Federal Communications Commission
Office of Plans and Policy
445 12th Street, SW
Washington, DC 20554

OPP Working Paper Series

26 Broadcast Television in a Multichannel Marketplace

June 1991

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BROADCAST TELEVISION IN A MULTICHANNEL MARKETPLACE

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Office of Plans and Policy
Federal Communications Commission
Washington, D.C. 20554
June 1991

OPP Working Paper No. 26

* The opinions and conclusions expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Communications Commission or any of its Commissioners or other staff. The authors appreciate the helpful comments and suggestions of their colleagues at the Commission. Any errors in this paper, however, are their responsibility.

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EXECUTIVE SUMMARY

This study examines changes in the competitive situation of the television broadcasting industry from 1975 to 1990 and presents some predictions for the next decade.[1] Over the past fifteen years the range of broadcast, cable, and other video options available to the American viewer has increased dramatically. Broadcast television, however, has suffered an irreversible long-term decline in audience and revenue share, which will continue throughout the current decade.

In the next ten years, broadcasters will face intensified competition as alternative media, financed not only by advertising but also by subscription revenues, and offering multiple channels of programming, expand their reach and their audience. Television broadcasting will be a smaller and far less profitable business in the year 2000 than it is now. Although broadcasting will remain an important component of the video mix, small-market stations, weak independents in larger markets, and UHF independents in general will find it particularly difficult to compete, and some are likely to go dark. The analysis supports the conclusion that in the new reality of increased competition regulations imposed in a far less competitive environment to curb perceived market power or concentration of control over programming are no longer justified and may impede the provision of broadcast services.

THE 1975-1990 PERIOD

In 1975, the United States had three commercial broadcast television networks and no cable networks; cable television was solely a broadcast retransmission medium. Only 17 percent of television households subscribed to cable in 1976; over 56 percent subscribed in 1990. By 1990, there were four commercial broadcast networks and over 100 national and regional cable networks. The number of broadcast stations had increased by 50 percent, with independent stations accounting for three-quarters of the growth. The number of off-air stations available to the median household increased from six in 1975 to ten in 1990, and by 1990 94 percent of television households were located in markets with five or more television stations. In 1975, there were no home satellite dish systems and no home videocassette recorders

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1 This paper presents only the views of members of the staff of the Office of Plans and Policy. It does not represent the views of the Commission or any individual Commissioner, and has not been considered by or voted upon by the Commission.

(VCRs); in 1990, 3 percent of television households had home dishes and 69 percent owned VCRs.

Expansion in the availability of outlets and programming has dramatically changed viewing patterns. The broadcast networks and their affiliates have been the big losers. The prime-time viewing share of the three major commercial networks plummeted from 93 in 1975 to 64 in 1990. The all-day three-network viewing share fell from 41 to 35 between 1984/85 and 1989/90. These declines have been accompanied by increased viewing of independent stations and cable networks. In recent years, pay cable and independent station viewing has leveled off, but basic cable viewing continues to grow. Overall, viewing of cable-originated programming rose from 14 percent to 26 percent of total viewing and from 24 percent to 39 percent of viewing in cable households. Thus, the decline in the broadcast share results from both increased cable penetration and increased cable viewing shares in cable households. While the tape rental business earns large revenues, the impact of tape rental on broadcast viewing has been small.

Competition has reduced television station profits, although the relative profitability of different categories of stations has remained unchanged. Network affiliates, on average, have much higher profits than independents. Indeed, independents apparently suffered losses on average in 1986-88. Also, VHF stations normally are more profitable than UHF stations and, if other factors are equal, large market stations are more profitable than small market stations. Large-market stations on average still earn very high profits. Even in large markets, however, independent stations may be unprofitable, particularly if there are several independent stations in a single market.

THE NEXT DECADE

During the next decade, television broadcasters will face increased competition from more and higher-quality alternatives and, consequently, broadcast television audience shares are likely to continue their gradual decline. Audiences and advertisers will find cable programming an increasingly good substitute for broadcast programming, and each major broadcast network will increasingly become one of a larger group of distributors, along with cable networks, Fox, and others.

Cable now passes over 90 percent of television households. While that fraction will rise slightly, increases in cable subscribership will come mostly from increased penetration of homes already passed. In 1990, 20 percent of homes not passed by cable owned home satellite dish systems. This fraction is likely to rise during the next decade. If the reception equipment costs are sufficiently low, and if programming is available, direct broadcast

satellite (DBS) service also could have a substantial impact. DBS is likely to spread more rapidly in areas not passed by cable, which may have limited broadcast service. To the extent that satellite services proliferate in cabled areas, the impact on broadcast shares will almost certainly be negative. Not only will satellite services offer additional viewing options, but they will exert competitive pressure on cable, resulting in lower cable rates and improved service.

The technological development with the greatest impact on the video marketplace in this decade will almost certainly be digital video signal compression, which will allow substantially expanded channel capacity. This capacity will be used in part for additional conventional services, but more importantly to provide time diversity, either through multiple feeds of conventional cable (or broadcast) networks or through "near video on demand" pay-per-view services. Compression will be introduced first in the satellite media, then in cable, and then, perhaps, in broadcasting.

Video advertising, the source of broadcasters' revenues, is likely to grow very slowly over the next decade, after an earlier period of rapid growth. The composition of video advertising will shift toward cable and national syndication and away from network and national spot. Consequently, television stations' overall share of advertising will fall further. The likelihood of continued rapid growth of cable advertising (national and local) is suggested by the fact that cable accounts for 6 percent of video advertising revenues but 22 percent of viewing on channels accepting advertising.

The effects of increased competition on broadcast television will be significant but vary among viewers and firms. Broadcast television stations, as a group, will suffer declining revenues. In large markets, most television broadcasters will remain profitable, though some may scale back local programming--mostly news and public affairs--and some marginal stations may go dark. In smaller markets the effects will be more severe with some stations going off the air, reducing viewer choice. Overall, by the end of the decade, fewer broadcast television stations will serve a shrunken, but nevertheless substantial, audience.

The three conventional television networks' audiences' will continue to decline, albeit more slowly than over the recent past. As cable advertising becomes a better substitute for network advertising, network revenues will fall along with audiences. The effect on network programming likely will be lower-cost and lower-quality programming, with the result that the networks will continue to lose their uniqueness to both audiences and advertisers. It is possible, however, that in the long run program quality will decline less than program costs because payments to the most popular talent will fall with

the audiences they can command. Further, in the short run, despite declining profitability, the three major networks in most cases will attract larger audiences than the alternatives and overall outspend their competitors on programming. Broadcast networks and stations will likely attempt to expand the application of their programming, packaging, and scheduling skills by diversifying into nonbroadcast media.

Viewers who do not subscribe to cable or other multichannel media will be made worse off by a decline in the quantity and quality of broadcast service. Because of its mandate to provide a nationwide communications system, the Commission should be concerned, in particular, with viewers who value television, but, in effect, have no substitutes for broadcast service, either because they lack access to multichannel media or because they cannot afford to subscribe to multichannel services. But viewers who subscribe to multichannel video services almost certainly will benefit from access to a greater quantity and diversity of programming.

IMPLICATIONS FOR REGULATION

Existing broadcast regulations may prevent broadcasters from adopting more efficient forms of organization and offering services the public would value. Relaxing or eliminating such rules would allow broadcasters to compete more effectively, and would facilitate the continued provision of valued over-the-air services.

The regulatory challenges of the next decade are to develop an equitable and efficient regulatory framework for all video service providers and to give single-channel advertiser-supported television broadcasters flexibility to compete more effectively with multichannel rivals that benefit from a dual revenue stream. Broadcasters should not be hindered excessively from diversifying to make efficient use of their core skills--production, acquisition, and scheduling of programming, as well as selling advertising. The physical distribution of the broadcast signal is, in fact, a small part of the broadcasters' business.

Thus, the Commission should eliminate its broadcast multiple ownership and network-cable crossownership rules, relax its duopoly rules, and seek Congressional authority to relax its cable-broadcast crossownership prohibition. Moreover, many of the Commission's network-affiliate regulations are ripe for re-examination, as is the forced sale of broadcast programming to cable via the statutory compulsory license. Fewer broadcast stations also means that there will be fewer areas in which broadcast service provides a competitive check on cable rates.

I. INTRODUCTION

Over the past several years, new services and technologies have produced vast changes in the television marketplace. Cable television systems, videocassette recorders (VCRs), home satellite receivers, and additional over-the-air television stations have given television viewers far greater program choice and viewing convenience. Direct broadcast satellite (DBS) systems may shortly add a nationwide multichannel service. Viewers find the additional choice and convenience highly valuable, as expenditures of $24 billion a year for cable subscriptions and videocassette rentals and purchases attest. The expansion of video service in the past fifteen years has also dramatically changed the competitive environment for broadcasters, resulting in a substantial decline in the audience shares and advertising revenues of conventional over-the-air television stations.

The purpose of this study is to document these changes and to assist the Federal Communications Commission (FCC) in determining to what extent the economic and technological changes in the marketplace call for changes in its existing rules. A primary goal of the FCC's regulation of broadcasting is to create an environment in which the services that viewers want are delivered in the most efficient manner. In serving viewers' interests, the FCC historically has considered as important goals diversity of programming, service to local communities, and provision of public interest programming, such as news and public affairs. This study is based on the belief that, in pursuit of these goals, the Commission should foster development of a

marketplace in which all firms can compete on an even basis, unhindered by artificial regulatory handicaps, and all have an opportunity to provide the most highly valued and most efficient service possible. The Commission should be concerned about the availability of service to viewers rather than the profitability, or even the continued existence, of particular firms or industries.

Many of the Commission's existing rules conflict with these goals, hindering broadcasters' efforts to provide service and preventing them from competing on an even footing in the new, more rigorous competitive environment. Many broadcast regulations, for instance, place restrictions on stations and networks that may make it difficult for them to show the programming that would be most valued by viewers or to make business arrangements that would increase their efficiency. Many rules place restrictions on broadcasters or broadcast networks that do not apply to their competitors.

While eliminating sources of inefficiency is always desirable, that objective takes on particular urgency at a time when broadcast stations and networks face intense competition and, in extreme cases, the prospect of insolvency. While broadcasters' programming for the most part is carried by cable systems, and could in principle be transmitted by other media, broadcasters furnish an important service to viewers not passed by cable or who cannot or are unwilling to pay for cable or other video media. They also provide the major source of competition to cable systems.

Many of the FCC's broadcasting rules were adopted when there were far fewer channels per market and the three networks dominated the supply of programming. Much of the FCC's broadcast regulation was motivated by a desire to limit economic market power and concentration of control over program content on the part of broadcast stations and networks. These concerns appear misplaced, or at best of greatly diminished importance, in a world where broadcast stations and networks face dozens of cable channels and program networks.

This study shows that a reduction in the quantity and quality of broadcast service is highly likely and provides a factual basis for reconsideration of a large body of mass media rules, Changes in Commission rules to allow more efficient provision of service may have an important effect in allowing broadcasters to continue to offer service the public values. The study documents the changes that have occurred in the video marketplace over the past fifteen years and the effects of those changes on over-the-air broadcasting. The study attempts to project trends in the marketplace over the next decade and discusses new technologies that may affect those trends. The study focuses in particular on two related issues: (1) the impact of multichannel video providers on the competitive position of television broadcasting; and (2) the implications of changes in viewing patterns, changes in the advertising market, and the use of direct payment for programming for the ability of broadcast television stations to pay for programming.

The next chapter discusses the economics of advertiser and viewer support of video programming. Chapter III gives an overview of the market for video services. Chapter IV examines the current state of broadcast television. Chapter V considers new technologies that may affect the video market. The following three chapters examine, in order, cable television, satellite television delivery, and other video media that may affect broadcasting. Chapters IX and X examine the operation of two markets that are central to the broadcasting business, the advertising market and the program acquisition market, to see how they are likely to be affected by changed competitive conditions. Finally, conclusions concerning the future of televison broadcasting are presented in Chapter XI.

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II. THE ECONOMICS OF TELEVISION FINANCING METHODS

Broadcast television in the United States has been financed, with few exceptions, by the sale of advertising time, in contrast with other video media where direct viewer payment is the norm. While broadcasters clearly produce programming that informs, educates, and entertains, their purpose in doing so is to attract audiences to sell to advertisers. Since the effects of the differing financing methods crucially affect both the financial viability of the media and their ability to meet consumers' preferences, it is useful to begin by discussing these financing methods and their implications for the television marketplace.

Advertiser support historically has provided a means of paying for broadcast services in the absence of a conventional market for broadcast programming. A market in which viewers could buy the programs they want, as they do other commodities, did not develop in broadcasting in part because collecting payment from viewers historically has been prohibitively difficult or expensive.[1] Further, a broadcast system financed by direct

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1 Commission rules permit broadcast stations to transmit in the subscription television (STV) mode, but the Commission has classified those services as non-broadcast. Report and Order in General Docket No. 85-305, 2 FCC Rcd 1001 (1987) ("Subscription Video Report and Order"). At the moment, no full-power television broadcast stations operate in the STV mode, at least in part because of the expense of controlling access to the signal via encryption.

viewer payment would entail economic inefficiences because, once a broadcast signal is transmitted, the cost of serving an additional viewer is zero.[2] Therefore, assuming transmission of the signal, consumer welfare is maximized when the price is zero.[3] A zero price is efficient because otherwise potential viewers for whom the value of the service is greater than or equal to the (zero) cost of providing it to them would be denied service. By allowing programs to be delivered to viewers free, advertiser support achieves economic efficiency in program distribution and provides benefits to viewers who otherwise would not receive television service.

