weighted Average	0.273	0.219	0.232

n.a. = not available.

a/ Sales defined by personal consumption expenditures in the National Income Accounts.

b/ Reflects increased magazine advertising after the FCC ban on broadcast cigarette advertising that began on January 2, 1971.

are available, for the years 1965, 1971, and 1976.[9] As predicted, the simple average magazine advertising-to-sales ratio was found to be larger for consumer durable goods than for consumer non-durable goods. This anticipated finding contrasts with evidence presented earlier (based on Table 27) that the ratio of total advertising outlays-to-sales tends to be smaller for consumer durable goods than for consumer non-durable goods by a statistically significant margin.

The magazine advertising-to-sales ratios presented in Table 28 also provide the basis for an analysis of variance exercise such as that performed by Jastram for total advertising-to-sales ratios. However, because the average magazine advertising-to-sales ratio for durable goods is larger than the average ratio for non-durable goods -- and larger than the ratio-to-sales for durable goods advertised in all media combined -- the results of our analysis of variance could be expected to conflict with Jastram's results. That is to say, the mean level of the magazine advertising-to-sales ratio for non-durable goods could not be expected to be larger -- by a statistically significant amount -- than the mean level of the ratio-to-sales for durable goods.

The results of our analysis of variance exercise for the years 1965, 1971, and 1976 confirmed our expectation. As shown in Table 29, there was no statistically significant difference in the variation of the magazine advertising-to-sales ratios of consumer durable and non-durable

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[9] In 1976, the 18 consumer durable goods accounted for 90 percent of the total personal consumption expenditures on durable goods; the 22 consumer non-durable goods accounted for 88 percent of total personal consumption expenditures on non-durable goods.

goods in any of the three sample years. This result, and the data in Table 28, suggest that advertisements for consumer durable goods are likely

TABLE 29
Analysis of Variance:
Ex Post Magazine Advertising-to-Sales Ratios,
Consumer Durable and Non-Durable Goods
(1965, 1971, 1976)

Year	Degrees of Freedom			Mean Squared Variance		F-Ratio	Critical F-Ratio	
	Total	Between	Within	Between	Within		1%	5%
1965	37[a/]	1	36	7.2	7.8	0.9	5.4	4.1
1971	39	1	38	0.6	8.7	0.1	5.3	4.1
1976	39	1	38	4.0	8.9	0.4	5.3	4.1

[a/] Data not available for hand tools and foreign automobiles categories.

to have a disproportionately larger impact on the level of total magazine advertising than on the level of total advertising in all media combined.

Annual Fluctuations in Magazine Advertising and Consumer Goods Sales

The timing and magnitude of advertising volume fluctuations in magazines and in all media combined can be expected to reflect the relative distribution of durable versus non-durable goods in their respective advertising bases. In 1962, Charles Yang examined the relationship between advertising fluctuations and fluctuations in consumer goods sales and found the following:

> There is a clear indication that total advertising outlays tend to accompany sales in their cyclical fluctuation for durable and non-durable consumer goods groups. Thus, advertising responded closely and positively to changes in sales during the period under study, although the patterns of response varied somewhat from one group to another. More precisely, advertising conforms with sales in the direction

> of movements in seven of nine years for the consumers' non-durable goods; six out of nine for the consumers' durable goods group.[10]

It was shown above, however, that the share distribution of magazine advertising among consumer durable and non-durable goods differs from the share distribution in all media combined. Given this difference it is worthwhile to investigate the degree to which magazine advertising fluctuations independently reflect fluctuations in consumer durable and non-durable goods sales.

Following procedures suggested by Yang, annual rates of change were computed for magazine advertising expenditures volume and the two consumer goods sales series. The annual rate of change over the 1965-1976 period for each series was assumed to represent that series' average secular growth rate. Deviations from this growth rate, measured in terms of standard deviations, were regarded as cyclical fluctuations. These computations provide the bases for a crude examination of the conformity and relative magnitude of magazine advertising expenditures and consumer goods sales fluctuations presented immediately below.

Chart 6 shows annual percentage rates of change in magazine advertising expenditures, sales of consumer durable goods, and sales of consumer non-durable goods. Examination of the chart reveals that the magazine advertising expenditures series and the consumer durable goods sales series moved in the same direction in 8 out of the 10 years for which annual percentage changes could be calculated; the direction of movement in the

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[10] Charles Yang, A Theoretical and Empirical Investigation of Advertising Cycles, Unpublished doctoral dissertation, New York University, Graduate School of Business Administration, 1962, p. 204.

