Staff paper 80 - 75

Changing Structure of Mass Media Markets: Relevance for Policy Initiatives on Advertising in the Food System

by Ron Cotterill*

I. INTRODUCTION

Neither advertising or the mass media is a recent historical phenomena; yet the advance of the electronic age has greatly enhanced their role in market economies. When commercial radio broadcasting began in 1920, promoters quickly recognized its potential as a communications medium. Soon thereafter, advertising emerged as the primary financial support for broadcasting. In August 1922 station WEAF, New York City, sold the first radio commercial (10 minutes for fifty dollars) to the Queensborough Corporation. When Queensborough reported that sales increased $27,000 dollars during the three weeks following the advertisement, arguments for other methods of financing radio became moot [FCC, October 1979, p. 18]. Advertising-financed radio networks, such as CBS and NBC, and their affiliated local stations expanded radio service to the general public at an explosive rate during the 1920's and 1930's.

The experience with radio consequently influenced the economic organization of the television industry. Commercial TV broadcasting began in 1940. Soon thereafter station WNBC, New York City, sold advertising rights to one hour of prime time for $120. After the war, television grew in a very short time span to replace radio as the dominant form of mass media. Today, 76.3 million households, 98%

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This paper was delivered at the NC-117 symposium on advertising and the food system, Arlie House, Virginia, November 5-7, 1980. M.S.U. Agricultural Economics Staff Paper No. 1980-75.

of all households, own at least one television set; 83% own color recievers; and one half of all households own two or more sets. The average hours of household TV usage per day in 1978-79 was 6 hours and 26 minutes--up from 5 hours and 30 minutes in 1965-66 [Nielsen Report on Television, 1980, p. 7] These statistics reflect a steady increase in television usage during the post World War II era, despite the trend towards smaller households.

Concommitantly television advertising revenues have increased. One minute of prime time advertising on a national network now sells for more than $10 thousand dollars. Total advertising revenues for the television industry were $6.8 billion in 1977, and firms actively engaged in the processing and marketing of food products were a major customer, purchasing $1.7 billion dollars of television advertising in 1977 [LNA, 1978; Mather, 1979].

Newspaper and radio advertising are also important selling methods for food firms; however, this paper will examine only television advertising and the implications of changing structure in the television industry for advertising-related policy initiatives in the food system. Focusing upon television advertising seems justified for three reasons. A wider analysis requires more space than a symposium paper can offer. Moreover, the television industry is experiencing major structural change based upon the introduction of new technolgy, and deregulation by the Federal Communications Commission. Third, and perhaps most important, is that policy-related research on food and other consumer goods industries indicate television advertising is a major factor in the changing structure and performance of those industries [Mueller, 1980 and Porter 1974].

The economics of advertising is not a neatly defined subject. Indeed it is somewhat presumptuous to talk of an economic theory of advertising. If an economic theory for advertising exists, are there also economic theories for other activities such as hammering, sawing, and singing? This is not a trivial point. Inevitably, it is necessary to base theoretical and empirical advertising research upon a social science, for example general economic theory, and often a subdiscipline such as industrial organization analysis. As a result, even within economics advertising is analyzed in a varied, diverse, and eclectic fashion.

Most public policy oriented studies of advertising in the economy examine the role of advertising within one of three types of markets: 1) commodity markets such as food and other consumer goods markets, 2) markets for advertising exposures such as viewer-minutes of television time, or 3) the television market. Consequently, public policy initiatives in each of these markets are often evaluated without extensive consideration of their impacts upon structure and performance in the other markets. In many cases a single industry focus may be acceptable, but it is inappropriate for analyzing the current topic.

This paper examines the role of advertising in the commodity, advertising message and television market simultaneously, thus enabling analysis of changes in the structure of the television market upon the advertising and commodity markets. In addition, its general equilibrium approach will be employed to determine how changes in public regulatory policy in the television market contribute to or diminish the need for public policy initiatives in the food system.

Section two reviews the new delivery systems that are offering consumers as many as 36 channels of television and possibly double that number in the near future. Section three presents the rationale for public regulation of the television industry and examines the Federal Communication Commission moves towards less direct regulation. Section four develops a theory to explain how advertising functions in the economy. Section five expands the theory to encompass the new television delivery options and analyze their impact upon the price, quantity, and composition of television advertising. The final section builds upon the forgoing analysis to assess the implications of technological and regulatory changes in the television industry for public policy initiatives in the food system.

II. THE NEW COMMERCIAL TELEVISION DELIVERY SYSTEMS

Except for relatively few remote rural communities and other communities that experienced poor reception, television viewers prior to 1970 watched programs broadcast from local stations. Most local stations are affiliated with one of the national networks (NBC, CBS, ABC) and receive network programs via ATT long-line telephone service or terrestrial microwave transmission. The latter requires a chain of transmission towers spaced approximately 40 miles distant from each other. Satellite communication is the technological breakthrough that combined with existing cable technology to produce a delivery system for television that can provide viewers access to several television programs in addition to the locally available national network fare.

One cable entreprenuer summarizes the impact of satellite technology with an enthusiasm that is commonplace in the rapidly growing cable segment of the television industry.

> "Satellite technology is the biggest development to come to communications in decades. Satellites are to television what television was to radio back in the '40's. The possibilities are incredible [Rasmussen, 1980].

It is difficult at this early stage in the growth of satellite-cable based delivery systems to predict what the structure of the television industry will be in 1985.or 1990. But the major options are becoming apparent.

Cable Television

Cable TV (CATV) systems deliver programs to subscriber households by linking houses with coaxial cable to the "head-end" of a system. The head-end can be a studio which generates programming (live or taped), a community antenna which captures broadcast signals of local and regional television stations, and/or an earth station which receives signals from a satellite. Subscribers pay a one time hook-up charge (approximately $20) and a monthly user fee for CATV. In return they currently have access to as many as 36 channels of television programming.

Since 1975, the Cable Television Bureau of the FCC has published financial statistics for cable by state, and recently by size of cable system. Table 1 indicates the scope and recent growth of CATV. The number of firms operating cable systems have increased from 2,443 in 1975 to 2,865 in 1978, a 17.2 percent increase. In 1978, 14.1 million households, approximately one-fifth of all households, were receiving television programs via cable. The number of households

subscribing to CATV is increasing approximately 10 percent annually. Cable TV will almost certainly become the dominant delivery vehicle for television programs and advertising by the end of this decade.

Pay Cable[1/]

Pay cable refers to special cable channels, most of them carrying movies and sports, available to cable subscribers for an additional monthly fee. Table 1 documents the rapid growth in pay cable gross income, and the number of firms offering pay cable programming. Approximately 4.5 million cable households were pay cable subscribers in 1979.

Of the 22 program services now available to cable systems via satellite, seven are either full service ("Maxi") pay TV, providing 8-12 hours per day of continuous programming, or "Mini" pay TV, usually consisting of one movie per day. With either "Maxi" or "Mini" pay cable service, the cable operator either puts the signal on a "scrambled" channel and charges his subscribers an extra fee monthly for a signal converter or "unscrambler", or the signal can be "trapped at the pole" —i.e. prevented from entering a nonpay cable household.