At the same time, inefficiencies result from advertiser support because viewers cannot directly express their preferences for various kinds of programming. Advertisers pay for advertising time, roughly speaking, on the basis of the number of viewers attracted to adjacent programming, regardless of whether viewers like a program intensely or only slightly

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2 The marginal cost is zero only within a given service area. Expanding the geographic area of service may require additional expenditures for greater power, a higher antenna, or other technical improvements.

3 Economists call goods and services with this characteristic "public goods." Because the market will not supply them in optimal quantities, a theoretical case can be made for subsidy or public provision. Paul A. Samuelson, "Diagrammatic Exposition of a Theory of Public Expenditure," Review of Economic Statistics 37 (November 1955): 350-356. Of course, given the potential inefficiencies of providing goods through subsidy or direct government provision, these methods may be no more efficient than a pure market system.

more than the alternatives. As a consequence, the number and type of programs that viewers would choose if they could pay for programming may not be produced.[4]

Viewer payment for programs, on the other hand, improves the incentives for program production but creates inefficiencies by causing programming to be denied to viewers who would value it more than the cost of delivering it. An inherent conflict thus exists between efficient production and efficient distribution of programming.[5]

Spence and Owen have examined the effects of television financing methods on program production incentives.[6] They show that both advertiser support and viewer fees undersupply programs that have high value to a small

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4 See Jora R. Minasian, "Television Pricing and the Theory of Public Goods," Journal of Law and Economics 71 (1964): 71-80; Paul A. Samuelson, "Public Goods and Subscription TV: A Correction of the Record," Journal of Law and Economics 71 (1964): 81-83.

5 Another source of inefficiency in broadcasting is nonmarket spectrum allocation techniques, which prevent the number of channels from adjusting in response to changes in demand. Spectrum-using services could be provided more efficiently, and licensees and users would be better off, if channels could be shifted from lower-valued to higher-valued uses, for instance between television and land mobile or cellular radio, without cumbersome administrative procedures.

6 Michael Spence and Bruce Owen, "Television Programming, Monopolistic Competition, and Welfare," Quarterly Journal of Economics 91 (February 1977): 103-126.

number of viewers and programs that are expensive to produce, relative to what would be supplied if viewers could be induced to pay what programs were worth to them. The biases are larger, however, with advertiser support than with viewer payment.

Spence and Owen show that advertiser support is closer to the optimum when viewers perceive programs as close substitutes than when viewers have strong preferences among programs. When viewers have only weak preferences among programs, the value of increased viewing due to the availability of free programming is high relative to the value of greater resources devoted to program production. On the other hand, if viewers have strong preferences, the gain from the availability of highly-valued programming to those willing to pay for it may outweigh the loss due to inefficient distribution, i.e., denying access to programming to those who are not willing to pay the market price but who place some value on the material.

Spence and Owen speculate that a mixed system with both advertising and viewer support may best serve consumers' needs, making available low-cost programming for those without strong program tastes and allowing those with strong tastes to purchase programming that would not otherwise be produced. Such a system would be particularly valuable where incomes and intensities of preference varied widely. Such a mixed system has indeed developed in the cable television industry.

Sale of advertising appears able to support less programming than viewers would like and would be willing to pay for.[7] Intuitively, it seems plausible that in most cases, advertisers value viewer exposure to commercials less than viewers value the associated programming. With large numbers of channels, however, the value to viewers of an additional channel probably falls rapidly.

Where both advertiser support and viewer payment exist, we expect that the role of advertiser-supported channels will be to provide mass-taste programming to a general audience. This audience will include both cable subscribers and those who, because of low income or lack of interest, are unwilling to pay for either higher-cost programming or programming for specialized tastes.[8] Existence of viewer-supported options, and of larger numbers of channels, will reduce the audiences and the advertising revenues of advertiser-supported channels, and may reduce the number of advertiser-

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7 The fact that consumers will pay for cable services in areas where unused over-the-air allotments exist suggests that advertiser support results in an undersupply of programming. In 42 of the top 100 television markets there is at least one commercial television channel within 55 miles for which no license application has been filed. Federal Communications Commission, "Television Channel Utilization," Public Notice, September 9, 1990.

8 Broadcast network programming is currently more expensive than cable programming in the aggregate, but not necesarily at the level of individual programs. There is some evidence of efforts by broadcast networks to move to less expensive types of programming. "NBC Outlines Disturbing Trends in Network Finances," Los Angeles Times, January 7, 1991, p. F-4; "Network News Divisions Are Developing Programs in Effort to Lure More Viewers," Wall Street Journal, September 24, 1990, p. B-11. For a discussion of cable and broadcast programming see chapter X below.

supported channels than can be supported. The viability of advertiser-supported broadcast stations will depend on the size of the audience for mass-market programming relative to that for specialized programming, and on the demand for advertising to the remaining viewers of over-the-air channels. Most viewers probably have some demand for mass-market programming and some demand for specialized programming. Demand for broadcast television advertising, in turn, will depend in part on what advertising substitutes exist to reach the broadcast audience. If few good substitutes exist for television advertising, advertising revenues will not necessarily decline proportionately with the decline in audiences.

Cable and other new media offer additional choices to subscribers, and the fact that subscribers are willing to pay for those choices indicates that they place significant value on having those additional choices available. As long as the quality of broadcast service, in terms of meeting the preferences of those who view it, remains equally good, subscribers to other media are made better off and no one is made worse off. If the quality of broadcast service declines, however, viewers who do not subscribe to cable will be made worse off. The following chapters consider changes in the markets in which broadcasters operate, and likely consequences of those changes for viewers, as a result of new media and technologies.

III. THE MARKET FOR VIDEO MEDIA

In most of the United States in the mid-1970's the only sources of visual entertainment and information were movie theaters and broadcast television. Television service was almost universally available; as shown in table 1, 97.4 percent of households had television sets in 1976. The percentage has grown slightly in the period since. The percentage of television households during this period has been far higher than the percentage of households having telephones.[9] By 1990, almost two-thirds of households had more than one television receiver, and the average number of sets per household was two.

The past fifteen years have seen the advent of alternative sources of video programming, primarily through the increasing penetration of cable television and the introduction and diffusion of the home videocassette recorder. As shown in table 1, cable subscribership has grown from 17 percent of households in 1976 to 56 percent in 1990. Home satellite dishes provide multichannel service in about 3 percent of households; roughly 20 percent of households not passed by cable have home satellite dishes.[10] Additional households receive video service from so-called wireless cable systems and

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9 U.S. Bureau of the Census, Statistical Abstract of the United States: 1989 (109th edition). Washington, D.C., 1989, p. 544.

10 Home satellite dishes make available much of the same programming that is typically available on cable systems.

TABLE 1
HOUSEHOLDS WITH TELEVISION EQUIPMENT AND SERVICES, 1975-1990

	1976	1980	1985	1990
Television Sets (% of All Households)	97.4	97.9	98.1	98.2
Multiple Sets (% of TV Households)	43.1	50.1	56.8	65.3
Average Number of Sets	1.56	1.68	1.83	2.0
Homes Passed by Cable (% of TV Households)	33.2	45.7	76.2	91.2*
Cable Subscribers (% of TV Households)	17.0	25.2	43.2	56.0*
Videocassette Recorders (% of TV Households)	0.0	1.1	20.8	68.6
Home Satellite Dish Systems (% of TV Households)	0.0	0.1	1.6	2.9

SOURCES: Television sets and videocassette recorders, Television Bureau of Advertising, Inc., "Trends in Television," April 1990, pp. 3-6; homes passed by cable and cable subscribers, Paul Kagan Associates, Cable Television Investor, Nov. 21, 1990, p. 9; home satellite dish systems, 1980 and 1985, Report and Order in General Docket 86-336, 2 FCC Rcd 1669 (1987), paragraph 25 and table 2; 1990, Satellite Business News, Dec. 12, 1990.

*Estimated.

from satellite master antenna television (SMATV) systems in large buildings.[11] Videocassette recorders, whose use was negligible in 1975, are now used by more than two-thirds of all households. Other innovations introduced during the period, video games and home computers, compete for viewers' time (and their television screens).

11 Satellite program delivery has been essential to expanding the alternatives in the market, providing inexpensive program delivery to cable systems, home receiving dishes, wireless cable systems, SMATV systems, and independent stations, as well as to network affiliates.

More channels of video service are available to viewers as well. The number of over-the-air television stations available to the median household increased from six in 1975 to ten in 1990. Including cable channels increases the median number of available channels to well over thirty.[12]

The relative size of the segments of the video industry, and their recent growth rates, reflect the revolution in the market in the last 15 years (table 2). Expenditures on cable television (by both subscribers and advertisers) are now more than half as large as those for broadcast television. Total expenditures on broadcast television grew more slowly than the Gross National Product (GNP) between 1984 and 1989; expenditures on network television grew slowly during this period. (Indeed, when adjusted for inflation, network television expenditures actually dropped from 1984 to 1989.) Cable advertising and subscriptions, by contrast, have grown much faster than the GNP. Consumer expenditures on home video in 1989 were larger than advertiser expenditures on network television and almost twice as large as theater box office revenues. Consumer expenditures on home video grew at 47.5 percent per year between 1984 and 1989.

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12 Television stations calculated from Arbitron Ratings Company, Television Markets and Rankings Guide, 1975, 1980-81, 1984-1985 ADI Market Guide, Television ADI Market Guide, 1989-1990; cable channels from NBC, citing Nielsen Television Index, Television Audience 1990 (1991).

TABLE 2
EXPENDITURES ON VIDEO MEDIA, 1984 AND 1989

	1984 Gross Expenditures ($ Billion)	1989 Gross Expenditures ($ Billion)	% Change 1984-1989
Broadcast Television	19.8	24.1	21
Networks	8.3	9.1	10
Stations	10.5	15.0	42
Cable Television	8.3	17.3	109
Advertising*	0.6	2.0	241
Subscriptions	7.2	14.1	97
Other	0.5	1.1	127
Filmed Entertainment	10.8	23.8	120
Box Office	4.0	5.0	25
Home Video	1.4	9.6	586
Television Programs	5.0	7.9	58
Barter Syndication**	0.4	1.2	200
GNP			39

SOURCES: Broadcast Television, McCann-Erickson, Inc., "Estimated Annual U.S. Advertising Expenditures," prepared for Advertising Age, April 1991; cable television, Paul Kagan Associates, Inc., The Kagan Cable TV Financial Databook (June 1990), p. 70; and Paul Kagan Associates, Inc., Cable TV Investor, Nov. 21, 1990, p. 9; filmed entertainment, and GNP, The Veronis, Suhler & Associates Communications Industry Forecast ("Communications Industry Forecast") (New York: Veronis, Suhler & Associates, Inc., 1990), pp. 13, 22.

NOTE: Expenditures on filmed entertainment cannot be added to those for TV and cable because television program and barter syndication expenditures are inputs into those services. Also, totals reflected rounding error.

*Includes local and network cable advertising.

**Programming traded for television advertising time.

IV. BROADCAST TELEVISION

The advent of alternative video media has radically altered the market in which television stations and networks operate. This chapter reviews the effects on the availability and viewing of broadcast stations and on their financial health.

AVAILABILITY OF OVER-THE-AIR TELEVISION SIGNALS

Despite apparent competition from new cable systems, the total number of television stations, particularly UHF stations, has increased over the past decade (table 3). After a period of slow growth in the 1970's, the

TABLE 3
COMMERCIAL TELEVISION STATIONS, 1975-1990

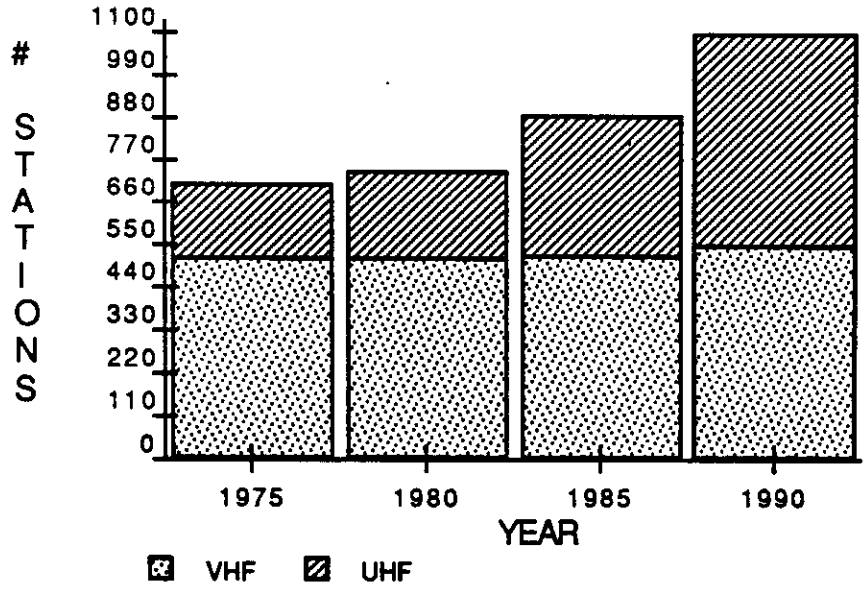
	1975	1980	1985	1990
Number of Stations				
Total*	706	734	883	1,093
VHF*	514	516	520	547
UHF*	192	218	363	546
Independent**	86	129	262	380
% Change Over 5 Years				
Total*		4.0	20.3	23.8
VHF*		0.4	1.0	5.2
UHF*		13.5	66.5	50.4
Independent**			103.1	45.0

SOURCES: Total, VHF, and UHF, Television Bureau of Advertising, Inc., "Trends in Television," April 1990, p. 9; independents, 1975, Tentative Decision and Request for Further Comments, BC Docket No. 82-345, 94 F.C.C.2d 1019 (1983), paragraph 111 and table 3; 1980-1990, Arbitron, cited by CBS.