CHART 6

ANNUAL PERCENT CHANGES IN MAGAZINE ADVERTISING VOLUME
AND SALES OF CONSUMER DURABLE AND NON-DURABLE GOODS

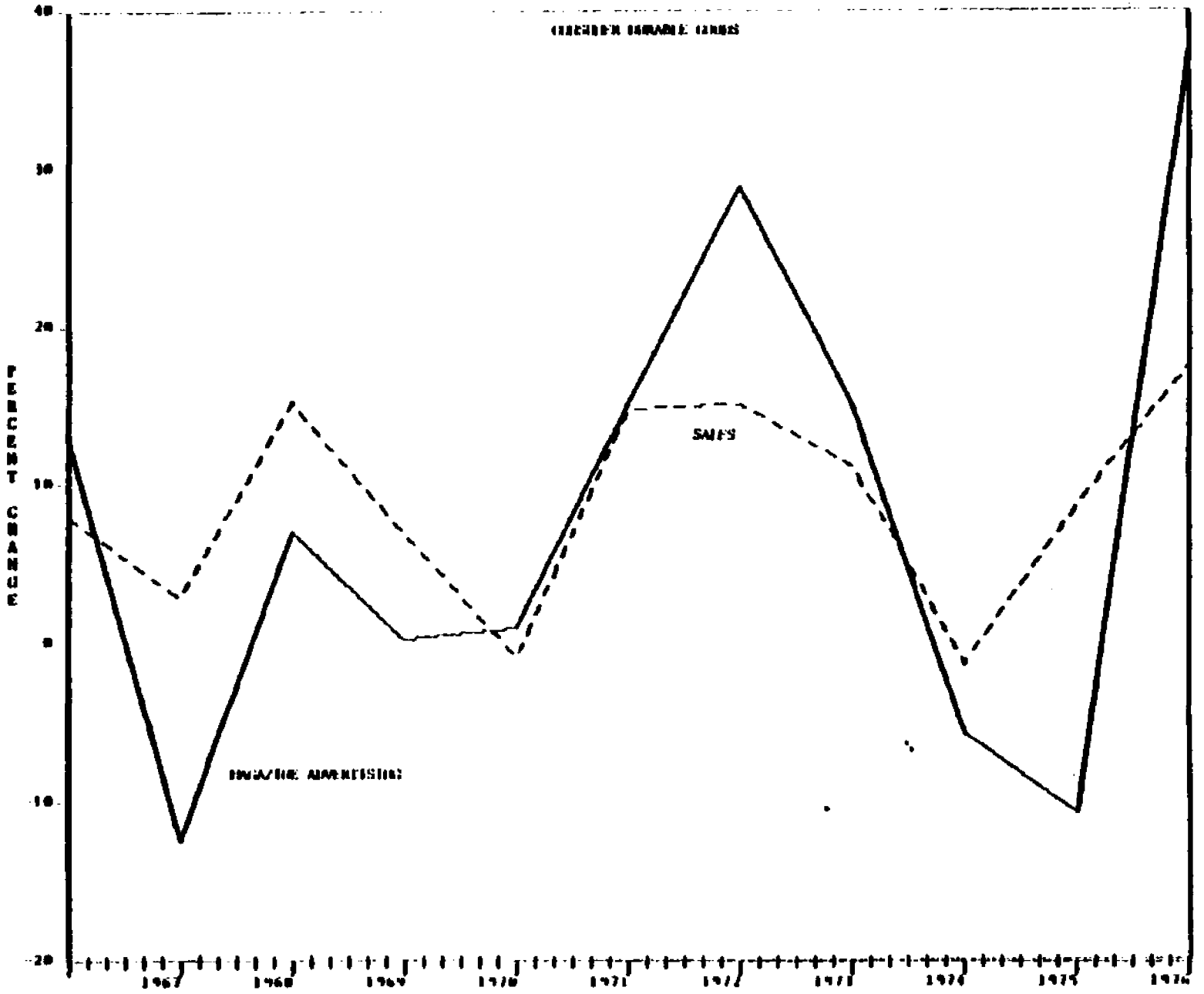
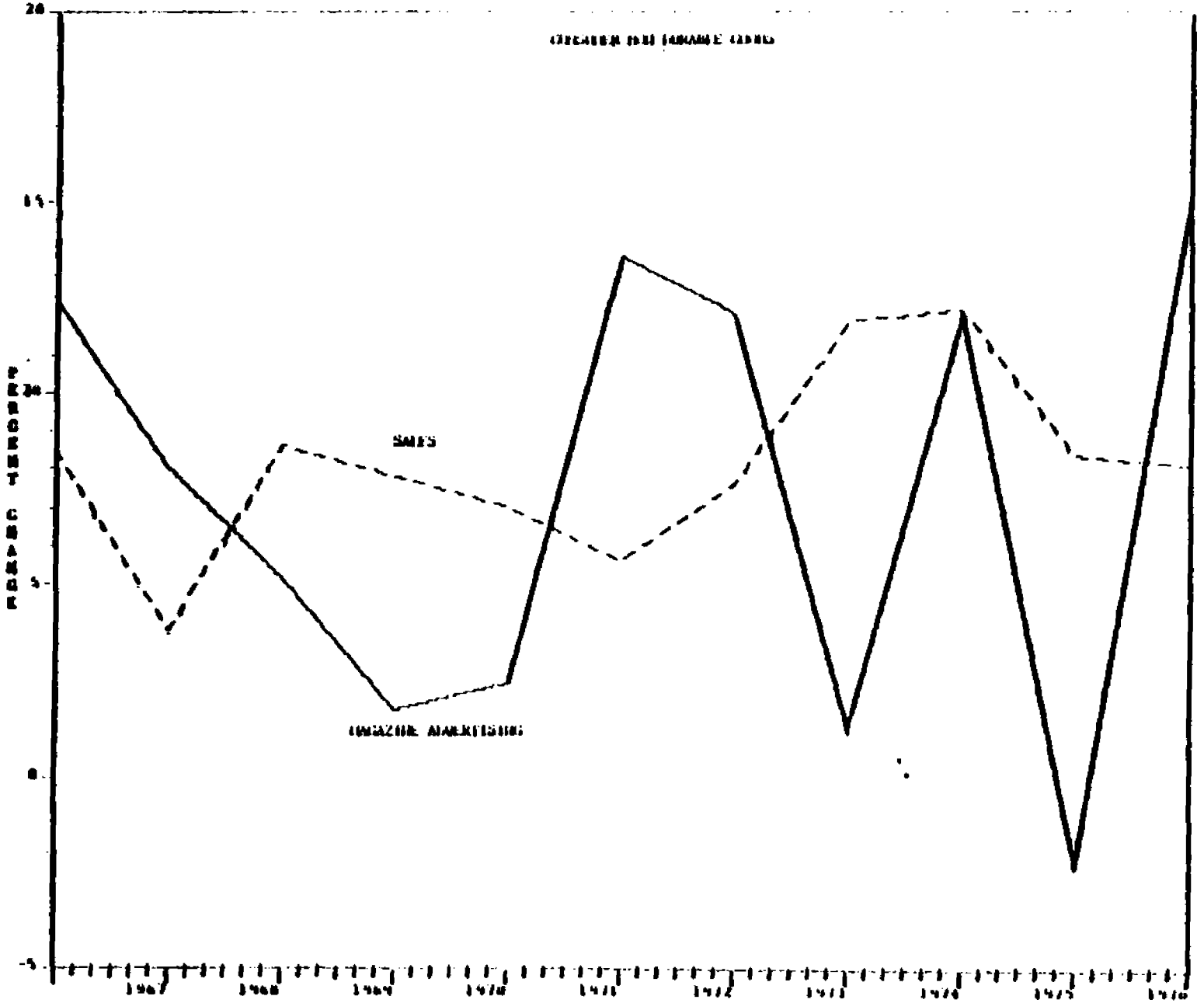


CHART 6 -- Continued



magazine advertising expenditures series and the consumer non-durable goods sales series conformed in only 4 out of the 10 years. Thus, contrary to Yang's findings for total advertising in all media combined, the direction of changes in magazine advertising volume over time appear to more closely correspond with the direction of changes in consumer durable goods sales than with changes in consumer non-durable goods sales.

We next turn to a comparison of the magnitude of cyclical fluctuations in magazine advertising expenditures and sales of consumer durable and non-durable goods, measured in terms of standard deviations from their respective long-term growth trend values. In his analysis of total advertising expenditures in all media combined, Yang made a similar comparison and found the following:

> When we compare the standard deviation for sales of each product group with the corresponding standard deviation for total advertising expenditures, we find evidence of a reasonably close relationship between them. In other words, a high standard deviation for sales tends to produce a high standard deviation for advertising outlays and vice versa. Thus the consumers' durable goods group has the highest standard deviation for sales and also the highest standard deviation for advertising outlays, while the consumers' non-durable goods group ranks the lowest in both the standard deveiation for sales and that for advertising.[11]

The results are somewhat different, however, when the standard deviations for magazine advertising expenditures are compared with the standard deviations for sales of the corresponding product group (see Table 30). The average standard deviations of magazine advertising expenditures for durable and non-durable goods are virtually equal (27.2 and 26.9, respec-

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[11] Ibid., p. 206.

TABLE 30

MAGNITUDE OF CYCLICAL FLUCTUATIONS OF MAGAZINE ADVERTISING AND SALES, BY PRODUCT CLASSIFICATION (1965 - 1976)

Products by Product Classification	Standard Deviation from the Mean Rate of Annual Change		
	Magazine Advertising	Sales	Cyclical Sensitivity Ratio [a]
Consumer Non-Durable Goods:			
Pork, Beef, Poultry, and Fish	21.44	5.28	4.06
Eggs and Dairy	45.96	4.71	9.76
Fats and Oils	31.47	10.34	3.04
Alcoholic Beverages	42.36	1.32	32.09
Fruits and Vegetables	52.47	5.84	8.98
Bakery Products	34.00	10.73	3.17
Food in Purchased Meals and Beverages	22.13	3.70	5.98
Shoes and Other Footwear	12.43	3.49	3.56
Women's Clothing	13.13	2.31	5.68
Men's Clothing	11.35	2.11	5.38
Luggage	30.10	3.07	9.80
Gasoline and Oil	29.64	6.93	4.28
Tobacco	60.91	2.20	27.69
Semidurable Housefurnishings	21.24	3.45	6.16
Drug Preparations and Sundries	15.37	2.02	7.61
Toilet Articles and Preparations	13.53	1.61	8.40
Stationery and Writing Supplies	24.37	5.43	4.49
Nondurable Toys and Sports Equipment	7.39	2.15	3.44
Lighting Supplies	36.91	3.29	11.22
Cleaning Preparations	19.22	1.66	11.53
Household Paper Products	25.70	2.98	8.62
Newspapers and Periodicals	21.08	7.01	3.01
Simple Average	26.92	4.17	8.55
Weighted Average	5.51	2.24	2.46
Consumer Durable Goods:			
New Domestic Cars	43.12	17.64	2.44
New Foreign Cars	24.72	10.32	2.40
New and Used Trucks	17.39	23.21	0.72
Recreational Vehicles	62.92	25.27	2.49
Tires and Tubes	30.20	1.91	15.81
Auto Accessories and Parts	10.19	4.99	2.04
Furniture	31.12	2.99	10.41
Kitchen and Other Household Appliances	34.66	3.44	10.08
China, Glassware, Tableware and Utensils	12.96	2.97	4.36
Radios, TVs, and Musical Instruments	24.69	4.32	5.72
Floor Coverings	27.10	6.28	4.32
Other Durable Housefurnishings	32.26	2.88	11.20
Hand Tools	19.20	5.45	3.52
Jewelry	19.36	4.04	4.79
Opthalmic and Orthopedic Appliances	32.16	6.47	4.97
Books and Maps	13.65	5.19	2.63
Wheel Goods	29.24	5.26	5.56
Boats	24.43	21.24	1.15
Simple Average	27.19	8.60	5.26
Weighted Average	15.02	8.29	1.81

SOURCES: PIB; U.S. Department of Commerce, Bureau of Economic Analysis.