Of the pay cable services, the original (and by far the largest) is Home Box Office (HBO) owned by Time, Inc., with well over 2 million subscribers. HBO has been distributed via satellite since November, 1975. Next largest is Showtime, a joint venture of Viacom

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[1]The technical descriptions of this and other delivery systems described below are based upon Neilsen [1979].

Table 1. Selected Financial Statistics for the Cable Television Industry, 1975 - 1978. [a/]

Year	Number of firms	Number of Subscribers (millions)	Growth in Subscriptions (percent)	Average Subscription Rate ($)	Total Revenues (million $)	Number of firms offering Pay-cable	Growth Rate of Pay-cable Firms (%)	Pay-cable Revenues (million $)
1975	2443	9.863	--	6.21	894.9	110	--	N.A.
1976	2349	11.648	18.1	6.49	999.8	224	103.6	41.0[b/]
1977	2577	12.832	10.2	6.85	1,205.9	393	75.4	85.9[b/]
1978	2865	14.114	10.0	7.03	1,511.0	760	92.6	191.9

[a/] Source: Annual Statistical Reports on the Cable Television Industry, Federal Communications Commission, 1919 M Street, NW, Washington, D.C. 20554

[b/] Pay-cable revenues for 1976 and 1977 according to the Federal Communications Commission are "somewhat understated" because some firms reported net rather than gross pay-cable revenues.

N.A. = Not Available

and Teleprompter, two of the largest cable companies.[2/] Others carried on RCA's Satcom I are Star Channel (Warner Cable), Fanfare (Hollywood Home Theatre), Take 2 (Mini service of HBO), Front Row (Mini service of Showtime) and Home Theatre Network (Mini New England Cable).

Paid-for-Programming

Paid-for-programming services are packages of programs that can occupy a cable channel for several hours if not continuously. A system pays the supplier a small amount, normally one to ten cents per subscriber per month, but may not make a special charge to its subscribers. Instead, the system expects to get the cost back through added subscriptions to its basic service. Paid-for-programming usually carries advertising.

Paid-for-programming sources include: Nickeldeon (Warner Cable-children's programming), Madison Square Garden (U.A. Columbia-MSG sports), Entertainment Sports Programming Network (Getty Oil Corp.—NCAA sports, Northeast sports), Thursday Night Baseball (U.A. Columbia-Major League Baseball), UPI Newstime (transmitted by Southern Satellite Systems-24 hrs./day slo-scan news), and C-SPAN (Cable Sat. Public Affairs Network—proceedings of the U.S. House of Representatives).

In addition to the Paid-for-Programming services mentioned above, there are two free programming services, Satellite Programming Network and Modern Cable Programs, and three religious/family programming services. Christian Broadcasting Network, PTL Network, and Trinity Television Network, plus four distant signal (broadcast) services (see "Superstations").

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[2] Teleprompter recently merged with Westinghouse. HBO is a wholly-owned subsidiary of Time Life Incorporated.

Satellite

Access in to RCA's Satcom I satellite in 1975 enabled HBO to move from a local pay-cable option in New York City to a national program service for cable systems. When Southern Satellite put WTCG (TV), Channel 17 in Atlanta, on the satellite a year later, cable operators were quickly convinced of the advisability of having earth stations to receive these two satellite program services. During the following three years between 1,500 and 2,000 cable systems invested approximately $20,000 each for their own earth receiving stations. The result has been a ready-made and fast growing prospect list for other program services. Satcom I, which can transmit 22 signals, is carrying 18 non-broadcast services and 4 distant stations. With Satcom I now at saturation, additional satellites and satellite services of various kinds are under consideration.

Superstations

A superstation is a local independent TV station whose programs are carried via satellite to cable systems located in distant markets. The cable systems pay a fee to the common carrier for this signal, usually 10¢ per household per month. The cable operator must also pay a small copyright fee for imported programming. A station can become a superstation against its wishes, and has no control over the common carrier which re-transmits its signal to the satellite or over the cable systems which pick it up.

The superstation stands to gain if it can increase its advertising rates to reflect its increase in audience as a result of the potentially large number of distant cable homes that can receive its

signal. On the other hand, program suppliers can demand higher prices for programs and, in some instances, refuse to sell programs to superstations.

Table 2. Superstations as of Summer 1979.

Station	Common Carrier
WTCG, Atlanta	Southern Satellite Systems
WGN, Chicago	United Video, Inc.
KTVU, San Francisco (KPIX late night)	Southern Satellite Systems
WOR, New York (WCBS late night)	Eastern Microwave

Ted Turner's WTCG is the original superstation (call letters were changed to WTBS in August, 1979). In July, 1979 when the common carrier, Southern Satellite Inc., added its 1,000th cable system, WTCG/WTBS could be viewed by 4.8 million cable subscribers in 46 states via Satcom I, in addition to the 556,000 cable homes which could pick up the signal via terrestrial microwave. Approximately two-thirds of WTCG/WTBS's audience is outside the Atlanta over-the-air viewing area.

Subscription Television

Subscription TV is a second version of pay TV. Not a cable service, it is distributed as an over-the-air broadcast signal. Its signals are scrambled and can only be rectified or "decoded" by a special decoding device attached to the TV set for a fee. STV programming contains no commercials.

According to FCC rules, STV stations must be commercially licensed broadcast stations. All the current STV stations are independent UHF's.[3] They operate as commercial stations during the day and early evening, converting to STV during the prime time when ratings of an independent UHF are normally low. In this manner, a STV station has the advantage of obtaining commercial revenues during its stronger commercial time periods and STV revenues during prime time.

It is estimated that within 10 years there will be STV operations in each of the top 40-50 markets. Within 5 years, industry sources estimate that there will be between 1.5 and 2.5 million subscribers to STV and revenues, at the current average price of $20 per month, could total between $300 and $500 million annually by 1984. [Nielsen, 1979, p. 8] One reason for the expected growth in subscription TV, as will be explained in the next section, is the Federal Communications Commission's new emphasis on expanding T V viewing options beyond those offered by the three major networks.

III. THE REGULATORY POSTURE OF THE FEDERAL COMMUNICATION COMMISSION

Prices generated by exchange between buyers and sellers within competitively structured markets can efficiently allocate resources given consumer preferences and incomes. Yet in some industries the market allocation system fails. When market performance is especially deficient, governments often establish independent regulatory commissions as a supplement or substitute for price competition. The television industry is a case in point.

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[3]Television stations are either ultra high frequency (UHF) stations or very high frequency (VHF) stations.

Two rationales have commonly been cited for public action. First, television programs are, in at least one fashion, a public good akin to defense or river dredging. The marginal cost of an additional viewer for a program is zero. Thus a firm that seeks to cover its costs by directly charging viewers a positive price misallocates resources and supplies less TV than is socially desirable. European countries resolved this pricing problem by establishing license or tax-supported television networks. In the United States "free" television is financed by selling advertising and delivering television viewers a joint product--television programs and advertisements. Of course, publicly financed television (PBS) has recently been established in the United States, but this option was openly rejected for smacking of socialism at the advent of the commercial television era, and operates today on a limited budget.