*January 1st each year. **November each year except 1990, which is based on May.

number of commercial UHF stations grew by 150 percent between 1980 and 1990. About 70 percent of the new stations since 1980 have been independents, that is, stations unaffiliated with the three major broadcast television networks, ABC, CBS, and NBC; the number of independents nearly tripled between 1980 and 1990. The number of independents grew from about 18 percent to about 35 percent of the total.

FIGURE 1
COMMERCIAL TELEVISION STATIONS



Industry observers believe that the growth of cable made possible the expansion in the number of broadcast television stations by increasing the potential audiences of UHF stations.[13] Cable carriage of over-the-air signals reduces the disadvantage of UHF relative to VHF stations by increasing UHF stations' geographic reach and improving their reception quality. Channel positioning also appears important to the success of broadcast stations, and cable systems can give UHF stations desirable low channel positions. Satellite delivery of syndicated programming may also have encouraged the growth in numbers of television stations by making program distribution more flexible and efficient and less expensive.

The increase in the number of over-the-air stations is reflected in an increase in the number of stations available to viewers (table 4).[14] In 1975, 79 percent of television households were located in markets with 5 or more stations, not counting cable channels; by 1990 94 percent of television households were in markets with 5 or more stations (typically the three major networks, a PBS station, and an independent). In 1975 14

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13 For a discussion of the disadvantages under which UHF television stations operate, see UHF Comparability Task Force, Comparability for UHF Television: Final Report, FCC, Office of Plans and Policy, September 1980, pp. IV-XXVIII.

14 The data in table 4 are percentages of households in Arbitron Areas of Dominant Influence (ADIs), not percentages of total U.S. households. Each county in the United States, except in Alaska and Hawaii, is assigned to one ADI. In 1990 ADI households comprised 99.1 percent of all U.S. households. The data on numbers of stations represent all stations in the ADI; not all of them are receivable by every household.

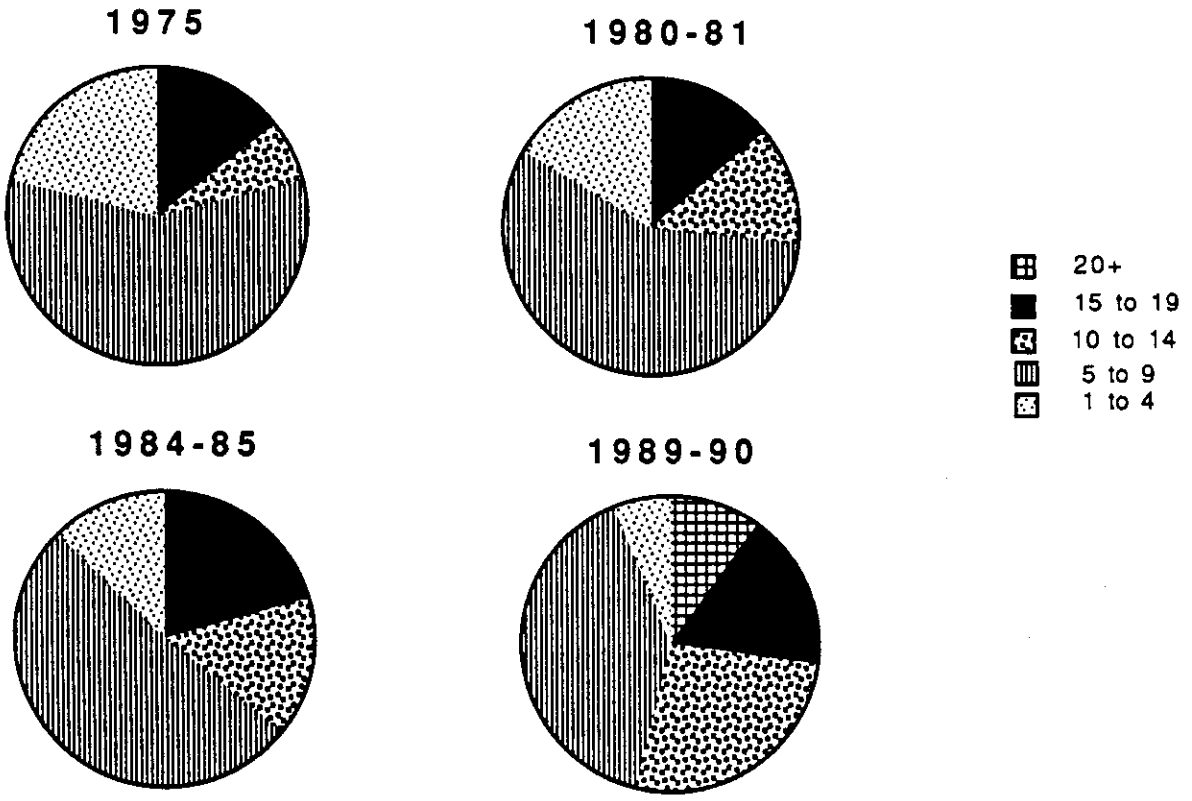
TABLE 4
HOUSEHOLDS IN ADI'S WITH VARIOUS NUMBERS OF OVER-THE-AIR SIGNALS

	1975		1980-81		1984-85		1989-90	
	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %
20+	0.0	0.0	0.0	0.0	0.0	0.0	10.1	10.1
15-19	14.3	14.3	13.8	13.8	20.5	20.5	17.2	27.3
10-14	6.8	21.1	12.8	26.6	15.2	35.7	26.5	53.8
5-9	57.7	78.8	56.8	83.4	51.9	87.6	40.1	93.9
1-4	21.1	99.9	16.5	99.9	12.4	100.0	6.1	100.0

SOURCE: Arbitron Ratings Company, Television Market and Rankings Guide, 1975, 1980-81; 1984-1985 ADI Market Guide; Television ADI Market Guide 1989-1990.
NOTE: Percentages do not add to 100 due to rounding.

percent of television households had available 15 or more over-the-air stations; in 1990 27 percent had 15 or more stations and 10 percent had 20 stations. Not only has the number of television signals available increased dramatically over the past 15 years, but over-the-air service is such that most households have considerable choice in programming even without cable. Ironically, however, this expansion of over-the-air signals was made possible by cable.

FIGURE 2
NUMBER OF BROADCAST TV SIGNALS AVAILABLE TO SHARE OF HOUSEHOLDS



TELEVISION VIEWING

Time spent watching television has increased by almost an hour per day per household since 1975. Total household viewing reached a peak in 1985, however, and has declined slightly since:[15]

Year	Hours
1975	6.1
1980	6.6
1985	7.2
1989	7.0

15 "Trends in Television," Television Bureau of Advertising, Inc., April 1990, p. 7. Data for 1975 through 1985 are based on NTI Audimeter sample; data for 1989 are based on NTI People Meter sample.

The causes of the decline in measured viewing are not entirely clear. The change may have been caused by a change in audience measurement techniques by A.C. Nielsen in 1987.[16] On the other hand, as detailed in the appendix, changes in the demographic characteristics and behavior of the population make it likely that a real decline in viewing time per household has occurred. Most importantly, labor force participation of women has increased steadily and is predicted to continue to increase, meaning less daytime viewing by women and less leisure for viewing in other time periods by all family members. The growth of single-parent families has reinforced the trend. In addition, the population is aging, producing a larger proportion of working-age persons. Slower population growth will also mean slower growth in the number of television households.

Cable viewing appears to have displaced viewing of over-the-air signals to a considerable extent in recent years. In 1990, cable households viewed 18.8 percent less broadcast television than non-cable households, on average, even though they viewed 32.5 percent more hours of television

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16 But measured viewing was slightly lower in 1986 than in 1985, using the old measurement technique.

altogether (table 5).[17] The greater total viewing of cable households almost certainly results in part from differences in tastes, since those households that use television most are most likely to subscribe to cable and to pay-cable channels.[18] The differences are likely to result also from availability of a larger quantity of attractive programming in cable households.

TABLE 5
TELEVISION VIEWING BY CABLE AND NON-CABLE HOUSEHOLDS
(Average Weekly Hours, Oct. 1989 - Sept. 1990)

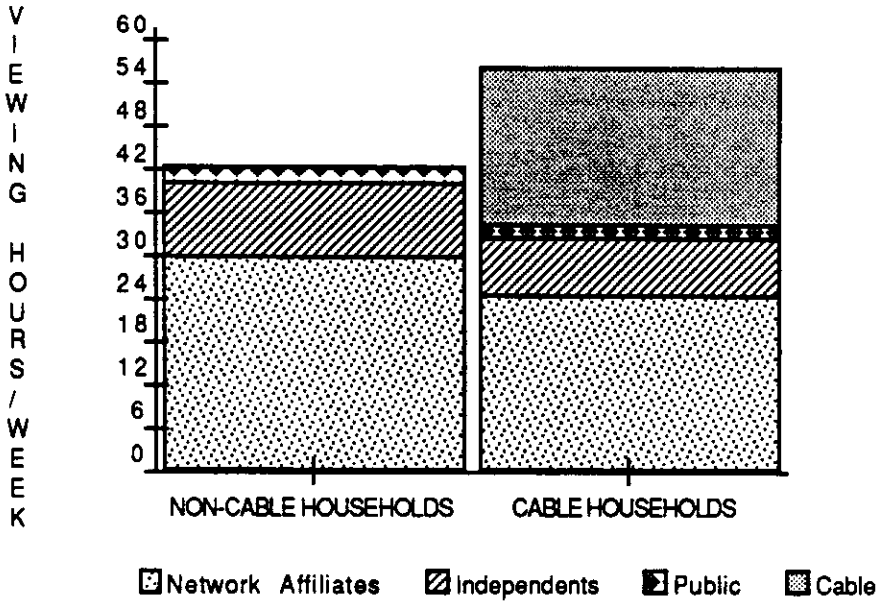
	Non-cable Households	Cable Households	Difference	% Difference
Total TV Viewing	42.1	55.8	+13.7	+32.5
Broadcast	42.1	34.2	-7.9	-18.8
Network Affiliates	30.1	24.6	-5.5	-18.3
Independents	10.0	8.2	-1.8	-18.0
Public	2.0	1.4	-0.6	-30.0
Cable	--	21.6		
Basic	--	16.5		
Pay	--	5.1		

SOURCE: Cable Televison Advertising Bureau, Inc., Cable TV Facts, 1991 ed., p. 11, citing Nielsen Monthly Cable Status Report.

17 Video games and the use of videocassette recorders to view prerecorded tapes also compete for viewers' time and hence probably have cut into broadcast televison viewing.

18 For definitions of basic and pay cable, see chapter VI.

FIGURE 3
WEEKLY TELEVISION VIEWING



Trends in cable and non-cable household viewing are shown in table 6, which provides data on all-day viewing shares for the ratings years of 1984/85 and 1989/90.[19] The share of viewing accounted for by cable services increased steadily during this period. For all households, the share of cable-originated services (i.e., basic plus pay) rose from 14 to 26 percent during the period. If distant independent stations and superstations, which in general are available only via cable, are included, in 1989/90 32 percent of viewing in all television households was accounted for by services available only via cable. In cable households, the viewing share of cable-

19 Except as noted, the data presented here are percentages of total viewing, not the commonly-reported shares of households, which do not account for viewing of more than one channel at a time by a household.

TABLE 6
ALL-DAY VIEWING SHARES, CABLE AND NON-CABLE HOUSEHOLDS

	ALL HOUSEHOLDS		CABLE HOUSEHOLDS		PAY CABLE HOUSEHOLDS		NON-CABLE HOUSEHOLDS	
	1984/85	1989/90	1984/85	1989/90	1984/85	1989/90	1984/85	1989/90
Network Affiliates	63	52	53	43	47	39	74	70
Independents	21	19	20	15	19	15	22	24
Local	12	13	8	9	8	9	18***	22
Distant	3	2	4	2	3	2		1***
Superstations**	6	4	8	4	8	4	4***	1***
Public	3	3	3	3	3	2	4	5
Cable	14	26	24	39	31	44	--	--
Basic**	8	20	14	30	14	28	--	--
Pay	6	6	10	9	17	17	--	--
Total*	101	100	100	100	100	100	100	99
Basic+Dist.+Super.	17	26	26	36	25	34	--	--
Basic+Dist.+Super.+Pay	23	32	36	45	42	51	--	--

SOURCE: Cabletelevision Advertising Bureau, Cable TV Facts, 1991 ed., p. 6; 1986 ed., p. 6; both cite the Nielsen Monthly Cable Status Report.