[a] Column 1 divided by column 2.

tively) and substantially larger than the average standard deviations for sales of durable and non-durable goods (8.6 and 4.2, respectively). The "cyclical sensitivity ratio" -- the ratio of the standard deviations (from their respective long-term trends) of magazine advertising expenditures-to sales -- for durable goods is 5.3, considerably smaller (closer to unity) than the cyclical sensitivity ratio for non-durable goods, which equals 8.6. This comparison suggests that, on the average, fluctuations in sales and magazine advertising tend to be more alike in magnitude for consumer durable goods than for consumer non-durable goods.

Quarterly Fluctuations in Magazine Advertising and Consumer Goods Sales

When the data are expressed on a quarterly basis, characteristics of the relationships between magazine advertising expenditures and sales of each product group are more easily discernible. In Charts 7 and 8, the plot of the quarterly seasonally adjusted index of magazine advertising expenditures is contrasted with the plot of the quarterly seasonally adjusted indexes of consumer non-durable goods sales and consumer durable goods sales, respectively, for the period 1965/1 - 1976/4. Examination of Chart 7 reveals that the plot of consumer non-durable goods sales traces a fairly smooth curve, the locus of whose points resembles a free-hand trend line through the plot of the magazine advertising expenditures index. The relationship between these two plots suggests that consumer non-durable goods sales are more likely to be associated with the secular increase in the level of magazine advertising expenditures than with their cyclical fluctuations.

CHART 7

INDEXES OF SEASONALLY ADJUSTED MAGAZINE ADVERTISING
VOLUME AND CONSUMER NON-DURABLE GOODS SALES

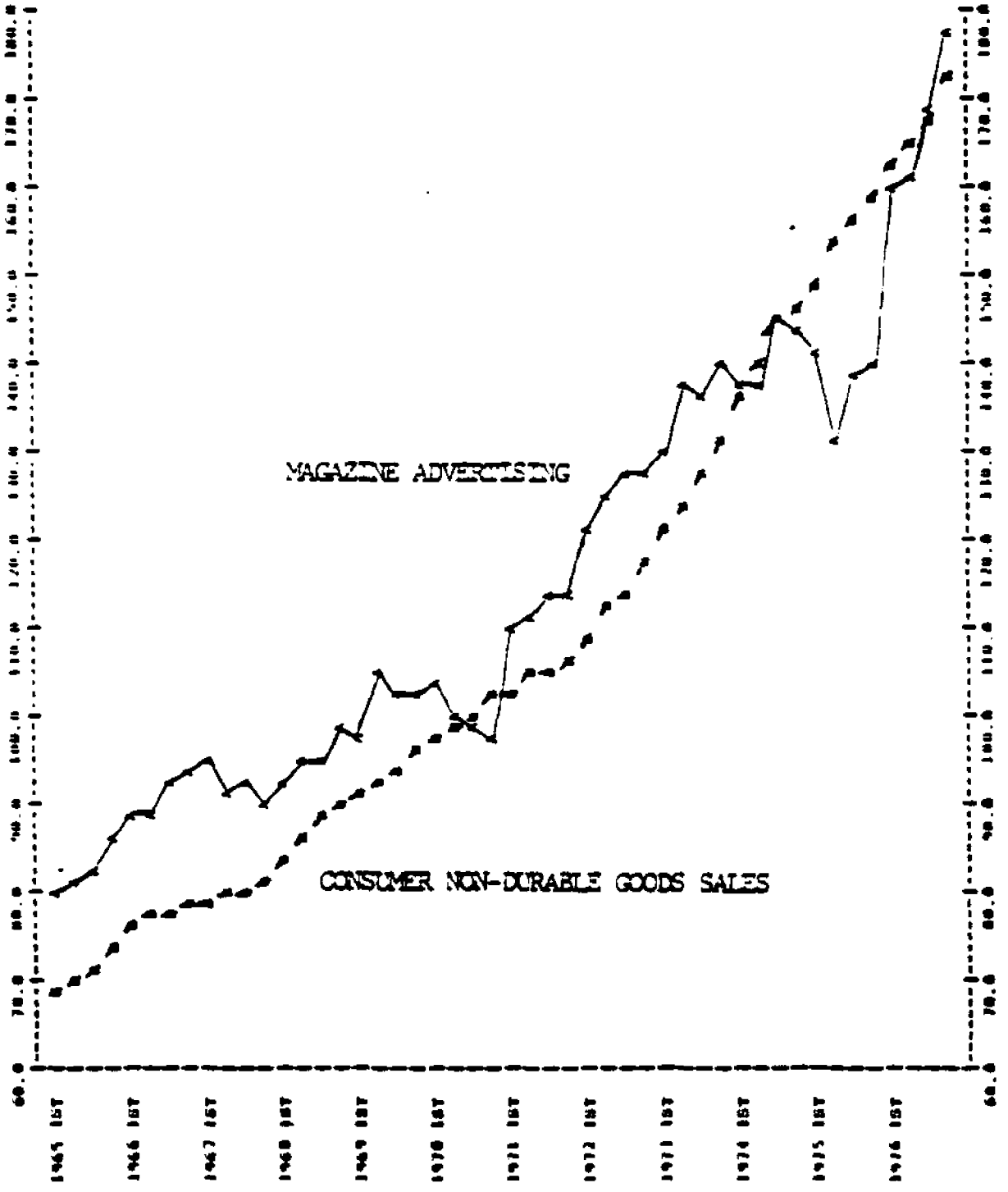
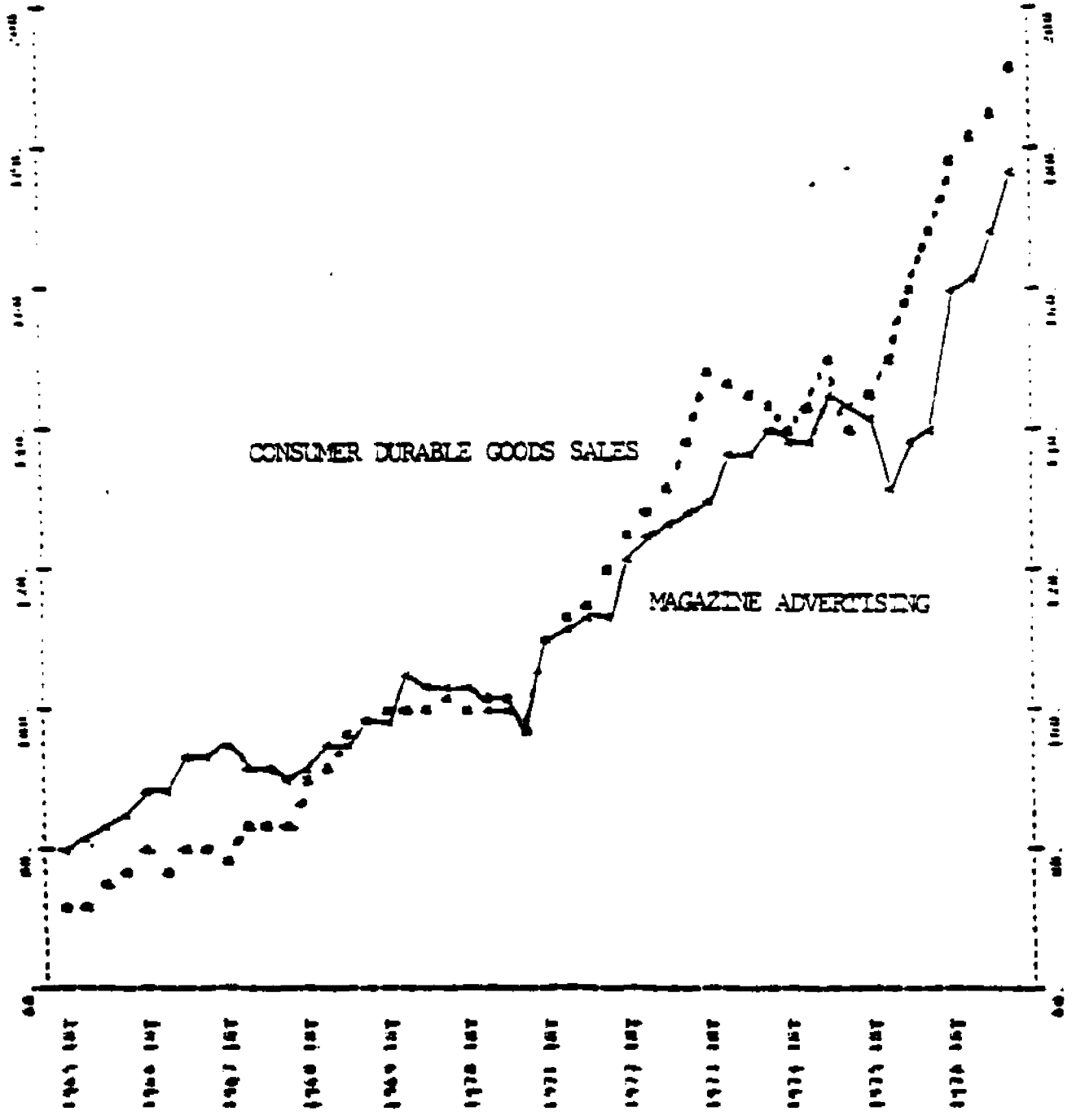