The limited range of the radio spectrum is also a potential source for public regulation in the television broadcasting industry. Unless a convention is established to identify frequencies which are available in a geographical area for broadcasting, as a common property resource without clear delineation and ownership possibilities, the radio spectrum would quickly become overloaded. Viewers would receive jumbled and overlapping signals. The Federal Communications Commission has responsibility for avoiding this problem and insuring that the radio spectrum is used efficiently. It does this by licensing television stations and by determining each transmitter's power level.[4]

The way in which the FCC split the spectrum when assigning television channels further restricted broadcasting. There are 12 very high

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[4] The FCC license procedure not only allocates the spectrum; it also administratively assigns stations to applicants. See Coase [1966] for a trenchant critique of the FCC's administrative allocation procedure.

frequency (VHF) channels and 70 ultra high frequency (UHF) channels. Commercial television developed primarily in the VHF band because television sets were only equipped to receive VHF signals during the early era of broadcasting. Also, VHF signals deliver higher quality reception. Consequently, the FCC's allocation in 1952 of VHF channels among the nations cities determined to a very large extent that only two and possibly three television networks would develop. Given the number of VHF stations allocated to different cities, one network could reach 45 of the top 50 markets. A second network could reach 43, while a third network would be able to reach only 27, and a fourth network would have access to VHF stations in only 7 of the top 50 markets. [FCC, October 1979, p. 79] As recently as 1965, two-thirds of the countries communities received only two or fewer signals [Seiden, 1965, p. 82]

The implications for competition in local markets with so few sources of supply were obvious. Since competition was not effective in these markets, it could not serve the public interest by providing strong incentives for cost efficient operations, program diversity, locally originated programs, and innovation. Accordingly, the FCC developed an extensive rule-making procedure to promulgate regulations for conduct by TV stations and networks.

Such conduct-orientated regulatory policies have more often than not proven ineffective. Bain [1968, p. 331] generally concluded that since there are so many alternative patterns of conduct available to firms, proscribing one has little impact upon performance. In his words "there is more than one way to skin a cat". Moreover, William Appleman Williams, Horace Gray, and others have pointed out that independent regulatory commissions

such as the FCC are often co-opted by the industries that they regulate and persuaded to adopt anti-competitive rather than pro-competitive policies.

Writing in 1958, Walter Adams summarized the role that pro-competitive actions should occupy in a regulatory policy, and decried the lack of regulatory commission concern for competition in regulated industries:

> "public regulation involves the application of two fundamental policies. One is purely regulatory in nature. Its aim is to assure the public of adequate service at reasonable rates in industries with "natural" monopoly characteristics. Its orientation is static, negative, and protective. The other policy involves primary reliance on competition. The yardstick device is used, not only as a measure of industry performance, but also as a spur to increased efficiency, cost reductions, and service improvements. Promotional competition is used to foster developmental pioneering and over-all growth of the industry. Throughout, the emphasis is on progressive performance-achieved through the maintenance of competitive opportunities and the promotion of competitive rewards. Thus competition serves as a useful adjunct to regulation and promotes the attainment of goals that are seemingly unattainable by administrative fiat.
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> Unfortunately, this regulatory role of competition has never been fully appreciated by the high priests of administrative expertise. Even in the absence of malfeasance, venality, or irregularity, they have generally succumbed to the institutional infirmities of the regulatory process. The cost and delay of processing applications, the harassment of powerful protestants, the slavish adherence to legal technicalities, a pharisaical devotion to a case-by case approach, the petulant defense of status quo—all these have militated against the competitive entrepreneur and the dynamic innovator." [Adams, 1958, p. 542]

The FCC's reaction to cable TV firms when they first sought authorization to expand was true to this script. Reviewing the Commission's decisions on cable TV up to 1970, Alfred Kahn concluded:

> — "The fact remains that the FCC adopted a protectionist approach to ensuring optimal use of the limited airways; it sought to encourage the entry of new, commercially marginal stations (particularly in the opening-up UHF spectrum) by protecting them as well as existing local stations from competition. ...

> It would be impossible on economic grounds to quarrel with the Commission's purpose of encouraging the maximum number of economically viable stations and sources of programming, consistent with physically good signals. But if that effort was limited by the economically marginal character of many stations (both those in existence and those on the margin of entry), the better solution, it would seem, would have been not to impose restraints on the CATV alternative, but to broaden the geographic coverage of the television markets each is licensed to serve. Such a course of action, too, would have diminished the competitive attractiveness of CATV, whose primary appeal was that it brought into markets theretofore served by less than three stations the additional signals available from a distance; but it would have done so by loosening the restrictions on existing suppliers rather than tightening the controls over the threatening competitors."[Kahn, 1971, p. 37]

Many economists held views similar to those of Adams and Kahn. This longstanding economic criticism of the FCC has combined with the new satellite-centered television delivery systems to produce a major shift in FCC policy during recent years.

In January, 1977 the Commission established the Network Inquiry Special Staff and directed it to undertake a full scale review of the television industry. The last comprehensive Commission sponsored effort was the Barrows Report issued in 1957. Phase one of the Network Inquiry produced several reports in late 1979. Their evaluations of industry performance and Commission policy is providing a base for changes, not so much in the basic rationale or scope of regulation, but for changes in the methods and outcomes of the regulatory process. These actions are popularly termed "deregulation"; but, a more appropriate term may be "reregulation".[5/]

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[5] The jurisdiction of FCC has expanded, and will probably continue to expand. National Broadcasting Co. v. U.S., 319U.S.190(1943) extended FCC jurisdiction from local broadcasting stations (in this case radio) to networks. U.S. v. Southwestern Cable, 392U.S.157(1968) extended jurisdiction to cable TV reasoning that it was "reasonably ancillary" to

Reviewing the findings of several studies completed by outside consultants in phase one, the Network Inquiry staff found that regulating the network-affiliate relationship by prohibiting certain conduct by either the existing networks or their affiliates is unlikely to affect substantially the way the television industry responds to viewers' interests. As Bain predicted, industry participants usually find alternative methods to attain their objectives. The staff also found that regulation of station ownership and network-affiliate contracts has had very little affect on the performance of television stations — most notably their program choices. In conclusion, the Network Inquiry staff stated:

> Structural policies — those affecting the number and types of available television viewing alternatives and programming outlets — are far more likely to have that effect." [FCC Report No. 15262, October 16, 1979, p. 2]

Phase two of the Network Inquiry was authorized in October, 1978 and is scheduled for completion in the Fall of 1980. It focuses upon changes in the market structure of the industry. Specifically, it is examining the prospects for new networks, and the effects such additional commercial television networks might have on the nature and extent of the Commission's regulatory role [FCC, January 1980, p. 2].