NOTE: Figures are pencentages, not commonly-reported household shares.

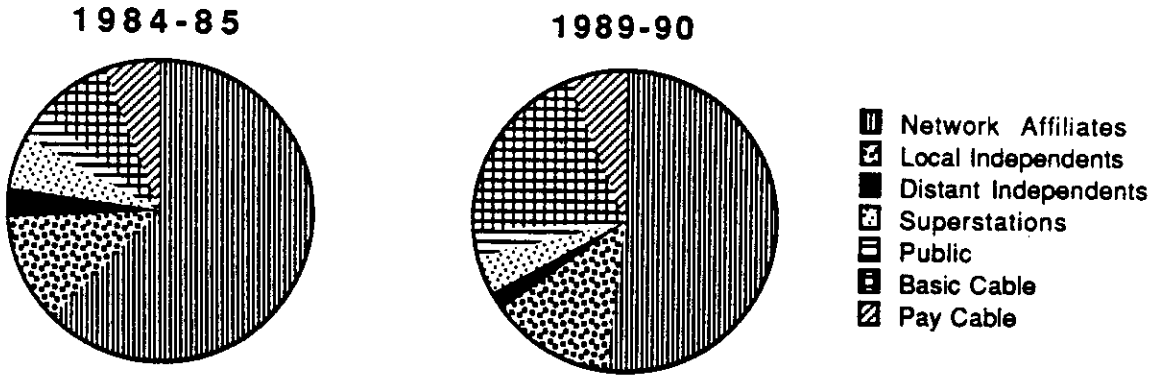
*Differs from 100 percent due to rounding.

**In 88/90, WTBS is included in basic cable, not superstations.

***Distant signals and superstations are received by satellite in some non-cable households.

originated services rose from 24 percent in 1984/85 to 39 percent in 1989/90. So the declining share of broadcast viewing results both from increased cable penetration and from an increased share of cable programming in the viewing of cable households. In 1989/90, services available only via cable accounted for a substantial 45 percent of viewing in cable households and 51 percent--over half--in pay cable households. The increase in cable viewing occurs entirely in basic service; pay viewing shares have remained flat, while the combined share of superstations and distant independents has fallen.

FIGURE 4
ALL-DAY VIEWING SHARE



Cable subscribership will almost certainly continue to grow, though the rate of growth may have peaked. Over 90 percent of television households are now passed by cable, and over 60 percent of those passed subscribe. Many of the households not passed by cable are located in areas where cable service would be prohibitively costly, and many nonsubscribers probably place a low value on cable service. By one estimate, basic cable subscribership, which grew 41 percent between 1985 and 1990, will grow 18 percent between 1990 and 1995 and 30 percent between 1990 and 1999. By this estimate, in 1999 about two-thirds of all households will receive cable.[20] But changes in the relative attractiveness of the media could drastically change this proportion.

Viewing of broadcast network programming has declined more sharply than viewing of other over-the-air programming. Over the whole period from 1975 to 1990 the three-network share of households (not percentage of viewing) in prime time fell from 93 to 64; the absolute number of households

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20 Paul Kagan Associates, Inc., Cable TV Programming, August 31, 1990, p. 2.

reached fell by 11.4 percent (table 7).[21] The largest decline in the network share occurred between 1980 and 1985, while the largest decline in households reached occurred after 1985. This result is consistent with a pattern in which viewers, particularly new cable subscribers, first increase their total viewing by adding cable and new independents to their existing viewing, then reduce viewing to a level closer to the original level but maintain the new network-independent-cable proportions.

TABLE 7
PRIME-TIME VIEWING OF THE THREE MAJOR COMMERCIAL NETWORKS

	1975	1980	1985	1990*	1994*
Share	93	89	74	64	61
Households Reached (Millions)	36.9	40.0	38.0	32.7	33.5

SOURCE: Communications Industry Forecast, 1990, pp. 45-46.
NOTE: Share of households, not percentage of total viewing.
*Projected.

In the top ten markets the three networks began with a smaller share, and the decline has been less steep, than in other markets. The three-network share of total viewing in these markets fell from 75 in 1980 to 63

21 In the earlier years there was very little difference between percentages of households and percentages of total viewing. In recent years multiple set viewing has increased; total share points for all households were 105 in 1989/90. As a result, shares of viewing are slightly higher than percentages in recent years, so that the decline in viewing is slightly understated in table 7.

in 1989.[22] As a result, the three-network share now appears to be about the same in all markets as it is in the top markets. A possible explanation is that network viewing has historically been lower in markets with more over-the-air alternatives. With the growth in the numbers of independents and cable systems, the number of alternatives available in smaller markets has risen, making viewing in those markets more comparable to that in the largest markets. This is in accord with the projections in table 7 of a slower decline in the viewing share of the networks through 1994. Veronis, Suhler, and Associates attribute this pattern to slower growth of competitors, and also project a modest increase in the number of households reached caused by an increase in the number of television households. As we discuss below, this prediction probably understates the decline in network audiences.[23]

The networks' share of prime-time viewing remains larger than their share of daytime viewing, but the decline in prime-time network viewing has been more rapid than the decline in daytime viewing.[24] The decline in

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22 Nielsen Station Index, Nov. 1980 and Nov. 1989.

23 For elaboration of the Veronis, Suhler view, see The Veronis, Suhler & Associates Communications Industry Forecast (New York: Veronis, Suhler & Associates, Inc., 1990) ("Communications Industry Forecast") pp. 46-47. In fact, the networks' prime-time share dropped to 61 in 1991. Broadcasting, June 17, 1991, p. 33. Hence, the Veronis, Suhler network share projection is too high.

24 1991 Cable TV Facts (New York: Cabletelevision Advertising Bureau, Inc., 1991), p. 14.

prime-time viewing has a particularly large impact on networks because their advantage to advertisers historically resided in their ability to deliver the mass audiences that watch television during prime time.

At the same time, the prime-time viewing shares of independents and affiliates of the Fox network have increased (table 8).[25] In fact,

TABLE 8
COMMERCIAL TELEVISON PRIME-TIME VIEWING SHARES BY CHANNEL TYPE
1982/83-1989/90

Years	3 Networks	Independents	Fox	Basic Cable	Pay Cable
1982/83	73	14		4*	6*
1983/84	71	15		5*	6*
1984/85	69	15		6*	6*
1985/86	68	16		7*	6*
1986/87	66	17		7*	6*
1987/88	62	19	2	9*	6*
1988/89	59	19	3	12	6
1989/90	58	19	4	14	6

SOURCE: 1982/83-1987/88, Nielsen Television Index and Nielsen Monthly Cable Status Reports (Oct. - Nov.); 1988/89-1989/90, Nielsen Television Index.

NOTE: Figures are percentages of viewing, not commonly reported household shares. Totals do not sum to 100 because viewing of PBS stations is not included. Moreover, Fox shares are also included in the independents column, e.g., the 1989/90 share for non-Fox independents was 15.

*Monday - Sunday 8:00 - 11:00 PM.

25 The Fox network began service in the 1987/88 season and distributes programming five evenings a week to formerly independent stations. For most purposes Fox stations are grouped with independents in this paper.

increased viewing of independents and Fox stations accounts for almost as much of the decline in the prime-time network share as does increased viewing of cable-only programming.

FIGURE 5
PRIME-TIME VIEWING SHARES

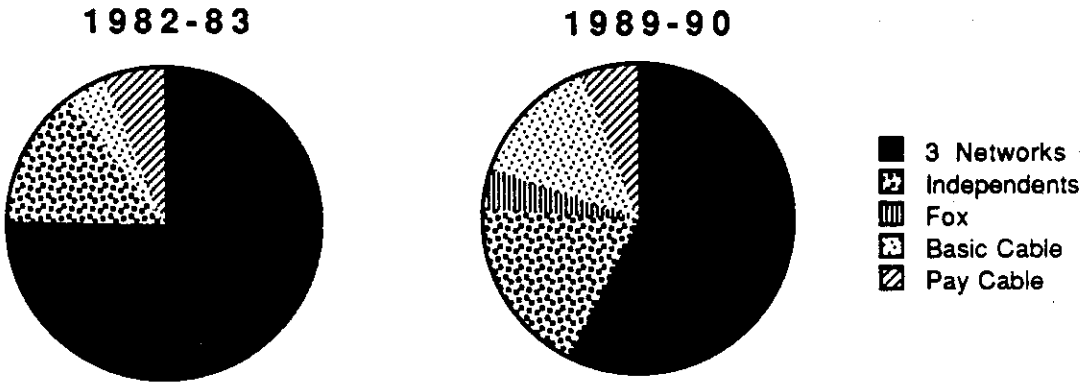

Table 9 shows the shares of viewing accounted for by network affiliates during "network dayparts" and "non-network dayparts." Overall, viewing shares of affiliates have declined from 63 percent to 52 percent in all households and from 53 to 43 percent in cable households during the period from 1984/85 to 1989/90. However, the decline has apparently been more precipitous in the non-network dayparts, i.e., those that are programmed locally by the affiliated stations, either with locally produced or

TABLE 9
VIEWING OF NETWORK AFFILIATES IN NETWORK AND NON-NETWORK DAYPARTS
(All Day Viewing Shares)

	1984/85	1989/90
All TV Households		
Affiliate Share	63	52
Network Dayparts	41	35
Non-Network Dayparts	22	17
Cable Households		
Affiliate Share	53	43
Network Dayparts	34	31
Non-Network Dayparts	19	12
Pay Cable Households		
Affiliate Share	47	39
Network Dayparts	31	28
Non-Network Dayparts	17	12

SOURCE: Cable Television Advertising Bureau, Cable TV Facts, 1991 ed., pp. 12-13; 1986 ed., p. 14; both cite the Nielsen Monthly Cable Status Report.

NOTE: Figures are percentages, not commonly-reported household shares.

syndicated programming.[26] For all households, the decline was five percentage points in non-network dayparts and six percentage points in network dayparts, though the base for network dayparts was almost twice as big. For cable and pay cable households the difference was even more pronounced. On an absolute level, viewing of non-network dayparts is relatively small, 17 percent of all-day viewing in all households in 1989/90 and 12 percent of the comparable total for cable households.

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26 On the other hand, the network comments in the Financial Interest and Syndication proceeding show the network share of total day viewing declining faster than the affiliate local share between 1980 and 1989. Joint Comments of Capital Cities/ABC, Inc., CBS Inc. and National Broadcasting Company, Inc. in MM Docket No. 90-162 ("Network Fin/Syn Comments"), filed June 14, 1990, Vol. I, p. 114.

The data do not permit identification of viewing shares for locally-produced programming such as news and public affairs, or for syndicated programming that could be interpreted as contributing to the affiliated stations' fulfillment of their mandate to program in the public interest. Nevertheless, the figures in table 9 raise the question of how much value consumers place on the local component of a network affiliate's service.[27]

The relative value of network and local programming to viewers is important because the projections of cable subscribership given below implicitly assume that the broadcast system will remain stable in its current form. If the networks ever chose to deliver programming directly to the home viewer by cable, satellite, or other non-broadcast means, the future of local television broadcasting would look much bleaker, particularly if viewers place a low value on affiliates' local programming. Viewers' valuation of local programming will also affect the competitive balance between cable and satellite service, since satellite systems probably will be unable for technical reasons to deliver local signals.

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27 Independent stations also provide some local programming, including news, but viewing shares of this programming cannot be disaggregated. However, as we shall see below, independents as a groups provide much less of such programming than do affiliates.

COSTS, REVENUES, AND PROFITS OF BROADCAST TELEVISION STATIONS

Broadcast station profitability provides an indicator of the health of the broadcast televison industry and the sustainability of its current configuration. Additional competitors can be expected to affect stations' profits in at least two ways. First, the observed decline in broadcast viewing has reduced audiences for advertising and may have contributed to reduced advertising revenues for networks and stations. Second, increased numbers of video channels may have increased the demand for and bid up the prices of inputs into broadcast service, especially programming and the talent that produces it, and thus increased costs.

To see how changes in the video marketplace have affected the financial position of broadcast stations, we look first at a snapshot of the revenues, expenses, and profits of commercial television stations. Then we examine trends over time in the components of these measures.[28] The data are drawn from FCC Television Broadcast Financial Data for 1975 and 1980 and from the National Association of Broadcasters (NAB) Television Financial

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28 The statistics shown here are at best suggestive of the relationship between characteristics of the market and broadcasters' financial condition. More rigorous statistical techniques, such as multiple regression analysis, would be required to provide a definitive explanation of the mechanisms at work.

Report for more recent years.[29] The data are averages over all reporting stations in each category.