CHART 8

INDEXES OF SEASONALLY ADJUSTED MAGAZINE ADVERTISING VOLUME AND CONSUMER DURABLE GOODS SALES

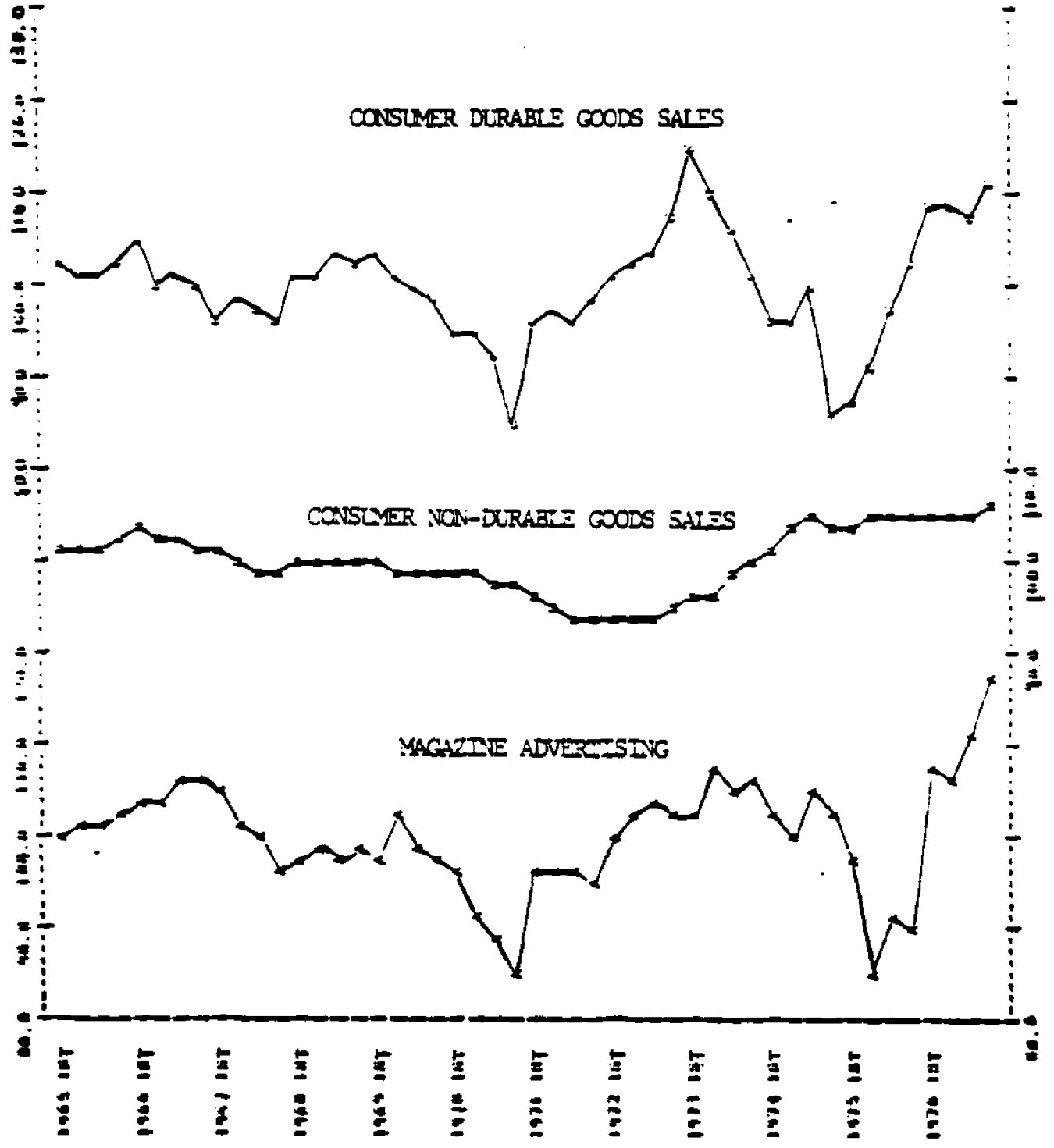


The plot of the consumer durable goods sales index, on the other hand, moved in fairly close agreement with the plot of the magazine advertising expenditures index, both in terms of changes in level and in terms of the timing and magnitude of fluctuations (see Chart 8). Fluctuations in magazine advertising volume, therefore, seem likely to be associated with cyclical fluctuations in consumer durable goods sales.

These relationships are further illustrated by the plots of cyclical indexes of magazine advertising expenditures, consumer non-durable goods sales, and consumer durable goods sales, which are shown in Chart 9. Examination of this chart reveals that the timing, magnitude, and pattern of cycles in magazine advertising expenditures bear little resemblance to the cyclical characteristics of consumer non-durable goods sales. However, the cyclical characteristics of magazine advertising expenditures appear to systematically conform with the timing, amplitude, and pattern of cyclical fluctuations in consumer durable goods sales. Furthermore, a cursory examination of these two indexes indicates that turning points of magazine advertising expenditure cycles tend to lag briefly behind turning points in consumer durable goods sales cycles. These conclusions are consistent with: (1) findings presented in Chapter 4 indicating that the magazine advertising budget process adjusts spending to changes in consumer goods sales with a brief lag; and (2) evidence presented earlier in the present chapter showing the relatively closer relationship of fluctuations in magazine advertising to those in consumer durable goods sales than to those in consumer non-durable goods sales.