To date, fact finding by the Network Inquiry has largely verified previous empirical studies by academic economists and supported similar, if not identical, reasoning to that quoted from Bain, Adams, and Kahn. The Commission has been receptive. Several rules intended to control the conduct of broadcasting stations and cable TV systems have been

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the ability of the Commission to regulate broadcast television. The current issue is not whether to reduce this scope of FCC jurisdiction; the question is whether FCC will have jurisdiction over the commercial practices of new networks based upon satellite transmission. The distinction between regulation as a common carrier by the ICC, or as a broadcaster by the FCC becomes important here.

rescinded or their withdrawal is imminent. Recently the Commission also initiated proceedings to achieve the first major reallocation of the radio spectrum since 1952. The proposed rule changes are designed to encourage the start up of hundreds and possibly thousands of low-power television stations around the country.

> As envisioned by the FCC staff, such ministations chiefly would serve remote rural residents currently without adequate TV service as well as urban minorities, subscription TV customers, and other specialized audiences ... Present FCC licensing rules don't bar low-power broadcast transmitters, but they discourage them by imposing prohibitive costs on station applicants ... There isn't anything new about ministation technology ... The signal of a 100-watt VHF ministation would have a radius of only 12 to 15 miles compared with approximately 60 miles for a 100,000-watt standard VHF station. However, the smaller station could be put on the air for $80,000 or less compared with the $2 million needed to build full-power stations [Wall Street Journal, September 10, 1980, p. 2],

Separately the Commission is considering a staff recommendation to reduce the required mileage between full-power VHF stations. If the Commission so decides, the result would be several dozen new television stations on channels 2 through 13 in the top 100 markets. Both plans for adding TV stations reflect the FCC's recent change in regulatory methods. The Commission now is clearly embracing what it believes are pro-competitive, structurally-oriented policies.

Within its new regulatory posture the FCC has not directly considered how television could or should be financed. It has not, for example, based decisions upon whether they enhance or diminish the future of advertising-financed television. Entrepreneurs as well as consumers are being given more choice — more opportunity to decide how much advertising they desire on the basis of price, supply, and demand. That is one of the basic conclusions of this section. The other is that the FCC is attaining that goal by reducing entry barriers faced by new

television delivery systems in order that they may expand. These regulatory changes have major implications for television advertising, and the use of advertising in the food system.

IV. A GENERAL EQUILIBRIUM FRAMEWORK FOR ANALYZING ADVERTISING

> "One of the major questions is whether the existing mechanisms and institutions do work in the case of advertising as if there were a market for advertising... with an equilibrium quantity and price... having the same properties as those in the familiar analysis of a market going back to Alfred Marshall"[Telser, 1978, p. 74].

Having reviewed recent developments in television delivery technology and FCC regulation, the task at hand is to explain those aspects pertaining to advertising's role in the economy that are necessary for assessing the impact of TV innovations and new regulation on advertising in the food system. This is by no means an easy or straightforward endeavor. The general equilibrium model of advertising in the economy developed below is based primarily upon Lester Telser's ideas; but it departs from them on at least one important point. Telser assumes that advertising is produced jointly with other goods and services. Thus, firms supply and households demand advertising messages. The alternative adopted here is to assume that advertising is an input into the production and marketing process, and that firms demand and households supply advertising exposures. To a certain extent the change is semantics. Purchasing one exposure is equivalent to selling one message. For a household, offering one exposure is equivalent to receiving one message. The input specification, however, is more attractive because advertising by a firm is an expenditure rather than an income item. Also a theory based upon

advertising inputs and exposures describes actual rather than implicit market transactions. Firms actually purchase advertising exposures from the television industry: as will be shown, there is an implicit market for advertising messages; but, firms do not directly sell messages to consumers.

Figure 1 illustrates in a very aggregate form the product and value flows in the U.S. economy prior to recent television delivery system innovations. The household sector purchases product from the goods and services (GS) industries in exchange for price payments. Different products contain different amounts of advertising exposure as inputs. One advertising exposure consists of one person viewing an advertisement.[6/] Firms in GS industries maximize profits given demand conditions, production technology, and input prices. Hence, these firms have derived demand curves for advertising exposures.

One or more of several underlying technological and institutional factors determine the position and shape of a firm's derived demand curve for advertising. These include advertising's contribution to product differentiation, its enhancing of barriers to entry, its impact upon market concentration, its conveyance of information to prospective purchasers, its improvement of vertical coordination within marketing channels, and its expansionary effect on sales which can allow longer production runs, increase production efficiency and lower the average cost of output. The magnitude and relative importance of these factors is not at issue here. For current purposes, it is only necessary to recognize that firms have a derived demand for advertising exposures.

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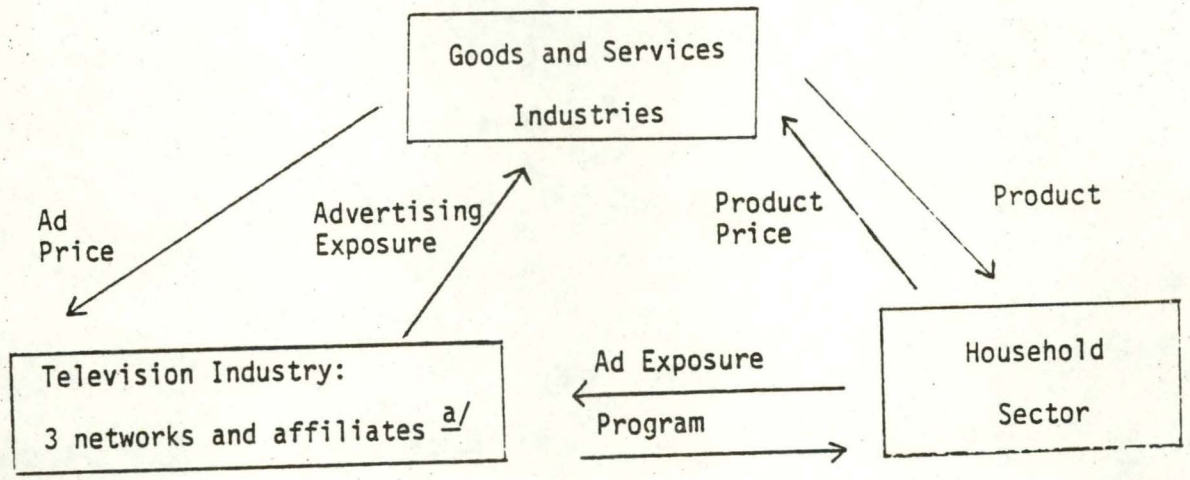
[6] This definition is consistent with industry measures. Malcolm McNiven, Vice President of Pillsbury Company writes: "The volume of advertising is measured by units called gross rating points (GRP's). A GRP equals one advertising exposure to one percent of U.S. homes [McNiven, 1980, p. 34].

Figure 1. A model of Television Advertising in the U.S. Economy Prior to Recent Television Delivery System Innovations



a/ One can also include independent stations.

The television industry in Figure 1 comprises the three major networks and their affiliates. Media companies supply advertising exposures (national and local, spot and contract) to GS industries in exchange for price payments. These revenues enable the TV industry to pay for the production or procurement of programs that are supplied to the household sector.