Table 10 shows averages of net revenues, expenses, and profits in 1989 for commercial stations grouped by ADI market rank.[30] In general,

TABLE 10
AVERAGE REVENUES, EXPENSES, AND PROFIT OF COMMERCIAL TELEVISION STATIONS, 1989

ADI Market Rank	Average Net Revenue ($ Million)	Average Expenses ($ Million)	Average Pre-Tax Profit ($ Million)	Profit as % of Net Revenue
1-10	56.4	40.7	15.7	27.8
11-20	26.8	23.1	3.7	13.7
21-30	20.1	17.3	2.8	14.0
31-40	13.8	13.7	0.2	1.3
41-50	11.4	10.4	1.0	8.7
51-60	8.9	9.0	(0.1)	(1.4)
61-70	8.5	7.7	0.9	10.1
71-80	7.1	6.8	0.2	3.5
81-90	6.1	5.8	0.3	5.6
91-100	6.5	5.7	0.7	11.3
101-110	5.3	6.1	(0.8)	(15.3)
111-120	5.0	5.4	(0.4)	(8.2)
121-130	4.2	4.7	(0.5)	(10.8)
131-150	3.8	4.2	(0.4)	(11.3)
151-175	3.6	3.6	0.1	1.6
176+	2.5	2.8	(0.2)	(8.1)

SOURCE: NAB, Television Financial Report, 1990, pp. 1-16.
NOTE: Parentheses denote loss.

29 FCC, Public Notice, "TV Broadcast Financial Data," August 2, 1976; FCC, Public Notice, "TV Broadcast Financial Data," August 10, 1981; National Association of Broadcasters, Television Financial Report, (Washington, D.C.: National Association of Broadcasters, 1986, 1987, 1988, 1989, 1990).

30 Net revenue is gross revenue minus agency and rep commissions, not gross revenues minus costs. NAB, Television Financial Report, 1990, p. 118.

stations in large markets have many times the revenues and expenses, and much larger percentage profits, than stations in small markets. Average 1989 revenues range from $56.4 million[31] in the top ten markets to $2.5 million in markets ranking below 175. The high revenues of stations in large markets are usually explained by the high rates advertisers are willing to pay to advertise to large audiences, coupled with a limited number of frequency allotments that prevents expansion of the number of broadcast stations.

Average annual expenses were $40.7 million for stations in the top ten markets but only $2.8 million for markets below 175. Assuming similar service areas across markets, the technical cost of delivering signals is invariant with the number of viewers. While cost differences exist between UHF and VHF stations, and rent and other input costs are likely to be higher in large markets, such cost differences are highly unlikely to explain the pattern of expenses seen here.

Despite the high average expenses in large markets, average profits were also very high in the top 30 markets. In the top ten markets they amounted to 27.8 percent of net revenue for all stations.[32] This pattern of

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31 In the largest markets, some stations have substantially higher revenues.

32 For network affiliates average profits were 38.0 percent of net revenues in the top ten markets. Ibid., p. 34.

costs and profits is consistent with artificial supply limitations in large markets, and with stations in those markets driving costs above the competitive minimum in an attempt to increase their audiences through expenditures on improved service, principally more expensive programming, when they cannot increase the quantity of programming and advertising time or compete for viewers by price. Noll, Peck, and McGowan saw a similar pattern of profits in 1973, and noted that the high profits of television broadcasting are an indicator that too few resources are being devoted to the industry.[33]

Not all stations in large markets shared the high profits, however. At least 25 percent of stations in the top ten markets experienced losses.[34] In the current market, many stations experiencing losses may be new entrants or UHF independents that may have been profitable when there were fewer competing channels.[35] In any case, great differences clearly exist in the competitive success of large market stations.

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33 Roger G. Noll, Merton J. Peck, and John J. McGowan, Economic Aspects of Television Regulation (Washington, D.C.: Brookings, 1973), pp. 17-18.

34 NAB, Television Financial Report, 1990, p. 1.

35 In the past, differences in profits among stations within a market have been explained by higher costs and smaller coverage areas of UHF relative to VHF stations, lack of attractive non-network programming due to the higher costs of syndication relative to networking, and smaller audiences and revenues of non-network stations. See Noll, Peck, and McGowan, Economic Aspects of Television Regulation, pp. 58-96. Satellite delivery has since largely eliminated cost differences between networking and syndication, and cable has removed some, but not all, of the UHF handicap.

In smaller markets profits were lower than in large markets. Aggregate losses occurred in most size classes of markets below the top 100.[36] At least 50 percent of independents in all market classes below the top ten experienced losses.[37]

Trends in Profits

Average profits of network affiliates have been extremely high, over 20 percent of net revenues, throughout the period studied (table 11).

TABLE 11
PROFITS OF COMMERCIAL TELEVISION STATIONS AS A PERCENTAGE OF NET REVENUES, 1975-1989

Year	Affiliates*	Independents*	500 Largest Industrial Corporations**
1975	26.2	8.1	
1980	29.1	17.1	4.5
1985	29.9	13.3	3.9
1986	27.9	(0.6)	4.1
1987	26.4	(1.8)	5.1
1988	25.0	(3.2)	5.5
1989	21.8	1.5	4.7

SOURCES: 1975 and 1980, FCC, Public Notice, "TV Broadcast Financial Data," August 2, 1976 and August 10,1981; other years, NAB, Television Financial Report, 1986 through 1990; for 500 largest corporations, 1980-88, U.S. Bureau of the Census, Statistical Abstract of the United States: 1990 (110th ed.) Washington, D.C. 1990, p. 542; 1989, Fortune, April 23, 1990, p. 339.

NOTE: Parentheses denote loss.

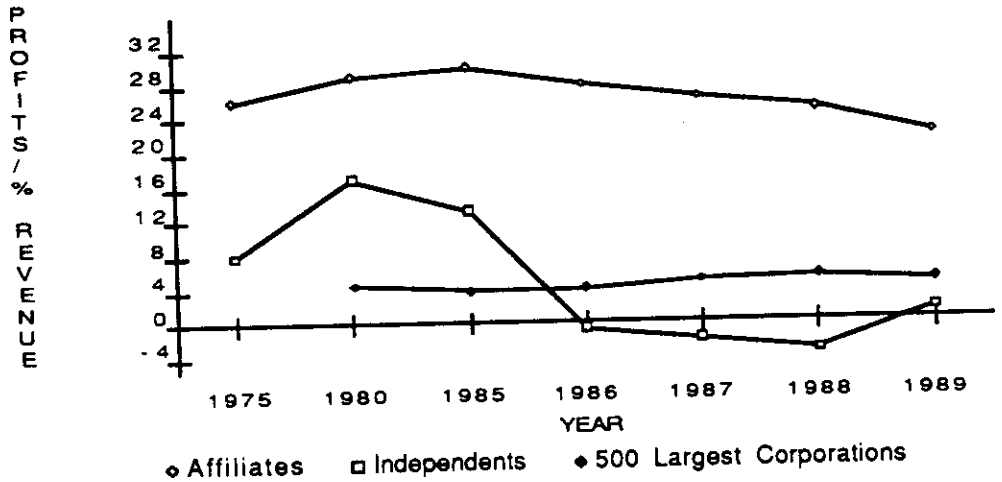
*Average for all reporting stations in class. **Median return on sales.

36 This is not to say, however, that many stations, especially network affiliates, were not profitable in small markets.

37 NAB, Television Financial Report, 1990, pp. 1-16.

Affiliates' profits peaked at 29.9 percent in 1985. By comparison, average profits as a percentage of total receipts for all corporations filing income tax returns averaged 3.9 percent in that year.

FIGURE 6
PROFITS AS A PERCENTAGE OF REVENUE



For both affiliates and independents, average profits show a pronounced downward trend over the last half of the 1980's. For network affiliates, however, average profits remain high at the end of the period, 21.8 percent of net revenues. While independents as a group were marginally profitable in 1989, they experienced increasing losses from 1986 through 1988.[38] The performance of independents improved in 1989 over 1988,

38 Average net losses bottomed out at 3.2 percent of net revenue in 1988. See table 11.

possibly as a result of the success of the Fox stations and falling prices of syndicated programming.[39]

The decline in profits of commercial television stations over the late 1980s is consistent with increased competition from increasing numbers of independent stations and cable systems. As noted above, network affiliates' audience shares, and total audiences, have declined. Viewing of independents, on the other hand, appears to have increased in the aggregate. Yet profits of independents have fallen far more than those of affiliates. An explanation may be found in the increasing number of independent stations, which kept viewership per independent station low. Between 1982 and 1989, while independents' prime-time share of all viewing increased from 14 to 19, the number of independent stations more than doubled. Looking at all-day viewing rather than prime-time viewing, the share of local independents only increased from 12 to 13 percent between 1984/85 and 1989/90.[40] Thus it is not surprising that independents' average profits plummeted during this period.

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39 Disaggregating further shows the same downward trend, in general, for all groups of stations, but VHF independents had high average profits (17.2 percent of net revenue in 1989), while UHF independents had large average losses from 1986 on. Losses of UHF independents averaged over 20 percent of net revenues from 1986 to 1988, falling to 13.7 percent in 1989. NAB, Television Financial Report, appropriate years. The high profits of VHF independents may have occurred because they are primarily located in the largest markets and benefit from technical and coverage advantages over UHF stations.

40 See tables 6 and 8.

The difference in profits between large and small markets appears to have persisted over time. Profits were lower in markets below the top 100 than in all markets in 1975 and 1980 as well, but in those years profits occurred, in the aggregate, even in markets below the top 100. In 1980 profits were 26.9 percent of net revenue in all markets and 14.1 percent in markets below the top 100.[41]

The large losses reported here must be interpreted with caution. Accounting losses may not reflect economic losses. For instance, broadcast station selling prices, which reflect the value of the license in addition to the value of plant and equipment, have varied greatly over time. Interest on debt incurred to purchase stations enters into costs and may affect the pattern of profits in ways that are not obvious.

The losses reported in the NAB data may overstate the stations' difficulties, as the pattern of losses over time suggests. The FCC data show, for instance, that the percentage of independent stations reporting losses was 40.2 in 1975 and 45.5 in 1980. The NAB data show that in 1989 between 50 and 75 percent of independents reported losses. For the category with the worst financial performance, UHF independents, the percentage reporting losses was 75.0 in 1975, 88.9 in 1980, and something greater than 75 percent in 1989. With long-term losses of this magnitude, one would expect to see wholesale exit from the market. Yet the number of

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41 FCC, Public Notice, "TV Broadcast Financial Data," August 2, 1976; FCC, Public Notice, "TV Broadcast Financial Data," August 10, 1981.

independents, in particular UHF independents, has grown rapidly over the period. In the early years, growth in numbers of stations was relatively slow, so the losses during that period cannot be attributed, for the most part, to new stations with large startup costs. One can conclude that, while the trend of declining profits or increasing losses is clear, the absolute level of profits or losses, and the implications for the ability of markets to support the existing number of stations, are not.

The industry's expectations concerning future profits are reflected in television station trading prices. The price for which a station sells represents what buyers and sellers believe to be the present discounted value of the station's future profit stream. Television stations typically sold at prices between 10 and 12 times cash flow during the 1980's, but now are reported to be selling at seven to eight times cash flow.[42] Clearly beliefs concerning future profits of television stations have adjusted downward in the recent past.

Trends in Revenues and Costs

Affiliates and independents both enjoyed large increases in real (inflation-adjusted) average revenues between 1975 and 1985, followed by slow growth for affiliates and a slight decline for independents (table 12).

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42 Kevin Goldman, "Sellers Are Finding the Price Isn't Right For Their Television Stations These Days," Wall Street Journal, May 7, 1981, p. B-1.

Affiliates' revenues peaked in 1986. Independents recovered to some extent in 1989 from earlier declining revenues.

TABLE 12
AVERAGE INFLATION-ADJUSTED NET REVENUES
OF COMMERCIAL TELEVISION STATIONS, 1975-1989
(1982-84 Dollars)

	1975	1980	1985	1986	1987	1988	1989	85-89
Revenues ($ Million)								
Affiliates	6.3	8.0	12.1	13.3	12.6	12.7	12.7	
Independents	7.5	9.4	12.2	10.9	11.3	11.1	12.0	
% Change in Revenues								
Affiliates		26.8*	49.8*	10.6	-6.0	0.7	0.6	5.7
Independents		25.2*	29.8*	-10.7	3.3	-1.6	8.5	-1.6

SOURCES: 1975 and 1980, FCC, Public Notice, "TV Broadcast Financial Data," August 2, 1976 and August 10, 1981; other years, NAB, Television Financial Report, 1986 through 1990.

NOTE: Missing data imputed beginning in 1987.

*Over five-year period.

Breaking down costs into their constituent categories can provide an insight into observed cost changes and differences in costs across groups of stations. This section looks first at the composition of costs of commercial broadcast stations in markets of various sizes in 1989, then

examines changes over time in the composition of costs.[43] The most striking difference across markets is the higher percentage of total expenses devoted to news and to programming and production in large markets (e.g., a total of 59.3 percent in the top ten markets) than in small markets (e.g., 23.8 percent in markets below 175) (table 13). This finding is consistent with stations in large markets competing through increased program expenditures

TABLE 13
EXPENSE ITEMS OF COMMERCIAL BROADCAST STATIONS BY MARKET SIZE, 1989
(Percent of Total Expenses)

ADI Market Rank	Engineering	Programming & Production	News	Sales	Advertising & Promotion	General & Administrative
1-10	6.7	42.7	16.6	6.4	5.9	21.6
41-50	6.4	29.1	12.4	9.2	4.2	38.6
91-100	7.9	26.5	11.5	11.6	3.7	38.9
131-150	7.7	17.5	10.8	10.6	2.1	51.4
176+	8.5	14.8	9.0	12.5	2.0	53.2

SOURCE: NAB, Television Financial Report, 1990.
NOTE: Percentages do not add to 100 due to rounding.

where the price and quantity of output are fixed. Also, prices of syndicated programs are to a large extent based on audience size, resulting in higher prices in larger markets for comparable programming.[44] At the same time, engineering, sales, and general and administrative expenses make up a decreasing share of expenses as market size increases.