CHART 9

CYCLICAL INDEXES OF MAGAZINE ADVERTISING AND SALES OF CONSUMER DURABLE AND NON-DURABLE GOODS



Estimating Total Magazine Advertising Using Different Sales Variables

The partial adjustment model introduced in Chapter 4 is easily amenable to estimation of the effects of consumer durable and consumer non-durable goods sales fluctuations on the level and adjustment of the mean advertising-to-sales ratio for products that advertise in magazines.[12] It may be recalled that our original estimation of the partial adjustment model over the 1965/2 - 1976/4 period generated the following results:

$$\text{(Eq. 4)} \quad MA_t = \underset{(0.08)\ 3.32}{0.27\ SG_t} + \underset{(0.11)\ 5.77}{0.66\ MA_{t-1}}, \qquad CR^2 = .97,\ DW = 1.90,\ SEE = 3.30$$

where MA_t = magazine advertising expenditures in period t; SG_t = sales of consumer goods in period t; and MA_{t-1} = magazine advertising expenditures in period t-1. Evidence presented earlier in the present chapter, however, suggests that the partial adjustment model should be respecified and re-estimated with one or more components of consumer goods sales as explanatory variable(s). The two components of SG -- consumer durable goods sales (SD) and consumer non-durable goods sales (SN) -- experienced very different secular and cyclical growth paths over the 1965 - 1976 period, both relative to each other and relative to fluctuations in MA. Furthermore,

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[12] Richard Schmalensee attempted to measure the independent impact of consumer durable and non-durable goods sales on advertising volume, but was unable to refute the null hypothesis that the coefficients on the two sales variables were identical. However, since Schmalensee's study covered only the first two postwar decades, it could not capture the effects of television growth and the expansion of specialized magazines that increased the share of durable goods advertising in magazines relative to non-durable goods advertising.

the volume of advertising for durable goods appears to have a significantly (and disproportionately) greater impact on the overall level of magazine advertising than on the overall level of advertising in all media combined. Thus, it seems worthwhile to respecify the partial adjustment model with SD and/or SN, instead of SG.

Because the level and fluctuations of magazine advertising expenditures vary closely and positively with consumer durable goods sales -- and not with consumer non-durable goods sales -- the strongest advertising determination equation could be expected to include SD and to exclude SN. In fact, the similarity of SN to a trend line fitted through MA poses a substantial problem to any estimation of the partial adjustment model. The coefficient on the autoregressive lagged dependent variable (MA_{t-1}), already included in the model, must itself be interpreted as an estimate of the secular trend in magazine advertising expenditures. Thus, inclusion of SN in the estimation equation could result in a higher CR^2 only at the cost of increased instability in all other regression coefficients (in the face of multi-collinearity). Even if the coefficient on SD turned out to be highly significant and with the expected (positive) sign, it is unlikely that the coefficient on SN would be significant.

These propositions were tested by respecifying the partial adjustment model to include the variables SD and SN instead of the variable SG. As in all estimations shown in Chapter 4, the constant term was suppressed to zero. Estimation of this respecified model over the 1965/2 - 1976/4 period generates the following results:

(Eq. 8) $MA_t = 0.41\ SD_t - 0.07\ SN_t + 0.56\ MA_{t-1}$.

	(0.08)	(0.09)	(0.10)
	4.97	-0.74	5.55

$CR^2 = .98$
DW = 2.13
SEE = 3.65

As expected, the coefficients on SD_t and MA_{t-1} are significant and have positive signs, while the coefficient on SN_t is not significant and has a perverse (negative) sign. Moreover, relative to Equation 4, the coefficient on MA_{t-1} is lower (0.66 compared to 0.56), the standard error of estimate is higher (3.30 compared to 3.65), and the CR^2 increases slightly (from 0.97 to 0.98). Thus, the inclusion of the variable SN_t -- in a model that includes MA_{t-1} -- biases the coefficients on all the variables and increases the estimation error of the regression fit.

An additional estimation was made using SD_t as the only sales variable. This estimation could be expected to improve upon the estimation expressed by Equation 8, since the most probable source of misspecification -- the variable SN_t found earlier to be collinear with the lagged dependent variable -- would be removed from the model. Estimations of the equation specified with SD as the sales variable could also be expected to be statistically stronger than estimations, like Equation 4, that include SG_t, since about two-thirds of SG_t is comprised of SN_t. The following are the results of the estimation of the magazine advertising determination equation, respecified to include only SD_t as the sales variable:

(Eq. 9) $MA_t = 0.37\ SD_t + 0.53\ MA_{t-1}$

	(0.06)	(0.09)
	5.78	5.83

$CR^2 = .98$
DW = 2.06
SEE = 3.63

As expected, the estimation results of Equation 9 are stronger than

those generated by the estimation of Equation 4. The removal of the trend-like influence of SN_t from the sales variable (SG_t) results in a larger coefficient on SD_t, relative to the coefficient on SG_t, and a smaller coefficient on MA_{t-1}. Moreover, the standard error is smaller, the t - statistic larger, for each coefficient in Equation 9 relative to those in Equation 4. Although the standard error of the regression fit increases, both the CR^2 and DW - statistic improve (increase) slightly.

The results of the estimation of Equation 9 also lead to the conclusion that total magazine advertising adjusts more rapidly to changes in the level of SD than to changes in the level of SG. When sales are defined by SG, the estimated mean and median adjustment lags are 1.9 quarters and 1.7 quarters, respectively; approximately 34 percent of the adjustment is completed after 1 quarter and 81 percent is completed by the end of 4 quarters. On the other hand, when sales are defined by SD, the estimated mean and median adjustment lags are both approximately 1.1 quarters; about 47 percent of the adjustment process is completed after 1 quarter and about 92 percent is completed after 1 year. (See Table 31). The reliability of these estimates is supported by the cyclical analysis in Chapter 3 which found that magazine advertising cycles tend to lag cycles in broad economic aggregates by about 1 quarter at their turning points.

Despite the differences in the timing of their adjustment processes, however, the estimated mean target ratios of advertising-to-sales for products that advertised in magazines are identical (0.8 percent) for both specifications of the sales variable (SD_t and SG_t). This finding is consistent with evidence presented earlier in the present chapter that revealed no statistically significant difference between the mean ex-post

TABLE 31

CHARACTERISTICS OF THE ADJUSTMENT OF ACTUAL TO TARGET ADVERTISING-TO-SALES RATIOS FOR TWO ALTERNATIVE SPECIFICATIONS OF THE SALES VARIABLE [a/]

	Sales Variables	
	SG	SD
Mean Target Ratio (percent)	0.8	0.8
Mean Adjustment Lag (quarters)	1.9	1.1
Median Adjustment Lag (quarters)	1.7	1.1
Percent Adjustment After 1 Quarter	33.9	47.1
Percent Adjustment After 4 Quarters	81.0	92.1

[a/] Based on Equations 4 and 9.

magazine advertising-to-sales ratios for consumer durable and non-durable goods.

Additional estimations of the partial adjustment model were also calculated for specifications that included: (1) TSD_t, an interaction term between a simple linear time trend and consumer durable goods sales designed to capture any tendency for the ratio of magazine advertising-to-durable goods sales to change over time; and (2) SDSD', the interaction between durable goods sales in period t and the percentage change in durable goods sales between period t-1 and period t, designed to capture cyclical differences in the distribution of advertising over phases of the product life cycle. The results of each of these estimations reveal that the coefficients on both of these variables are unanimously non-significant; this suggests that the ratio of magazine advertising-to-durable goods sales is stable over time and over the course of the business cycle.