Exchange between the television industry and the household sector appears straight forward. One might point out that consumers do not like the advertisements which are interspersed throughout programs, but they watch them in return for not having to pay for television programs. The exchange process, however, is considerably more complicated. Advertising cannot always produce an outflow of value from the household sector as indicated by the direction of the ad exposure arrows in Figure 1. Some consumers must value ad exposure positively, or at least behave "as if" they valued them positively by purchasing the advertised products. If no one did, then advertising outlays by firms in GS industries would be unprofitable, and advertising as we know it would disappear. Therefore some consumers implicitly pay for advertising exposures, and one can say, as Telser does, that these consumers "demand advertising messages". Advertising is different things to different persons.

The fact that some consumers react positively to advertising exposures has another implication as well. Assuming that firms in the advertising-financed TV industry seek to maximize profits, each would eliminate costly TV programming and broadcast only those ads that consumers value positively. This leads one to ask why advertising-financed television is not completely allocated to advertisements,

or why advertisements are not at least removed from programs and placed in blocks between them? The most plausible explanation is that television advertising is directed at others in addition to those who would watch commercials alone; ads are also targeted towards persons who tolerate them in exchange for television programming. The goal is to change consumer preferences, and increase the likelihood that those who don't value commercials purchase the product. There is clearly an element of persuasion here.

Telser arrives at the same conclusion. In a conference compendium published in 1978 by the American Enterprise Institute in issues in advertising that is subtitled, The Economics of Persuasion, he writes:

> [Consumer] preferences are not given; they depend on a stock of knowledge. Since it is costly to acquire knowledge ... this leads to inertia on the part of consumers. This inertia raises the return to the maker of an acceptable product who, by advertising can bring it to the attention of a consumer [Telser, 1978, p. 88].

Expanding the analysis to include changes in a "stock of knowledge" does little to allay the fac that one man's inertia is another's peace. Advertisements are still being directed at individuals with the intent to change their preferences.

This sounds insidious and somewhat subversive for neoclassical economic analysis as well as consumers. It is; yet, one must recall that choice is not absent in a world with advertising, i.e. watching commercials is the "price" consumers pay for receiving television programs that are financed by advertisers. If the benefits derived from watching a program are less than the costs of the associated advertising, a person does not watch television. Nonetheless choice, per se, is not an adequate safeguard for consumer welfare. As in any other market, anti-competitive regulation and/or non-competitive market situations

can influence exchange in TV markets. If exchange occurs at other than competitive terms of trade, there is a loss in economic efficiency and shifts in equity. The regulatory reforms at the FCC address this issue rather than advertisers' ability to change preferences. The former does, however, directly influence the latter.

V. QUALITATIVE ANALYSIS OF THE IMPACT OF CHANGES IN THE TELEVISION INDUSTRY

Since the new television delivery systems are in their infancy and regulatory reform is a very recent and yet unfolding event, one can observe only the direction of changes in the industry. Events have not progressed to a stage where they suggest with great confidence what the equilibrium structure in the television industry will be. Nonetheless, a qualitative analysis of those changes and the associated changes for advertising, may give timely guidance for policy and research needs.

The new delivery systems explained in section two can be classified into two major groups on the basis of how TV viewers pay for programs. The "Cable" group encompasses standard cable TV services including access to other than local network stations, superstations, and paid-for-programming such as the Entertainment Sports Network (ESPN). Consumers receive these additional television services in return for a one-time hook-up charge and a monthly fee. A second group of services, labeled "Pay TV", encompasses programs for which veiwers pay a monthly fee to view programs without commercials. This group includes subscription TV as well as pay cable options such as Home Box Office. Note, however, that one can subscribe to broadcast STV without taking cable, but one must subscribe to cable to gain access to pay-cable services like HBO.

Figure 2 visually presents these new viewing options within the context of the general equilibrium framework developed earlier. A major question is how will these new TV viewing and pricing options affect the price, quantity, and composition of advertising. Advertising by food firms is a special case. Changes in the television industry will affect advertising in at least four ways: increased opportunity for consumers to choose what they will view, increased competition with the television industry, increased opportunity for consumers to pay for TV with money income, and the introduction of option demand pricing in the television industry.

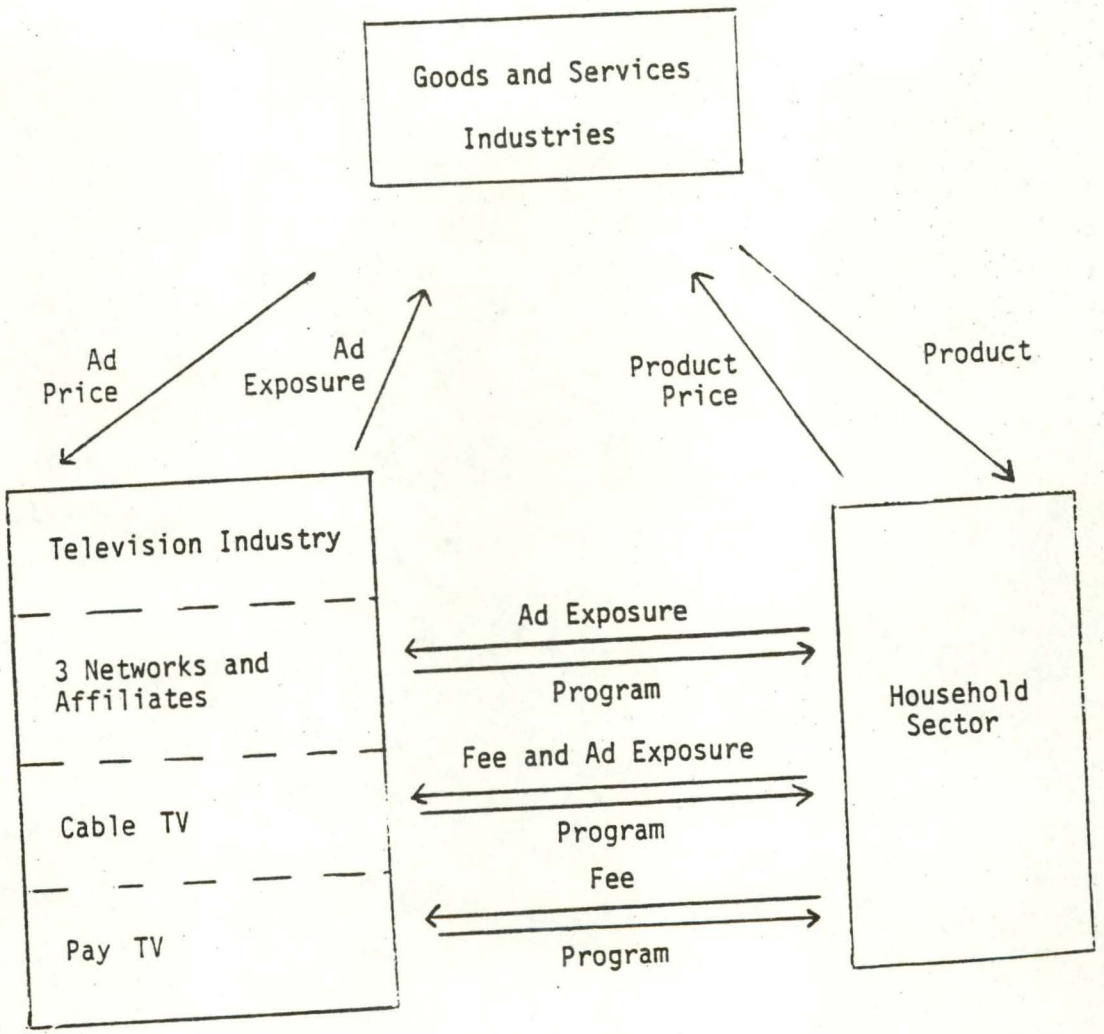
Increased Choice

When a household subscribes to one or more of the new TV delivery services, family members have as many as 25 more channels from which they can choose at any point in the day. Even if there is only one person in the household with one TV set, that person would find more television satisfying. In larger households with more than one TV set viewing would expand even more. Some household members may, for example, watch a situation comedy while others watch a sports event, movie, or news program. The general consensus is that the new delivery systems will increase the number of hours households watch TV. This means that cable subscribers will increase the supply of advertising exposures, and, ceteris paribus, the price that GS industries pay for ad exposures will decline.