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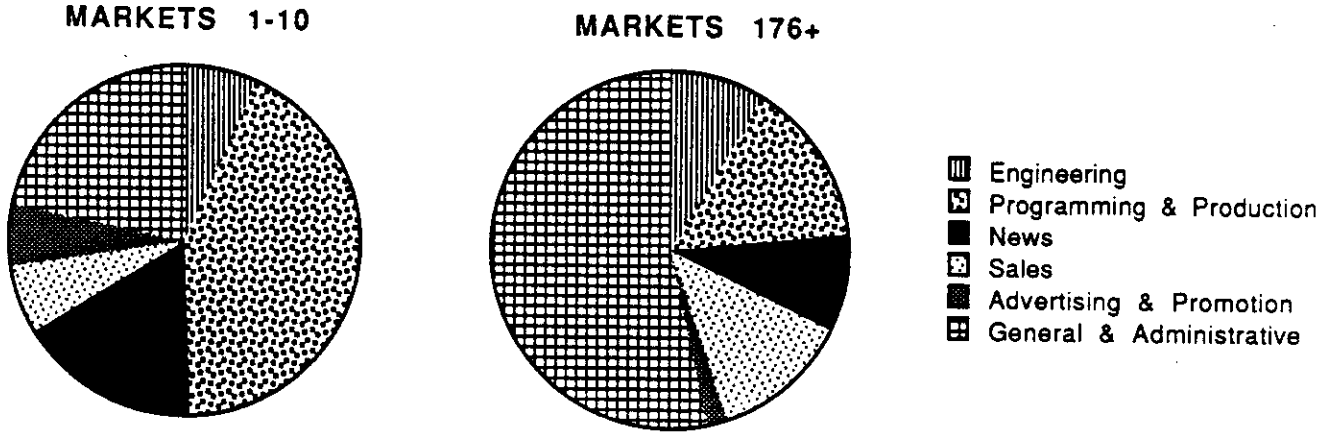
43 Cost categories are taken from the NAB Television Financial Report.

44 Noll, Peck, and McGowan, Economic Aspects of Television Regulation, pp. 71-80.

FIGURE 7
COMMERCIAL TV STATION EXPENSES (%)



Industry observers have reported that the increasing number of over-the-air and cable channels has bid up the price of programming, increasing station costs at the same time that their audiences are falling. To explore this assertion, we examine trends over time in the composition of broadcast station costs.

Table 14 shows programming expenses of commercial broadcast stations as a percentage of total costs. Where data are available, programming expenses are further broken down into broadcast rights, news, and other programming expenses. Affiliates and independents were examined separately because affiliates' program acquisition arrangements with the networks make their cost structure different from independents'.

TABLE 14
PROGRAMMING EXPENSES OF COMMERCIAL BROADCAST STATIONS, 1975-1989
(Percent of Total Expenses)

	1975	1980	1985	1989
AFFILIATES				
Programming	42.8	42.5	43.8	44.3
Broadcast Rights	12.1	11.5	11.8	18.0
News	--	--	20.6	19.1
Other	--	--	11.4	7.2
INDEPENDENTS				
Programming	48.8	49.4	52.5	57.1
Broadcast Rights	26.8	32.6	39.2	43.4
News	--	--	4.3	4.3
Other	--	--	9.0	9.4

SOURCES: 1975 and 1980, FCC, Public Notice, "TV Broadcast Financial Data," August 2, 1976 and August 10, 1981; other years, NAB, Television Financial Report, 1986 through 1990.

NOTE: For consistency, expense categories from the FCC reports were used. The NAB categories of "programming and production" and "news" were combined into "programming." "Broadcast rights" includes features, amortization of all syndicated programs, specials, sports events, and barter programming.

For both network affiliates and independents, programming is by far the largest expense item, averaging over 50 percent of total expenses for independents at least since 1985.[45] Programming expenses are a lower percentage of the total for affiliates because they do not pay for network programming with cash. On the other hand, affiliates spend far more for news, about 19 percent of the total as compared with about 4 percent for independents.

45 Comparing this finding with table 13 makes clear that large-market stations swamp small-market stations in the data.

Programming expenses as a percentage of the total appear to have increased slightly for affiliates and considerably, 8.3 percentage points, for independents over the period. For affiliates, the share of broadcast rights has increased much more rapidly than all program expenses. Clearly increasing costs of broadcast rights contributd substantially to the decline in broadcast station profits over the period.

Stations appear to devote only a small percentage of total expenditures to local programming. Excluding news, program expenditures other than those for broadcast rights were less than 10 percent of total expenditures in 1989 for both affiliates and independents. For independents, program expenditures, even including news, for anything other than broadcast rights were less than 14 percent of the total. Moreover, the figures in table 13 suggest that even these expenses were disproportionately incurred in large markets.

SUMMARY

The number of broadcast stations, particularly UHF independents, has increased greatly in the past decade, largely because cable carriage has reduced the disadvantage of UHF relative to VHF stations and thus increased their potential audiences. At the same time, broadcast station audiences are declining. Viewing hours per household appear to be declining. Cable households view less over-the-air television than non-cable households, and the share of cable-originated services in their viewing is increasing.

In households with pay cable services, less than half of viewing is accounted for by broadcast television. Prime-time network audiences have been falling since 1980; affiliates' audiences appear to have been falling faster during non-network time periods than during network-programmed periods. While viewing of independent stations as a group has increased, average per-station viewing has fallen because of the increased number of independent stations.

Broadcasters' revenues fell over much of the late 1980's while programming costs increased, resulting in declining profits or increasing losses for all classes of stations, with heavy losses concentrated among UHF independents and small-market stations. Independents appear to have had a reprieve in 1989. Unless the longer-term trend reverses, a shakeout could well occur. Changes in revenues appear to have lagged behind changes in viewing: while network audiences have been falling at least since 1980, affiliates' revenues peaked in 1985-86. The lag in the advertising market suggests that current declines in audiences will result in further declines in revenues in years to come.

Great differences emerge in costs, revenues, and profits between large-market and small-market stations. Stations in large markets on average appear to have revenues and expenses many times as large as those in small markets and to enjoy high but falling profits. The level and structure of the costs of large market stations suggests that they have considerable leeway to reduce costs if revenues fall. Marginal stations in large

markets, however, may not have the same ability to reduce costs. In intermediate-size markets, cost-cutting also appears to be possible; some small-market stations may have little room to cut costs.

V. TECHNOLOGICAL ISSUES

Several new technologies may radically change the economics of video distribution and the range of services delivered. Video compression is the development likely to have the biggest impact in the coming decade. Video compression technologies offer the potential to expand greatly the capacity of video distribution systems. While video compression is likely to be utilized first for satellite program distribution, it is applicable to cable and terrestrial transmissions as well. Another potentially important technology now under development is high definition television (HDTV), which would provide substantially better picture and sound quality.

Interactive services (i.e., those utilizing two-way communications) is a third area of technological development that will permit enhanced offerings of services available today such as pay-per-view and home shopping. Should significant demand for additional interactive services develop, interactive capacity will be an important determinant of the popularity of the various delivery systems.

A fourth important area of technological change is signal encryption. Any distribution system that relies even in part on subscriber fees must have an adequate method of controlling access to the product. In a wide range of applications, this means encrypting the signal. Video service providers are confronting, and will continue to confront, issues relating to the security and cost of encryption systems.

This chapter discusses the technology developments outlined above. Video compression is examined first, followed by HDTV, interactive television, and encryption.

VIDEO COMPRESSION TECHNOLOGIES

Digital video compression is a signal processing technique that permits transmission of a television signal using significantly less bandwidth than is currently needed (6 MHz for terrestrial broacast signals and cable and 24 MHZ for satellite signals). Digital video compression technology is applicable to all of the video delivery systems -- satellite, cable, broadcast, and wireless cable. For a given compression ratio, twice as many NTSC signals can be transmitted via a 24 MHz satellite transponder as via a 6 MHz terrestrial channel. Compression methods now under development promise to permit as many as eight standard NTSC television signals to be carried on a single satellite transponder.[46]

The technical details of compression technology are beyond the scope of this paper. However, the key effects of video compression will be a substantial increase in channel capacity and a concomitant reduction in the cost of a channel. As a consequence, delivery systems that utilize

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46 This satellite transmission compression ratio translates into a four-to-one ratio for terrestrial transmissions. Leland L. Johnson and Deborah R. Castleman, Direct Broadcast Satellites: A Competitive Alternative to Cable Television?, R-4047-MF/RL, (Santa Monica, CA: RAND Corp., 1991) ("RAND DBS Report"), pp. 51-59. See also Cable World, March 18, 1991, p. 9.

compression will be able to offer a substantial degree of time diversity. This could mean separate feeds of cable and broadcast networks for each time zone in the United States, and it could also mean staggered starting times for pay-per-view exhibitions of popular movies. In other words, a pay-per-view programmer could transmit a box office hit several times each night, with starting times every fifteen minutes or half hour of prime time. Since viewers would never have to wait very long for their chosen movie to begin, this service can be characterized as "near video on demand."[47]

The reduction in the cost of channel capacity will also lower the barriers to entry for new channels. As a result, it is likely that more

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47 Chapter VI contains a more extensive discussion of near video on demand and timeshifting in general. An alternative to near video on demand is pure video on demand, which would allow a subscriber to dial up a movie or other program at will. The technology to provide video on demand appears very expensive and is not yet commercially available. Leland L. Johnson and David P. Reed. Residential Broadband Services by Telephone Companies? Technology, Economics, and Public Policy. R-3906-MF/RL, (Santa Monica, CA: RAND Corporation, 1990) ("RAND Broadband Service Report")

Video on demand requires switching capability, as well as at least a fiber optic backbone and some fiber distribution plant and a link to the home that can carry a few switched video lines (to accommodate simultaneous on-demand viewing of multiple programs) in addition to capacity for the package of dedicated channels now used to supply cable programming to subscribers.

Whether it were provided by a cable operator, or even a telephone company, it is not clear if sufficient demand exists beyond near video on demand to justify the investment. For this reason, several firms are now conducting market research to determine the demand for switched video and the exent to which it would substitute for near video on demand and other subscription services. AT&T, TCI, and US West will offer 450 customers video on demand and "enhanced pay-per-view" (50 channels, with time diversity), while GTE's video on demand test involves four households. See Communications Daily, May 6, 1991, p. 2 and June 18, 1990, p. 6.

special interest or "niche" channels will develop. A related possibility is the "home shopping mall," which would consist of a group of home shopping channels, perhaps as many as 20 or 30, specialized by product offered.

Compression will also likely facilitate the introduction of HDTV. HDTV will require transmission of much more information per frame than standard NTSC. At present, it appears that no more than two, and possibly only one, HDTV signal can be transmitted per terrestrial channel or satellite transponder.[48] However, compression can free up capacity for HDTV transmissions by allowing consolidation of the NTSC transmissions onto fewer channels. It is worth noting that most of the contenders for the United States HDTV terrestrial transmission standard are now digital systems.

In the satellite arena, compression could interact with other technical factors to make DBS more feasible. One of the selling points of DBS is compact, inexpensive receiving equipment. Hence, in the absence of compression, to receive more than the 32 channels assigned to each orbital slot,[49] DBS reception equipment would have to be "tunable," i.e., it would have to be possible to adjust the dish antenna so it pointed at different satellites. It is, of course, possible to adjust the position of the dish antenna. However, equipment to do so accounts for a significant share of C-

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48 RAND DBS Report, p. 51.

49 E. E. Reinhart, "Satellite Broadcasting and Distribution in the United States," Telecommunications Journal 57, No. VI (June 1990) ("Reinhart"), p. 413.

band system cost. Similar equipment to adjust a much smaller DBS dish would likely require additional precision and cost more. Moreover, it would obviously rule out the scenario of a flat, unobtrusive antenna stuck onto the living room window of one's home. On the other hand, a four-to-one compression ratio would yield 128 channels per orbital slot and an eight-to-one ratio would yield 256. At this level of channel capacity, the subscriber would not necessarily need to adjust the position of the dish. Customers could, however, switch to a provider using another orbital slot, but the new hookup might entail a service call from the satellite dealer to "repoint" the antenna.

Compression also offers the possibility of substantial channel capacity expansion to cable operators.[50] It can be applied either with or without the introduction of fiber optics into the system. On the other hand, fiber is increasingly being used for high-capacity "backbone" in cable systems. This allows significant expansion of channel capacity, because the coaxial cable used to make the final connection to the subscriber's home is capable of carrying as many as 100 to 150 channels over a short distance. If the coaxial cable link is short enough, the signal can be transmitted without

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50 Firms that are developing compression technology for satellite use are also seeking to adapt their systems for cable use. See Cable World, March 18, 1991, p. 66 and April 1, 1991, p. 27.

amplification.[51] If compression, using a four-to-one ratio, were combined with fiber-coax hybrid systems, a cable system could offer as many as 600 channels.