Estimating Magazine Class Advertising Using Different Sales Variables

The relationship between fluctuations in magazine advertising expenditures and fluctuations in sales of consumer durable and non-durable goods has important implications for the eight individual magazine classes. Since the relative shares of advertising volume devoted to consumer durable and non-durable goods varies across the magazine classes, the level of the mean target ratio of advertising-to-sales, and the timing of its adjustment process, can be expected to differ across magazine classes. Furthermore, the relative strength of SG, SD, SN and MA_{t-1} in capturing the fluctuations

in magazine advertising is likely to vary according to the relative shares of consumer durable and non-durable goods in the advertising base of each magazine class.

In order to test these propositions, magazine advertising revenues for each magazine class were estimated using the partial adjustment model respecified to include the SD_t and SN_t variables together and the SD variable alone. Results of these estimations were then compared with estimates for each magazine class derived from specifications of the model that included only SG_t as the sales variable. A constant term was included in a set of estimations, but it was never found to be statistically significant or economically sensible.

The results of these estimations, as well as the results of the estimations that utilized SG_t as the sales variable (originally presented in Chapter 4) are presented in Table 32. Examination of this table reveals that the values of the coefficient on the lagged dependent variable and on the sales variable -- however specified -- differ from magazine class to magazine class. These differences can be primarily attributed to the uniqueness of the mix of products advertised in each magazine class. Furthermore, the value of the coefficient on the sales variable never decreases, and the value of the coefficient on MA_{t-1} never increases, when SD_t is substituted for SG_t as the sales variable specified in the model. This pattern, which is consistent with similar findings for the estimation of total magazine advertising expenditures presented earlier, indicates a more rapid adjustment in advertising expenditures toward the mean target ratio of advertising-to-sales for products advertised in each magazine class than was originally estimated with specifications using SG_t as the

TABLE 32

COMPARING THE ADJUSTMENT PROCESS OF MAGAZINE ADVERTISING TO TARGET LEVELS FOR TWO SPECIFICATIONS OF THE SALES VARIABLE

Magazine Classes	Estimated Coefficients on: SG	SD	MA_{t-1}	Characteristics of Adjustment Process: Mean Target Ratio (percent)	Mean Adjustment Lag (qtrs.)	Median Adjustment Lag (qtrs.)	Percent Adjustment After 1 Qtr.	Percent Adjustment After 4 Qtrs.
Total (All Classes Combined)	.27		.66	0.8	1.9	1.7	33.9	81.0
	.37	.53		0.8	1.1	1.1	47.1	92.1
Automotive	.59		.68	1.8	2.1	1.8	32.0	78.6
		.99	.42	0.2	0.7	0.7	58.0	96.9
Business	.12		.91	1.4	10.1	7.4	9.0	31.4
		.14	.90	1.4	9.0	6.6	10.0	34.4
General Editorial	.18		.80	0.9	4.0	3.1	20.0	59.0
		.22	.74	0.9	2.9	2.3	26.0	70.0
Home	.10		.83	0.6	4.9	3.7	17.0	52.5
		.17	.71	0.6	2.5	2.0	29.0	74.6
Men's	.07		.91	0.7	10.1	7.35	9.0	31.4
		.12	.85	0.8	5.7	4.3	15.0	47.8
News	.48		.54	1.0	1.2	1.1	46.0	91.5
		.49	.53	1.0	1.1	1.1	47.0	92.1
Sports	.30		.79	1.4	3.8	2.9	21.0	61.0
		.37	.73	1.4	2.7	2.2	27.0	71.6
Women's	.20		.69	0.7	2.2	1.9	31.0	77.3
		.27	.56	0.6	1.3	1.2	44.0	90.2

sales variable. Specifically, the estimated mean and median adjustment lags are shorter, and the percentage of the adjustment completed after all time intervals is larger, when SD_t is substituted for SG_t in the partial adjustment model. As was found to be the case in estimations of total magazine advertising expenditures, however, the estimated mean target ratio of advertising-to-sales for products advertised in each magazine class change slightly, if at all, in the revised specification of the model. This latter finding is consistent with evidence presented earlier in this chapter showing that the difference between the mean magazine advertising-to-sales ratios of consumer durable and non-durable goods -- the sales which comprise SG_t -- was not statistically significant.

The substitution of SD_t for SG_t as the sales variable in the partial adjustment model has its largest impact on the estimated coefficients of the automotive magazine equation. Since automotive magazine advertising volume generally fluctuates vigorously from quarter to quarter, it was expected -- and indeed found to be the case -- that removal of the relatively stable SN_t component from SG_t (thereby leaving only SD_t in the advertising determination equation) would result in stronger regression statistics. Estimated with the revised model, the coefficient on the sales variable increased from .59 to .99 and the coefficient on MA_{t-1} decreased from .68 to .42. Consequently, the speed of the adjustment process -- as measured by the length of the mean and median lags and the percentage of the adjustment completed by the end of each time interval -- was found to be substantially greater than originally estimated under specifications using SG_t instead of SD_t. Moreover, the standard error of estimate declines from 9.5 to 7.7 under the revised specification of

the model.

Before concluding, it is worthwhile to examine how the independent impact of SD_t and SN_t affect the estimation of men's magazine advertising volume. When men's magazine advertising determination equation was originally estimated (with SG_t as the sales variable), the coefficient on SG_t was low and not statistically significant; the coefficient on the lagged dependent variable, however, was relatively high and statistically significant. When the equation was re-estimated to include the interaction variable TSG_t, however, the coefficient on SG_t increased and became statistically significant; at the same time, the coefficient on TSG was negative in sign and statistically significant.

Interpretation of the negative sign for the coefficient on TSG_t suggests a tendency for the men's magazine target ratio of advertising-to-sales to secularly decline over time. This interpretation was confirmed by the equation that includes both SD_t and SN_t as separate variables. In that estimation, the coefficients on <u>both</u> of these sales variables are statistically significant, but the coefficient on SN_t has a negative sign. This is consistent with the secular downtrend, since 1972, in the men's magazine advertising-to-sales ratio.

Summary

The advertising process is designed to reinforce and expand consumers' stock of knowledge about qualitative attributes of competing products and brands. From the advertiser's viewpoint, the optimal media mix for transmission of messages is determined exogenously, depending as it does on characteristics of the products, buyer population, and technology of the

media, all of which are beyond the advertiser's control. For consumers, on the other hand, the process of acquiring product information involves both time and pecuniary expenses that vary according to the source of information and the product or product attributes focused upon by the advertiser's messages. Different media, or advertising vehicles, have different utility costs to consumers, provide different information about products and product attributes, and differ in their cost efficiency.

The qualitative characteristics of magazines, magazine audiences, and magazine advertisements are particularly well-suited to the transmission of direct, factual information about products and product attributes. Consumers seek out and acquire such information before choosing among competing products and brands that are typically characterized by some, or all, of the following characteristics: (1) high unit price; (2) high income and price elasticities of demand; (3) infrequent and planned purchases; and (4) attributes that can be examined by buyers prior to purchase. We hypothesized, therefore, that the magazine advertising-to-sales ratio for these products, on average, is higher than for other types of products, and higher than the total (all media) advertising-to-sales ratio for these products.

In order to test this hypothesis, we categorized products according to Phillip Nelson's criteria for search versus experience goods and by the more widely used classifications of consumer durable versus non-durable goods. We then tested for statistical significance of the differences in the mean and variance of the advertising-to-sales ratios for goods in each classification and compared the results of these tests with similar results

pertaining to advertising-to-sales ratios for similar goods advertised in other media.

The first series of tests focused upon differences in the advertising-to-sales ratios of search and experience goods. The results of these tests indicated that the magazine advertising-to-sales ratios of search goods were higher, on the average, than the ratios-to-sales for experience goods, and higher than the average advertising-to-sales ratio for search goods advertised on television and in all media combined.

We next undertook a more comprehensive examination of the relative magnitude of advertising-to-sales ratios for consumer durable and non-durable goods. Unlike Jastram, who found that the total advertising-to-sales ratio, on average, tends to be higher for non-durable goods than for durable goods, we were unable to refute the hypothesis that, on average, the magazine advertising-to-sales ratios for the two types of goods are equal. This result suggests that magazine advertising for consumer durable goods has a disproportionately larger impact on the overall level of magazine advertising than on the level of advertising in all media combined.