Increased Competition

The new delivery systems can increase choice simply by importing signals from more distant network-affiliated and independent stations; however increased competition in the television industry will also increase choice and its

Figure 2. A Model of Television Advertising in the U.S. Economy with Multiple Television Delivery Systems



analogue—program diversity. Hotelling [1929] was one of the earliest economists to analyze how firms in imperfectly competitive markets tend to offer similar product lines. To date television has been no exception. The three major networks tend to schedule the same types of programs at the same time of the day. Network news programs seem to be even more closely aligned. News staffs tend to regard the same events as news, often broadcast the news at the same time, and hardly differ in terms of analysis. During many evenings competition is reduced to differences in the image and tenor of the anchorperson and senior news correspondents.

As cable and pay TV increase competition by supporting new networks, advertisers will also gain. Networks and their affiliates will be forced to compete more vigorously for advertising placements. As a result of increased competition, ceteris paribus, the price of both local and national advertisements should fall and the quantities sold should increase.

The new delivery systems will also have additional impacts upon local advertising rates and volume because they affect the extent of the market. Cable TV, for example, widens the scope of local geographic television markets. Consider two neighboring cities, each with one TV station serving its citizens. After installing cable-TV, viewers in both cities can watch both stations. Widening the market increases choice and the potential for competition. Local advertising rates will, therefore, be more likely to fall towards competitive levels. Lower ad prices benefit local firms in each city, however they most advantage firms that do business in both cities. Local businesses will be disadvantaged relative to regional and national firms.

There may, however, be a second force that offsets this local disadvantage. The FCC's recent moves to encourage more low-power, local UHF broadcast stations, and the possibility that it may make a similar move in the VHF band, enhance the prospects of local television. Many of these new stations will have a substantial demand for advertisements as local firms find that they are more cost-effective than stations carried by cable for reaching local clientele. In fact, how fast these new local stations develop will depend, among other things, upon the number of local firms demanding advertising and the extent that cable TV has expanded the geographic market in which standard VHF station compete. This suggests that local firms may be disadvantaged in the short run as these new stations establish themselves, but they should eventually have access to local advertising at competitive rates.

The diversity resulting from increased competition may affect the composition of television advertisements in yet another way. Advertisers will be able to target their messages at new, more narrowly defined segments of the consuming public. A certain type of viewer will have access to more of the programs that he likes, e.g., middle-aged white males and baseball. Following this example in sports, a twenty-four hour sports network such as ESPN that provides more television coverage of new events such as frisbee, and women's athletics will attract a new segment of the viewing population--possibly younger adults of both sexes with more education, a more active lifestyle, and lower income but higher life-cycle earnings potential, than the standard baseball viewer. Firms selling specialized products in local and/or national markets, heretofore unable to advertise on TV, may now find it profitable to do so.

Adding a Second Payment Medium: Money

As explained earlier, for many individuals advertising exposures are a "price" that they pay in exchange for TV programs.[7] The price paid includes the time spent watching the ads and the frequent interruption of programs. Since these represent encroachments upon an individual's leisure, one must generalize the concept of household income to include leisure as well as money income. It is then possible to analyze the impact of allowing payment for TV programs to be made in both payment mediums as opposed to outlays only of leisure.

The fact that TV viewers can now pay for programs in two exchange media rather than one predicts that payments in the previously available medium (leisure) will decline. Some households will, ceteris paribus, reduce the quantity of advertising exposures supplied as they switch to some payments in money; and, the price of advertising would increase.

Adding money as a second payment medium may also have an effect upon the quantity of advertisements supplied by households with different income and leisure levels. Some households of course, have more money income and leisure income than others, but for a given household there is a trade-off between money income and leisure. There is a rate at which income will be freely exchanged for leisure. The wage rate is often used as a proxy for the opportunity cost of marginal changes in leisure such as those that occur when one watches advertisements. In this case it may understate the distraction component of advertisements; however, it is sufficient for demonstrating qualitative impacts. A person that earns $10/hr. could be expected to pay a fee of $10 or less to avoid one hour

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[7] Those consumers that positively value commercials, on the other hand, are willing to pay for them and do when they purchase the product.

of commercials. If the fee were greater than $10 he would prefer to watch the program with advertisements. Stated more generally, for any positive fee those television viewers that have a lower opportunity cost for leisure will continue to watch advertising-financed television. These individuals value advertisements negatively, but it is less expensive in terms of total satisfaction for them to pay in leisure than to pay in money income. The unemployed are an obvious example of a group that may not value advertisements but may prefer to pay for TV by watching them.

Given the above analysis, pay TV delivery systems that eliminate commercials will tend to be most attractive, ceteris paribus, to individuals that place a high value on their leisure time. High income households, and possibly higher educated households, who seek "quality" leisure experiences will prefer dollar outlays. Therefore, advertisers will find it relatively more difficult to reach high income and educated families via television. The composition of advertisements may, for this reason, shift towards messages oriented towards low and middle income families.

Introduction of Option Demand Pricing

There is a second dimension to the pricing schemes of the new television delivery systems that is independent from the question of payment medium. Subscribers to cable and pay-cable TV pay a monthly fee for service rather than a price per unit of TV viewed. Since this fee must be paid even if no one watches television, it is an option price as defined by Weisbrod [1964]. Paying the fee reserves the right or option to view that month's television programs. A household will calculate its