Compression can also be used with cable systems that utilize only coaxial cable. With the same four-to-one ratio assumed above, a 25-channel cable system could be upgraded to 100 channels and a 54-channel system to over 200 channels. Moreover, the cost of the compression equipment is relatively low. Although no digital video compression converter boxes are on the market yet, they are under development. Cost estimates are in the $100-$200 range.[52] In addition to new customer premises equipment, compression will require some new hardware at the headend, but its cost also appears low, by one estimate as low as $200 per subscriber to upgrade systems to 100 or more channels within two years.[53] This represents a significant savings, since the same source estimates that, without compression, the best option for upgrading would be to 60 or more channels over five years for $300-$600 per subscriber.

Digital compression is also applicable to terrestrial broadcasting, with the posibility that a compression ratio of four-to-one or more is achievable. Thus, a market with ten broadcast channels could expand to at least 40

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51 Time Warner has announced plans to upgrade its Queens, New York cable system to 150 channels using this technique. Communications Daily, March 8, 1991, p. 3.

52 See Satellite Business News, April 3, 1991, pp. 1, 22; Broadcasting, April 8, 1991, p. 66; Cable World, March 18, 1991, p. 9.

53 Communications Daily, April 12, 1991, p. 3.

channels for viewers with the appropriate reception equipment. In this environment, the Commission might well wish to re-examine its dual networking rule. This rule, in essence, prohibits any firm from operating more than one television broadcast network. The ability to obtain packaged programming from multiple suppliers is particularly important in the compression context, since it is likely that only a small share of the new capacity will be filled by locally produced programming. On the other hand, to the extent that compressed video channels were offered on a subscription basis, they might not constitute broadcasting at all, and thus might not be subject to the dual networking rule.[54]

Currently over 40 percent of television households rely on free over-the-air television for their video programming. For those households, investment in the additional equipment needed to receive compressed video may not be immediately attractive. Because households that did not make such an investment would lose service if local broadcast stations adopted video compression, it is likely that compression will not be initially adopted for broadcast transmissions.[55] It is more likely to be introduced along with HDTV, since a new receiver will be required in any case for HDTV and most of

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54 See Subscription Video Report and Order.

55 On the other hand, cable and satellite distribution systems could introduce compressed video by replacing their subscribers' converters and raising the customer premises equipment rental fee component of the monthly subscription bill.

the leading candidates for the American HDTV transmission standard are now digital.

HIGH-DEFINITION TELEVISION

High-definition television is a term used to describe technologically-advanced television systems now under development that will greatly improve the picture and sound quality of television signals. HDTV systems will have a larger number of horizontal scanning lines, better color fidelity, freedom from various artifacts of the transmission system, and a wider aspect ratio (ratio of width to height) than conventional television. New television receivers will be needed to view the improved-quality signal, though FCC rules require that the programming be receivable on conventional receivers through simulcasting.[56] HDTV has been hailed as the first major improvement in television technology since the advent of color.

The likelihood of success for HDTV has been a subject of controversy. Some advocates have seen HDTV as an engine for revitalizing the American consumer electronics industry, and many see a large consumer market for HDTV.[57] On the other hand, the receiving equipment will be expensive--

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56 Tentative Decision and Further Notice of Inquiry, MM Docket No. 87-268, 3 FCC Rcd 6520 (1988) at 6531; statement of Chairman Alfred C. Sikes to the Advisory Committee for Advanced Television, March 21, 1990.

57 The Scope of the High-Definition Television Market and its Implications for Competitiveness, Congressional Budget Office Staff Working Papers, July 1989.

possibly as much as $3000 initially--and viewers will need very large screens to be able to appreciate the improvement in picture quality. So the extent of consumer acceptance of HDTV in the short run is unclear.

For broadcasters, the cost of HDTV transmission equipment will be substantial. Recent studies estimate that for a large-market station, $1.5-$2.0 million would be required to transmit a network signal, and $10-$12 million would be required for local production capability.[58]

An Advisory Committee to the FCC is preparing to test HDTV systems to make recommendations to the Commission concerning adoption of technical standards for terrestrial broadcasting. The Commission expects to choose a standard by mid-1993. Service will begin in mid-1995 at the earliest. By the most optimistic current projections, penetration of receiving equipment will not reach 1 percent of television households by the year 2000.[59] So,

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58 "Estimates of TV Stations' HDTV Conversion Costs Cut by 2/3," Communications Daily, October 5, 1990, p. 2.

59 Videocassette recorders required between seven and eight years and color television receivers required eight years to reach 1 percent penetration. "Economic Potential of Advanced Television Products," report by Larry F. Darby Associates for the National Telecommunications and Information Administration, April 7, 1988. Research for Working Party 5 of the Planning Subcommittee of the Advisory Committee on Advanced Television Service indicates that only under the most optimistic assumptions does the rate of adoption of HDTV approach those of color TV or VCRs. Memorandum from Scott Frederick to Michael Tyler, "Revised Projections of ATV Receiver Cost and Penetration Rates for Discussion by the FCC Working Party," August 16, 1990. Demand for HDTV receivers, however, will almost certainly be highly sensitive to price, and developments in all-digital technology that have occurred since the forecasts were made may reduce receiver costs enough to increase the rate of adoption.

according to these projections, HDTV will not have an appreciable effect on the television marketplace during the period covered by this study, though it may be widely adopted shortly thereafter.

Since HDTV is a service that, at least at first, is likely to have small audiences but to be highly valued by its viewers, it is most likely to be introduced by a medium that allows direct viewer payment. HDTV is likely to be offered first on prerecorded videocassettes. DBS also appears to be a particularly promising early delivery medium for HDTV because it can aggregate small audiences on a nationwide basis, and because the cost of HDTV transmission equipment would only have to be incurred once for the whole nation. Cable will probably also offer HDTV before over-the-air broadcasting.[60] In principle HDTV could be introduced by these media without waiting for the FCC to set standards, though in practice compatibility with terrestrial broadcasting appears important enough to cause other media to wait and adopt the broadcast standard.

Since early audiences will be small, and even in the long run HDTV may not increase broadcast audiences, broadcasters' primary incentive to adopt HDTV will be the necessity to meet competition from other media. Broadcasters probably will adopt HDTV after penetration of receiving

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60 S. Merrill Weiss, "Rolling Out Advanced Television in the United States: A Broadcaster's Perspective," Broadcast Cable Financial Journal, March-April 1991, p. 28.

equipment is high enough to make an advertiser-supported service profitable. Broadcasters may perceive HDTV as a large additional expense that is necessary to meet competition but that probably will not increase audiences or advertising revenues.

Incremental improvements in television picture quality may become available before full-fledged HDTV. For instance, Faroudja Labs has developed a technique for improving the picture and sound quality of NTSC signals. Faroudja claims that its system, unlike so-called enhanced-definition (EDTV) systems, is consistent with the NTSC standard and so may be introduced with little or no Commission action.[61] Faroudja has announced that television sets to receive its SuperNTSC system could be available within two years.[62] Encoders required for broadcasting are ready now. Since SuperNTSC capability is expected to add only $300 to the cost of a conventional NTSC receiver, and equipment required by broadcasters might cost $10,000, the system might be attractive to consumers and broadcasters. As in the case of HDTV, however, consumer demand for such an innovation is difficult to predict. In the long run such an incremental improvement in quality would probably have little effect on competition

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61 The Commission has determined that it will select an EDTV system, if at all, only after it selects a simulcast HDTV system. Statement of Chairman Alfred C. Sikes to the Advisory Committee for Advanced Television, March 21, 1990.

62 "Faroudja to Bypass HDTV Test Process, Begin Immediate Commercialization," Communications Daily, September 12, 1990, p. 2.

among broadcasters or between broadcasting and other media because the changes could be adopted readily by all the media.

INTERACTIVE TELEVISION

Interactive television is a service in which the viewer communicates with the programmer/transmittor, whether to select program content or to send some other message. Interactive services could include transactions such as banking or home shopping. One special case of home shopping is the pay-per-view event. Viewers can choose, in advance or on the spur of the moment, to watch a recent movie or sporting event. Currently, most pay-per-view revenue comes from sporting events, such as boxing matches,[63] but the advent of near video on demand or video on demand could well increase interest in pay-per-view movies.

One frequently mentioned future interactive application is viewers choosing camera angles in sporting event telecasts. Interactive video plus video compression could allow the viewer to "direct" his or her own telecast of a football game or other sporting event. Interactive television could also be used for polling viewers on various subjects, ranging from local or

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63 A Paul Kagan Associates study indicates that, in 1990, boxing and wrestling accounted for 89 percent of gross pay-per-view revenues. The total gross revenues for the events studied was $136.5 million, with wrestling accounting for $72.5 million and boxing $48.6 million. See Broadcasting, Feb. 18, 1991, p. 49. Table 16 below shows 1990 pay-per-view revenues to cable operators of $417 million. Presumably the $136.5 million represents revenues to the rights holders.

national political issues to how to end a television program to voting for contestants in a talent contest.

The "return channel" that viewers use to transmit messages can be, but does not have to be, integrated with the video distribution system. In the 1970's and early 1980's, Warner Cable experimented with an interactive system known as "Qube" on its Columbus, Ohio cable system and others.[64] Recently the FCC has proposed to allocate a small amount of spectrum, just above television channel 13, for two "viewer response channels." This proposal would permit two television licensees in each market to offer interactive broadcast services to viewers equipped with miniature radio transmitters attached to their television receivers.[65]

The telephone provides a non-integrated interactive capability. In recent years, telephone companies have developed automatic number identification systems that allow them to process thousands of requests in a few seconds. This provides "impulse pay-per-view" capability. In other words, viewers can decide at the last minute to order a pay-per-view movie. While cable and terrestrial broadcasting will be able to offer either

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64 See Edward Meadows, "Why TV Sets Do More in Columbus, Ohio," Fortune, Oct. 6, 1980, pp. 67-73 and "Qube services to be dumped if TCI buys Warner Amex's Pittsburgh system," Broadcasting, April 16, 1984, pp. 94-95.

65 Notice of Proposed Rulemaking in Gen. Docket No. 91-2, 6 FCC Rcd 1368 (1991).

integrated or non-integrated return channels, telephone return channels are the only means of interaction currently available for satellites.

The value of the return channel is related to the range of interactive services offered, which is, in turn, a function of the distribution system's channel capacity or switching capability. For example, in the broadcast television case, a single channel of video is being transmitted to all viewers, so the transmission cannot be customized on a household-by-household basis in response to information provided via the return channel. Hence, interactive broadcasting will most likely be used for home shopping or polling.[66]

With multichannel media such as cable or satellite, the return channel can serve the additional purpose of selecting a particular transmission for reception by a particular viewing household. Thus, in the case of a pay-per-view movie or near video on demand service, the return channel is used to place an order. The viewer's camera angle choice example is similar. One might order this service for the Super Bowl, and have the ability to choose at will among eight or ten different "feeds" of the game.

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66 However, the interactive video data service that the Commission has proposed could be used for two-way communications, and the Commission has analogized it to interactive computer services such as PRODIGY and COMPUSERVE that provide information and services via telephone lines to personal computer users. See Notice of Proposed Rulemaking in Gen. Docket No. 91-2, 6 FCC Rcd 1368 (1991), para. 9; Reply of TV Answer, Inc., RM-6196, filed July 13, 1990; TV Answer, Inc., Submission of Information As Requested by the Commission Staff, RM-6196, filed Nov. 16, 1990; DBS News, May 1991, p. 6.

For services that entail placing a single order but do not require a continuing series of interactions, it is not clear that a return channel more sophisticated or dedicated than a telephone line is needed. Video on demand scenarios frequently include the capability to "dial up" a movie from a library of many titles. While this is a more sophisticated and versatile service, a telephone return channel still appears adequate. There are some continuing interactions, such as video games or catalog shopping, for which a dedicated return channel seems efficient. On balance, though, the need for interactive capability beyond that provided by telephone lines is not clear.

ENCRYPTION SYSTEMS

Any video service provider wishing to charge viewers for its service must be able to control access to that service. For satellite or terrestrial transmissions, in practice this means encrypting the signal and installing a conditional access system.[67] Encryption is important in the cable context as well. First, it is possible to tap into cable systems without authorization. Second, when different signal complements (e.g., tiers of basic services, premium channels, or pay-per-view events) are delivered to different subscribers, it is necessary to limit subscribers to services they are authorized to receive. Although single channel subscription services

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67 Encryption and decryption refer to the process of "scrambling" and "descrambling" the signal, while conditional access refers to the process of authorizing particular subscribers to decrypt particular packages, channels, or transmissions.

have been offered in the past, it appears that subscription services are only viable as part of a package over which the costs of encryption, decryption, and conditional access can be spread.