Although fluctuations in magazine advertising were shown in Chapter 4 to be associated with fluctuations in sales of consumer goods in general, additional tests revealed that the relationship between cycles in magazine advertising and consumer durable goods sales is especially close. Using annual data, we showed that fluctuations in magazine advertising changed in the same direction as fluctuations in consumer durable goods sales in 8 out of 10 years; magazine advertising and non-durable goods sales moved in the same direction in only 4 out of 10 years. Furthermore, the variance of

magazine advertising expenditures between 1965 and 1976 was closer in size to the variance of consumer durable goods sales than the variance of consumer non-durable goods sales. Thus, comparisons based on annual data suggest that the direction and magnitude of fluctuations in consumer durable goods sales have uniquely strong impacts on the level and fluctuations of magazine advertising.

These tentative conclusions were confirmed in graphical and statistical analyses that employed the seasonally adjusted quarterly data developed in this study. The plots of magazine advertising index relative to the indexes of consumer non-durable and durable goods sales, respectively, illustrated the following: (1) the plot of consumer non-durable goods sales resembles a freehand trend line through the plot of magazine advertising series; and (2) the plot of consumer durable goods sales is closely and systematically related to the plot of the magazine advertising series. These tentative findings were confirmed by the plots of the cyclical indexes of the three series. These results suggest that fluctuations in consumer durable goods sales are the primary factor in the cyclical adjustment of magazine advertising expenditures, while the considerably lower and less synchronous fluctuations in non-durable goods sales simply contribute to the over-all growth trend in magazine advertising.

Using the partial adjustment model introduced in Chapter 4, we attempted to estimate the adjustment process of magazine advertising to changes in sales of consumer durable and non-durable goods. The consumer goods sales variable used in the estimations presented in Chapter 4 was replaced in a set of estimations by separate variables for consumer durable

goods sales and consumer non-durable goods sales.

In each of these estimations, the coefficient on the durable goods sales variable was significant while the coefficient on the non-durable goods sales variable was consistently non-significant. Based upon these results, another set of estimations were computed in which the sales variable was defined only by durable goods sales. Most regression results from this set of estimations were statistically stronger than the results of estimations in which the sales variable was defined by total consumer goods sales or by separate variables for consumer non-durable goods and consumer durable goods sales.

Since the overall properties of the adjustment mechanism depend on both consumer durable and non-durable goods sales, the relative proportion of each of these product types in the advertising base takes on great significance. And since this proportion varies from magazine class to magazine class, properties of their respective adjustment mechanisms could be expected to differ. Tests of this hypothesis for each magazine class confirmed this expectation. Target ratio levels tend to be stable for given classes of goods and to vary widely from product to product. Thus, target ratios vary widely across magazine classes, reflecting differences in product mix in the respective advertising bases. The speed of adjustment also varies from magazine class to magazine class and this, too, reflects the product mix of the various magazine classes. Each of these differences result in distinct cyclical patterns of advertising revenues across magazine classes.

APPENDIX

Table

TABLE 33

INDEXES OF SEASONALLY ADJUSTED MAGAZINE ADVERTISING VOLUME, BY CLASS, 1965/1 - 1976/4
(1965/1 = 100)

Consumer Magazines, Total

1965	1	100.	101.362	103.563	107.234
1966	1	110.495	111.313	116.219	117.565
1967	1	113.576	114.603	115.376	112.561
1968	1	115.354	119.058	119.377	123.264
1969	1	122.42	130.797	128.323	128.574
1970	1	129.447	125.297	124.257	121.513
1971	1	137.775	139.307	141.639	142.253
1972	1	151.232	156.265	159.431	160.077
1973	1	162.563	171.57	170.707	174.39
1974	1	172.594	172.333	181.263	180.32
1975	1	176.435	164.144	173.976	174.725
1976	1	200.624	201.562	211.126	222.11

Automotive Magazines

1965	1	99.9999	90.2013	90.4012	92.
1966	1	138.331	120.255	133.437	137.276
1967	1	142.624	141.922	148.153	148.355
1968	1	152.939	160.073	163.508	177.257
1969	1	181.504	195.979	194.29	217.576
1970	1	225.922	212.255	217.617	206.533
1971	1	254.33	255.444	263.081	259.559
1972	1	277.941	317.956	322.392	347.74
1973	1	353.422	374.243	373.064	382.711
1974	1	354.471	339.937	373.143	362.433
1975	1	360.592	370.931	381.949	402.34
1976	1	466.914	477.167	463.7	577.703

Business Magazines

1965	1	100.	97.3355	96.7932	106.903
1966	1	115.526	116.49	130.398	130.476
1967	1	129.684	133.57	134.552	122.239
1968	1	130.176	123.153	122.443	135.567
1969	1	135.271	143.062	145.987	137.594
1970	1	137.364	126.882	114.262	110.319
1971	1	111.858	114.69	112.712	120.585
1972	1	124.294	127.017	131.972	130.408
1973	1	146.367	153.085	163.642	165.391
1974	1	157.056	170.556	176.171	190.377
1975	1	171.714	172.851	172.865	194.035
1976	1	209.269	222.618	231.419	242.715

TABLE 33 -- Continued

General Editorial Magazines

1965	1	100.	95.1772	99.6648	99.6351
1966	1	104.903	105.786	109.723	111.993
1967	1	102.825	104.855	103.541	100.361
1968	1	104.805	110.471	117.644	101.825
1969	1	107.443	96.7099	95.6914	101.399
1970	1	99.5012	99.5323	99.7229	98.5912
1971	1	107.28	112.048	112.334	110.413
1972	1	123.151	126.196	130.972	131.449
1973	1	131.37	139.639	133.295	144.627
1974	1	138.647	137.932	146.537	146.344
1975	1	145.537	136.567	145.437	144.786
1976	1	164.353	169.962	177.594	188.427

Home Magazines

1965	1	100.	105.415	110.289	104.695
1966	1	113.987	115.299	113.752	114.217
1967	1	117.053	116.397	115.201	119.462
1968	1	110.382	121.755	124.664	125.145
1969	1	125.23	129.104	129.431	131.303
1970	1	137.148	133.463	136.669	134.644
1971	1	135.217	139.292	146.546	153.753
1972	1	152.417	169.863	167.695	171.73
1973	1	169.359	176.5	173.449	160.119
1974	1	159.945	160.04	156.257	155.277
1975	1	147.434	142.666	149.004	153.476
1976	1	172.966	176.441	188.641	197.772

Men's Magazines

1965	1	100.	113.573	115.835	117.54
1966	1	127.416	138.286	153.643	155.242
1967	1	163.388	155.522	152.381	157.214
1968	1	156.637	173.739	174.828	194.77
1969	1	197.035	226.315	212.387	226.346
1970	1	225.032	219.525	222.587	215.236
1971	1	221.48	229.027	230.758	240.379
1972	1	226.455	259.609	271.24	269.592
1973	1	287.604	305.225	324.704	330.048
1974	1	232.123	328.552	322.219	311.222
1975	1	311.361	279.525	274.129	274.24
1976	1	295.935	294.808	314.663	326.068

TABLE 33 -- Continued

News Magazines

1965	1	99.9999	103.606	103.043	110.816
1966	1	109.302	110.322	120.142	112.041
1967	1	123.115	111.903	114.008	116.419
1968	1	117.483	117.975	124.355	126.275
1969	1	133.213	140.151	143.765	134.506
1970	1	136.622	126.016	123.867	129.106
1971	1	151.812	155.525	152.099	157.473
1972	1	164.319	170.979	174.841	179.88
1973	1	179.907	199.645	208.748	215.329
1974	1	207.723	202.112	243.991	215.339
1975	1	211.134	191.425	203.962	206.771
1976	1	228.736	241.222	251.643	257.638