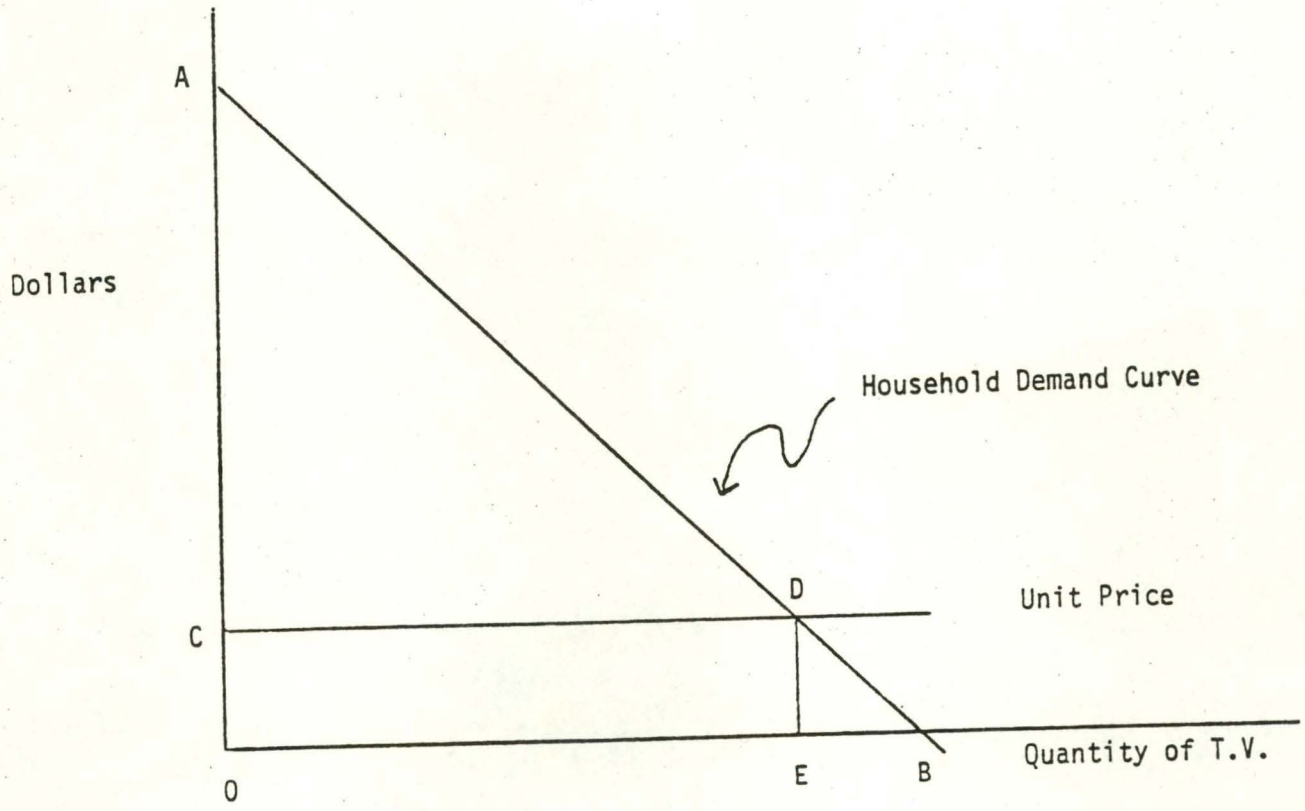
willingness to pay an option price by computing the gains in consumer surplus that result from a switch to pay TV and/or cable. If its gain in surplus is greater than the associated fee, then a household will subscribe.

This option price choice, as well as a household's choice of how much TV it consumes under unit pricing, are illustrated in Figure 3. Line AB is a household's demand for the additional TV programs as a function of price. If it does not watch the additional TV, it foregoes consumer surplus, ABO. The household will subscribe for any fee less than this amount, and will consume OB television programs. Under a unit pricing regime with a non-zero unit price, OC, the household will purchase OE units of television.

Note that option pricing gives the firm opportunity to extract considerably more revenue than unit pricing does. An option price can extract the total area OAB, whereas a unit price can extract only the area of a rectangle inscribed within the OAB triangle. Note also that for TV, where the marginal cost of an additional viewer is zero, option pricing is socially efficient and unit pricing is not. Households that pay option prices consume television until their marginal utility of an additional program is zero.

As an aside consider the implications of this analysis for the widely held view that advertising-financed, "free" TV engenders an optimal pricing strategy. Since advertising is interspersed throughout programs it is a unit price. As such it restricts television consumption to levels below the point where viewers attain zero marginal utility. Advertising-financed TV, therefore, does

Figure 3. Household Choice of the Quantity of Television Viewed Under an Option or Unit Pricing System.



not result in a socially optimal level of consumption. Anyone who has turned the TV set off in frustration because of a heavy dose of commercials during the last one third of the Saturday night movie should be able to appreciate this point.

Most cable and pay TV systems currently charge viewers dollar-denominated option prices. Experimental two-way cable technology, e.g., Warner Communication's Qube system in Columbus, Ohio, does allow the head end of a cable system to measure when a household is viewing a program. Two-way cable could institute unit pricing; but, the relative advantage that option pricing has for extracting revenue from households predicts that they will not, unless they are forced to do so by competition or the regulatory agencies. Since option pricing results, ceteris paribus, in households consuming more TV, they also consume more advertisements when subscribing to a cable TV system with option prices.

Table 3 summarizes the qualitative impacts of likely changes in the structure of the television industry upon the quantity, price, and composition of advertising. The structural changes envisioned are continued growth of cable-TV, pay-cable TV, subscription TV, satellite transmission, and the establishing of several hundred new UHF local broadcasting stations. These changes influence advertising through one or more of the following: increased consumer choice, increased competition in network and local markets, direct monetary payment for TV, and the introduction of option demand pricing. On balance, it seems most likely that households will increase their supply of advertising exposures to the TV industry which in turn supplies them to goods and service industries. Under

Table 3. Summary of the Predicted Qualitative Impacts of Changes in Television Industry Structure Upon the Quantity, Price, and Composition of Advertising.

Characteristics of Recent Changes in Television Industry	Impact on Advertising Exposures Supplied to Goods and Services Industries [a]		
	Quantity	Price	Composition
Increases Choice	Increase	Decrease	None
Increases Competition	Increase	Decrease	Local advertisers may be disadvantaged in the short run; however, in the long run new local stations may meet their needs. Advertisers will be able to reach new, very specific segments of the population.
Adds Money as a Payment Medium	Decrease	Increase	The proportion of total advertising viewed by high income and high education households will decline.
Introduces Option Demand Pricing	Increase	Decrease	None

[a] These inputs are partial changes. The remaining characteristics as well as all other supply and demand factors that influence advertising are assumed constant for purposes of analysis.

normal demand conditions, this increase in supply will lower advertising rates. The composition of television advertising will possibly shift away from high income and high education groups. In addition, it will become more diversified as advertisers find it increasingly possible to reach very specific segments of the household sector.

VI. IMPLICATIONS FOR PUBLIC POLICY INITIATIVE IN FOOD INDUSTRIES

These predicted changes in the advertising market have implications for several different types of public policy initiatives in food industries. Consider, for example, the following: Devine [1979] and Uhl [1980] conducted experiments in several retail grocery markets to assess the impact of regularly available consumer price information on industry structure and consumer welfare. Although information does produce a more competitive market some newspapers succumbed to retailer pressure and stopped publishing grocery price lists. Public access channels on cable TV could provide an alternative outlet for such price information.

On a more negative note, increases in the quantity of advertising and in market segmentation may heighten rather than reduce some conflicts over public policy. Deciding what is the appropriate policy on advertising directed at children is a good example. Similarly concerns may increase in other areas, such as the advertisement of medicines and palliatives to the terminally ill. Resources allocated to enforcing the anti-fraud laws may need to increase as advertising increases.