Sports Magazines

1965	1	99.9999	115.622	116.239	120.214
1966	1	126.117	132.371	129.002	139.271
1967	1	140.294	138.394	137.642	137.304
1968	1	147.229	170.821	167.161	179.577
1969	1	193.686	191.401	205.505	216.529
1970	1	220.949	216.537	212.043	247.443
1971	1	262.261	256.235	273.606	260.963
1972	1	279.499	291.897	306.304	305.991
1973	1	311.465	340.254	328.1	344.799
1974	1	349.572	357.792	337.432	336.965
1975	1	335.506	341.895	366.792	357.928
1976	1	408.61	417.966	456.527	452.619

Women's Magazines

1965	1	99.9999	105.791	104.635	113.625
1966	1	109.42	110.551	109.491	115.926
1967	1	115.173	113.125	112.277	108.004
1968	1	107.997	110.484	116.387	115.093
1969	1	120.46	124.355	123.554	121.624
1970	1	120.041	117.052	116.467	114.05
1971	1	131.967	132.374	140.139	137.948
1972	1	142.207	145.611	149.607	147.34
1973	1	144.891	147.089	142.979	143.163
1974	1	142.99	149.939	151.91	150.725
1975	1	148.021	148.014	141.57	153.666
1976	1	175.207	170.746	131.238	203.636

TABLE 34

CYCLICAL INDEXES OF MAGAZINE ADVERTISING VOLUME, BY CLASS, 1965/1 - 1976/4

Consumer Magazines, Total

1965	1	100.445	100.747	100.303	102.615
1966	1	103.981	103.376	106.019	105.879
1967	1	105.292	100.782	100.045	96.5
1968	1	97.2568	98.3	97.5174	99.2646
1969	1	97.1094	102.3	99.1976	97.4502
1970	1	96.5767	91.6663	93.2164.	95.3313
1971	1	96.7089	96.2411	96.4274	95.1589
1972	1	100.54	102.767	103.475	102.142
1973	1	102.255	107.544	104.921	106.322
1974	1	102.532	100.17	105.33	102.495
1975	1	97.2785	85.3126	90.962	89.3895
1976	1	107.234	106.309	111.642	113.075

Automotive Magazines

1965	1	95.4095	92.1393	90.5319	99.4587
1966	1	108.996	103.322	102.782	102.474
1967	1	102.79	101.185	100.904	98.5023
1968	1	98.1436	92.6763	97.2516	101.432
1969	1	100.531	99.6507	100.44	108.09
1970	1	110.017	96.9257	97.3975	99.1665
1971	1	107.5	104.1	103.6	97.3
1972	1	102.	116.	118.042	120.351
1973	1	118.004	122.489	116.683	113.346
1974	1	101.438	84.1917	93.4261	82.1451
1975	1	74.7395	72.6857	70.7967	73.9492
1976	1	95.2746	92.206	80.2136	122.245

Business Magazines

1965	1	97.5785	94.263	92.6895	96.8133
1966	1	105.716	105.33	115.521	114.394
1967	1	111.689	114.449	114.06	102.649
1968	1	107.857	104.9	98.9	103.3
1969	1	106.7	111.7	112.7	104.41
1970	1	102.799	92.7707	80.9735	76.2575
1971	1	76.0091	76.7977	73.6307	78.5041
1972	1	79.9498	80.5674	82.9902	80.0566
1973	1	91.441	95.2432	102.16	101.849
1974	1	93.2616	102.52	105.301	115.5
1975	1	97.9555	97.	95.1	110.489
1976	1	120.994	129.931	135.119	142.323

TABLE 34 -- Continued

General Editorial Magazines

1966	1	105.244	103.931	107.373	104.256
1966	1	110.47	110.248	112.021	114.24
1967	1	103.949	104.732	102.33	97.8305
1968	1	101.105	105.6	111.6	94.4
1969	1	98.8	96.7	99.3889	99.9285
1970	1	94.5836	94.5876	93.1283	90.6165
1971	1	97.999	91.3951	90.77	96.3942
1972	1	96.298	99.8902	103.121	102.2
1973	1	100.6	107.4	105.5	109.3
1974	1	101.577	99.3458	106.195	104.75
1975	1	102.118	91.5371	98.6227	96.1373
1976	1	114.677	117.799	124.071	123.036

Home Magazines

1965	1	95.9346	99.1911	102.013	96.4702
1966	1	102.911	102.924	100.897	100.084
1967	1	101.191	100.012	97.6206	99.3578
1968	1	91.6385	99.4397	100.595	99.8247
1969	1	98.744	100.6	99.6806	99.9496
1970	1	103.9	93.7796	98.6901	99.8671
1971	1	96.8411	99.7424	101.103	107.412
1972	1	112.856	117.305	114.265	116.079
1973	1	113.81	116.973	111.18	101.363
1974	1	99.7308	98.1854	91.9422	99.9465
1975	1	84.0615	78.8104	82.1731	84.1026
1976	1	98.4721	95.7991	106.664	112.127

Men's Magazines

1965	1	96.8638	91.5324	92.6057	90.6817
1966	1	97.7944	97.311	102.837	102.102
1967	1	104.2	99.22	96.2371	96.9347
1968	1	98.8548	101.031	99.227	107.122
1969	1	106.376	117.822	109.666	114.094
1970	1	111.568	107.101	106.922	101.079
1971	1	101.8	103.065	101.649	103.757
1972	1	95.1553	107.82	110.687	107.49
1973	1	113.141	118.605	124.764	124.512
1974	1	122.721	118.313	112.594	104.702
1975	1	101.787	83.8773	78.7773	75.6516
1976	1	77.7	78.4	84.	85.7

TABLE 34 -- Continued

News Magazines

1965	1	101.919	103.179	101.298	105.613
1966	1	103.337	102.177	107.932	100.273
1967	1	106.9	95.8526	95.7172	96.7762
1968	1	95.9	94.3537	97.2749	96.3248
1969	1	100.097	103.334	104.015	95.0657
1970	1	94.5719	92.0035	88.2414	82.4868
1971	1	97.2	97.6855	92.791	94.4309
1972	1	97.5067	99.619	99.983	100.428
1973	1	99.5735	110.641	114.714.	116.848
1974	1	109.339	101.255	129.533	105.554
1975	1	88.9757	81.1337	87.3105	86.1595
1976	1	99.251	106.591	109.536	110.539

Sports Magazines

1965	1	95.0737	100.467	99.1705	99.3
1966	1	100.237	101.277	97.977	100.694
1967	1	89.2264	96.4177	94.0481	91.3
1968	1	94.0559	102.33	98.4	101.601
1969	1	100.94	101.852	105.531	107.758
1970	1	106.96	102.142	97.2	109.93
1971	1	112.4	107.513	111.9	102.843
1972	1	107.553	109.431	112.975	106.067
1973	1	107.404	115.2	105.535	108.572
1974	1	106.189	105.096	91.3105	86.1431
1975	1	80.3799	77.9463	83.6	74.0452
1976	1	90.3306	95.0349	100.056	91.9745

Women's Magazines

1965	1	99.2211	103.224	101.275	107.993
1966	1	102.56	103.39	101.46	105.2
1967	1	104.3	101.514	99.739	95.0226
1968	1	93.945	94.9896	99.3711	96.7204
1969	1	100.2	102.4	100.571	97.7689
1970	1	95.2393	91.5345	89.804	96.5294
1971	1.	100.631	99.7442	105.179	102.
1972	1	104.366	105.987	108.1	104.842
1973	1	101.414	101.945	97.0652	95.8456
1974	1	94.047	98.7531	99.1	105.2
1975	1	92.8775	91.4	84.4	93.2439
1976	1	110.146	104.792	112.212	129.843

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