Each of these issues is important. However, changes in the television advertising market will most likely have their major impact upon the need for anti-trust enforcement in advertised product industries. The food industries are a prime example.

Some economists do not agree with this judgement. Most notably, "Chicago School" economists believe that advertising is pro-competitive. They dismiss all evidence to the contrary, contending that it is seriously deficient and unreliable because of errors in theory, measurement, or sampling. Ornstein's recent pamphlet, Industrial Concentration and Advertising Intensity [1977] is a representative example of the Chicago critique. If their beliefs carry the day, the predicted changes in the quantity, price and composition of advertising are at worst inconsequential, and at best pro-competitive. Chicago School adherents may stop reading at this point if they wish.

Most economists take a more eclectic view of advertising. Unlike Ornstein [1977, p. 65] and his compatriots, they do not, for example, have great difficulty reconciling the Federal Trade Commission's decision to encourage price advertising in the professions with the Commission's finding that advertising in the breakfast cereals industry is a source of market power. Certain kinds of advertising in some markets can be pro-competitive; other kinds in the same or other markets can be anti-competitive.

During recent decades the anti-trust agencies have based many enforcement activities, at least in part, upon one or more of the anti-competitive effects attributed to advertising.

Federal Trade Commission v. Procter and Gamble, 396U.S.568,(1967), was the first case in which an anti-competitive effect of advertising was cited by the FTC and affirmed by the Supreme Court as a major reason for prohibiting a merger. Procter was ordered to divest the Chlorox Company because, among other things, the Court found that Procter's advertising advantage as a large conglomerate consumer goods firm would raise barriers to entry in the bleach industry, thus establishing a "reasonable probability that competition may be substantially lessened" in the industry. A finding of "reasonable probability ..." is sufficient for violation of Section 7 of the Clayton Act; a statute that seeks to arrest trends towards monopoly in their incipiency.

The Procter and Gamble decision illustrates that advertising can be relevant for antitrust enforcement. What, one might ask, is the general rule for determining when advertising is relevant to anti-trust? There is strong theoretical and considerable empirical evidence for concluding that an industry's market structure exerts a significant influence upon the level of advertising in that industry [Kaldor, 1949; Comanor and Wilson, 1974; Strickland and Weiss, 1976]. For anti-trust purposes, however, the reverse relationship is most important. The statutes and court rulings have established structural rather than performance criteria for Sherman Act, Section 2 (monopolization) and Clayton Act, Section 7 (merger) cases. Accordingly, advertising must be analyzed to determine whether it contributes to the creation and/or maintenance of monopoly or to a tendency to substantially lessen competition.[8/]

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[8]Advertising conduct by firms may also lead to anti-trust action under Section five of the Federal Trade Commission Act which declares

Kaldor [1949], Bain [1956, 1968] and others have analyzed this question within the context of industrial organization theory. During the past twenty-five years several economists have tested the proposition that advertising contributes to encreases in market concentration. A study by Mueller and Rogers [1980) is the most recent example of several empirical investigations which conclude that increases in concentration in consumer goods industries, including food industries, are significantly related to advertising levels. Underlying and contributing to this observed relationship is the fact that advertising is a powerful source of product differentiation.

Documents requested under subpoena by the FTC in the Borden "Realemon" case demonstrate that industry understands the anti-competitive (price and profit enhancing) effect of product differentiation, as well as advertising's role in achieving and sustaining product differentiation. The following quote is from Borden's 1971 marketing plan.

> "Although reconstituted lemon juice is virtually indistinguishable one brand from another, heavy emphasis on the ReaLemon Brand name through its media effort should create such memorability for the brand, that an almost imaginary superiority would exist in the mind of the consumer, a justification for paying the higher price we are asking. ...[T]he reflection of this spread at retail level must be obscured for the consumer. To accomplish this, more advertising and promotional monies will have to be spent in 1971" [FTC, 1976, p. 82].

This type of advertising conduct also contributes to increases in concentration because economies of scale in advertising and product

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unfair methods of competition unlawful. One such method is predatory advertising. The extent to which predatory advertising is a problem depends upon the ability of advertising to influence market structure. This reinforces the need to determine whether in fact advertising does influence market structure.

differentiation raise barriers to entry. On the former point, research indicates that advertising exhibits both real and pecuniary scale economies [Comanor and Wilson, 1974; and Brown, 1978; FCC, June 1980].

Given these impacts of advertising on market structure, it is possible to predict how changes in the television industry will influence anti-trust policy in the food system. The predicted increase in the supply of advertising, and the lower offer prices resulting from that increase, suggest that advertising by food firms will increase. If the composition of advertising shifts towards lower and middle income groups, as predicted, food advertising may increase even further because food outlays represent a larger proportion of these groups' disposable income.

Lower advertising prices could, however, have a procompetitive effect. In industries where the demand for advertising is inelastic, lower prices would result in firms spending less on advertising, thereby diminishing the importance of scale economies in advertising relative to other food processing and marketing costs. This would enhance entry and possibly decrease market concentration. It is, however, unlikely that demand for advertising is inelastic in the food industries.

The predicted increase in market segmentation, and a possible short run increase in the disadvantage that local advertisers are already experiencing [Porter, 1976, p .403] does not auger well for competition in the food industries. Under this scenario local and regional food retailers and processors will find it increasingly difficult to compete with firms that sell in several regions or nationwide. The largest firms

may also be able to take most rapid and effective advantage of the television industry's growing ability to reach particular segments of the household sector. The Anheuser-Busch Company, for example, purchased one-eighth of all the advertising spots available in the package of 350 separate NCAA college sports events when the Entertainment and Sports Network (ESPN) first offered it to cable systems in September, 1979. For slightly over one million dollars, Anheuser-Busch received approximately 930 minutes of ad time in the 1979-80 season. This is equivalent to one thirty second spot in each of the estimated 1,860 hours of NCAA sports programming [Braunstein, 1979, p. 96]. Sports fans are not only watching more events, they are also watching more Budweiser commercials.

In conclusion, this qualitative analysis does not give an entirely unambiguous prediction; however, most factors seem to suggest that television advertising will become increasingly important. to anti-trust initiatives in the food system. The quantity of advertising by food firms will continue to rise and may increase relative to advertisements by other sectors of the economy. Product differentiation in food industries will most likely increase, raising barriers to entry, increasing horizontal market concentration, and possibly advantaging the larger, multimarket firms at the expense of local or regional firms. From the vantage point of research, resources and effort should be allocated to test these qualitative predictions. As the new channels for advertising develop anti-trust agencies will need quantitative estimates of how they influence market structure and performance in the food industries.

One caveat is in order, lest these conclusions be misinterpreted. The theory of "second best" notwithstanding, these results do not provide a rationale for reestablishing anti-competitive regulations in the television industry in order to preserve competition in the food system. Economic efficiency as well as other goals established by the anti-trust and regulatory statutes, including an explicit preference for competition, will be enhanced most by pursuing, in all industries, a policy of workable competition rather than workable monopoly.

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