The choice of an encryption system or systems affects the number of households willing to purchase subscription services. Hence, this choice also affects the degree of competition that broadcast television will face from subscription services. First, programmers will not continue to supply their product to distribution systems without reasonably secure encryption and conditional access systems; unfortunately, there are no foolproof systems.[68] Second, the choice of encryption system or systems affects the cost of reception equipment, whether it be a cable converter box or a satellite integrated receiver decoder. Equipment cost is a determinant of the price subscribers must pay for subscription services. In particular, if multiple, incompatible encryption systems are in use, equipment that can decode all

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68 Theft of services is a significant problem both in the cable and the HSD context. In addition to reducing the revenues of cable operators and programmers, it also results in higher prices to legitimate customers. The impact of theft of services, colloquially referred to as "piracy," is greater in the satellite context. The conservative estimates are that 50 to 60 percent of those receiving scrambled satellite services are stealing them. See Report in Gen. Docket No. 89-78, 5 FCC Rcd 2710 (1990) ("FCC Encryption Standards Report") para. 39. In the cable case, the corresponding figure is roughly 13 percent. This calculation is based on 8 million households receiving basic cable service without authorization and 51.6 million basic cable subscribers. See Cable World, Jan. 21, 1991, p. 10 and table 15 below. By contrast, there are 710,000 legally authorized home satellite dish subscribers. See note 113 below.

services will likely cost more than if only a single system is in use.[69] When an encryption system is compromised, it can either be scrapped or repaired. In either case, subscribers face additional costs -- purchasing a new decoder or paying for an upgrade of the old one. Thus, system security affects equipment costs too.

SUMMARY

Digital compression is the technological factor that almost certainly will have the biggest impact on the video delivery marketplace over the next ten years. It will allow for greatly expanded capacity on all media and will reduce the cost of channel capacity, thus spurring the development of new, competitive program channels, many of them narrowly focused. Compression will be implemented first for satellites (within the next year), then for

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69 Most satellite cable programming services are now encrypted using the Videocipher II technology. FCC Encryption Standards Report. Because programmers have powerful incentives to make their wares available to as many households as possible, they will be likely to address any problems of incompatible encryption standards that may arise. The options for dealing with such issues include adoption of a voluntary standard, simulcasting programming in different formats (the practicality of this option will be enhanced by the reduction in transponder costs that video compression is likely to bring), and pursuit of technologies to reduce the cost of a "multi-standard" decoder. One such technique would be adoption of a standard decoder interface. This would allow interchangeability and manufacturers could offer receivers with multiple standard encryption ports for maximum flexibility. The "smart card," a cartridge that can be inserted in the back of a decoder to change the manner in which the decoder is authorized to receive scrambled services, could be used with the standard decoder interface in a multiple encryption standards environment, or to restore security to a compromised encryption system. The smart card offers the possibility to make theft of service unprofitable by permitting relatively inexpensive security upgrades, either at regular intervals or in response to specific breaches in the encryption system.

cable (in a few years), and last in broadcast television (probably not until broadcast HDTV is deployed).

It is impossible to forecast the rate of diffusion of HDTV with precision. However, because , in the early years, home receivers will be expensive, adoption is likely to be slow. Moreover, at the beginning, the lack of HDTV receivers will make HDTV broadcasting unprofitable, while the lack of programming will retard the purchase of HDTV receivers. This, plus the cost of HDTV broadcast transmission equipment, makes it likely that HDTV will be introduced first by prerecorded tapes and then by satellites, which can aggregate audiences efficiently over large geographic areas. The practical impact of HDTV on broadcast television by the end of the decade will be small.

With respect to interactive television, in the absence of switched video, little appears to be gained by having a dedicated return channel. The common telephone line appears to be sufficient, and there is no evidence that a dedicated return channel, given the amount of time it would be used, would be cheaper than the public switched network. The remaining question is the demand for services that can be delivered by a cable or satellite system and requested by a telephone call. The utility of interactive broadcast services will be limited by the relatively limited channel capacity available.

Encryption technology facilitates or permits the operation of subscription services, which compete with broadcast television. The

technology, particularly in the satellite area, is evolving toward flexible systems that can be upgraded at relatively low cost in the event of a security breach. In the event that satellite programmers adopt incompatible encryption technologies, incentives will exist to develop multistandard decoders.

Overall, technological developments are likely to increase competition to broadcasters. Expansion of channel capacity will benefit nonbroadcast media disproportionately, allowing them to offer more time diversity, as well as additional targeted programming. Technological considerations per se do not change the most likely scenario for broadcast television over the next ten years--a continuing gradual decline in viewing shares. However, if some of the new services technology will make available turn out to have a fundamental effect on the way people watch television (e.g., if pay-per-view is wildly successful) the potential exists for a more rapid erosion of broadcasting's share. On the other hand, these technologies may permit television broadcasters to become multichannel, multi-revenue stream competitors.

VI. CABLE TELEVISION

Cable television constitutes by far the most significant rival to broadcast television today, and is likely to remain so over the next ten years. Cable systems began in areas with poor off-air television reception, and at first primarily offered improved reception of existing broadcast signals or imported a few distant signals. The advent of satellite program delivery to cable headends made possible the nationwide distribution of both broadcast signals and cable networks. The additional programming created a demand for cable even in areas with good over-the-air reception. The major urban areas of the country were generally cabled following the development of these national program services, in part because abundant off-air television service limited demand and in part, perhaps, because construction costs are higher in urban areas. Cable subscribership remains lower in most large urban areas as well.[70]

HISTORICAL DATA AND PROJECTIONS

Table 15 provides historical data on cable availability, subscribership, and penetration for the two main categories of cable television service--basic and pay.[71] Projections of basic cable

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70 In 1990, cable penetration was below the national average in seven of the top ten markets. Television and Cable Factbook, 1990, Services Volume, pp. C-340, C-337-38.

71 The third category, pay-per-view, which is not currently significant, is discussed later in the chapter.

availability and basic cable subscribership for 1995 and 1999, made by Paul Kagan Associates, are also included. Penetration refers to subscribership as a fraction of some universe of households. Thus, "basic cable penetration of homes passed" is basic subscribers as a fraction of homes passed.

TABLE 15
CABLE SUBSCRIBERS AND HOMES PASSED

	1976	1980	1985	1990*	1995**	1999**
Basic Cable						
Television Households (TVHH) (Millions)	69.6	76.3	84.9	92.1	98.3	102.7
Homes Passed (HP) (Millions)	23.1	34.9	64.7	84.0	91.4	95.7
Basic Subscribers (Millions)	11.8	19.2	36.7	51.6	61.0	67.5
Homes Not Passed (Millions)	46.5	41.4	20.2	8.1	6.9	7.0
Homes Not Subscribing (Millions)	57.8	57.1	48.2	40.5	37.3	35.2
Homes Passed/TVHH (%)	33.2	45.7	76.2	91.2	93.0	93.2
Basic Subscribers/Homes Passed (%)	51.1	55.0	56.7	61.4	66.7	70.5
Basic Subscribers/TVHH (%)	17.0	25.2	43.2	56.0	62.1	65.7
Homes Not Subscribing/TVHH (%)	83.0	74.8	56.8	44.0	37.9	34.3
Pay Cable						
Pay Units (Millions)	1.0	9.1	30.6	41.8	49.4	54.7
Pay Units as % of Basic	8.5	47.4	83.4	81.0	81.0	81.0
Pay Households (Millions)	--	13.8***	21.8	24.0	--	--
Pay Households/HP (%)	--	33.0***	33.7	28.6	--	--
Pay Households/TVHH (%)	--	17.3***	25.7	26.1	--	--

SOURCES: For 1995, 1999, Paul Kagan Associates, The Kagan Cable TV Financial Databook (June 1990), p. 10; TVHH, homes passed, basic subscribers for earlier years, Cable Television Investor (Nov. 21, 1990), p. 9, except 1976 TVHH from Television Bureau of Advertising, Inc., "Trends in Television," (April 1990), p. 3; pay units and households from Cable TV Investor, Nov. 21, 1990, p. 9.

*Estimated. **Projected. ***1981.

Basic cable service is a package of channels that generally includes some retransmitted broadcast signals (local and distant), some satellite-delivered cable networks, and some locally-originated cable channels (e.g., public access, educational, and government).[72] The broadcast signals and cable networks generally include advertising. The subscriber pays a flat fee for the entire package of channels. During the past year or so, many cable multiple system operators (MSOs) have "retiered" their cable systems, i.e., divided basic service into two or more separately priced packages.[73] Subscribers are not required to purchase all basic tiers. Press reports suggest that this adjustment is motivated by apprehension that rising cable rates might spark reregulation and by concern over sharply rising carriage fees charged by a small number of particularly popular cable channels. Placing such channels on a separate tier makes it possible to pass on price increases only to those who value the channels.

Pay cable services are offered to subscribers on a per channel basis for an additional fee. They generally do not carry advertising. Examples include Showtime, HBO, the Disney Channel, and some of the regional sports channels.[74]

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72 In the Communications Act, basic cable service is defined as "any service tier which includes the retransmission of local television broadcast signals." 47 U.S.C. 522(2) See also 47 C.F.R. 76.5(ii).

73 For a discussion of retiering and the motivation for undertaking it, see Broadcasting, May 21, 1990, pp. 35-41.

74 Chapter II discusses the importance of direct payment for programming (or any product) as a mechanism for transmitting to producers information

In 1976, roughly one-third of television households had access to cable (i.e., were "passed" by cable). In 1990, 91.2 percent of television households were passed by cable.[75] The share of homes with access to cable that choose to subscribe to basic service rose from 51.1 percent in 1976 to 61.4 percent in 1990. The consequence is an increase in the percentage of all television households that subscribe to cable from 17 percent to 56 percent.[76] The enormous growth in cable subscribership over the period was thus accomplished primarily through rapid construction of cable systems in uncabled areas, accompanied by moderate growth in the percentage of homes passed that subscribe to cable. While penetration of pay services grew rapidly in the earlier years, it appears to have levelled off recently.

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about consumer preferences and providing producers with proper incentives to supply programming closely matched to those preferences. In fact, for cable programming, with the exception of pay-per-view services, the information and incentive functions of prices are limited by the fact that viewers must purchase a bundle of services. This may be a bundle of channels (basic service) or a bundle of programs (a pay channel). Regardless of why cable operators undertake it, retiering can have the effect of restoring some efficiency to the information transmission mechanism. If all programs were pay-per-view, it would be possible for viewers to signal their valuations of those programs much more precisely than they can now. However, the transactions costs of assembling an individual schedule of programming appear excessive. Offering channels on an a la carte basis is an intermediate step, perhaps more practical, that would allow viewers to signal their preferences more accurately than they can now.

75 Other industry sources estimate a lower number of homes passed.

76 Neilsen figures for May 1991 indicate that 60.3 percent of television households subscribe to basic cable service. Communications Daily, June 17, 1991, p. 5. Arbitron data for November 1990 show 58.5 percent of households subscribing to basic service. See National Cable Televison Association, Cable Television Developments (March 1991) p. 1-A.

Table 15 shows that between 1985 and 1990 the pay cable penetration of homes passed actually dropped. The number of pay households increased only modestly.[77]

The projections in Table 15 suggest that over the next decade basic cable subscribership will grow at a slower rate than in the past. The projections reflect a growth rate of basic subscribers of 5.5 percent in 1990 and 2.5 percent in 1999. The slower growth occurs largely, but not entirely, because very little of the country remains uncabled, and in much of the uncabled area, constructing cable systems would be prohibitively expensive. The projections assume that new homes passed subscribe at the same rate as in the past, but subscriber growth in homes already passed slows from 3.9 percent a year in 1990 to 2.0 percent a year in 1999.[78] Press reports speak of market saturation after 1991, so that declining growth rates appear plausible.[79] Although projections of the number of households subscribing to pay cable are not available, current trends seem likely to continue.[80]

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77 Table 16 below indicates a similar pattern for pay cable revenues. From 1985 to 1990, their share in total cable operator revenues fell, while the increase in absolute magnitude was moderate. Competition from videocassette recorders and tape rental may explain this pattern. See chapter VIII below.

78 Paul Kagan Associates, Inc., "Cable TV Programming," August 31, 1990, p. 2.

79 "Cable Growth Pegged at 15 Percent," Multichannel News," January 7, 1991, p. 38.

80 Table 16 projects a modest increase in cable operator pay cable revenues and a declining share of those revenues in total operator revenues.

Data are also available on penetration of homes passed in each of the 211 ADI markets, for December 31, 1989.[81] There are two markets in which penetration was above 90 percent, and an additional nine in which penetration was between 80 and 85 percent. The national average at this time was 59.6 percent. Penetration is presumably highest in those markets where the conditions favor cable television and where cable has been available for a relatively long period of time. These figures support the plausibility (although not the precise magnitude) of the projection in table 15 that 70.5 percent of homes passed in 1999 will subscribe to cable.

Table 16 provides information on the revenues of cable system operators. Roughly half of cable operators' revenues derive from basic subscription fees, which have grown rapidly since 1975. Pay cable fees have grown little in the past few years after growing rapidly between 1975 and 1985. Some in the industry attribute the flat revenues of pay cable to competition from VCRs. Pay-per-view for individual events is a new but growing source of revenue for cable operators. Cable advertising has grown rapidly, but remains only 3.6 percent of cable operators' revenues.

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81 Paul Kagan Associates, Inc. ADI Cable Report: December 31, 1989, June 1990.

TABLE 16
CABLE OPERATOR REVENUES

	1975	1980	1985	1990*	1995**	1999**
Revenues ($ Million)						
Total	804	2603	9305	17874	28045	38401
Basic	764	1649	4353	9828	14953	20151
Pay	29	785	3787	5108	6501	7650
Pay Per View	--	--	--	417	1677	3913
Advertising	--	8	167	635	1500	2402
Other	11	161	998	1886	3414	4285
Percent of Total						
Basic	95.0	63.3	46.7	55.0	53.3	52.5
Pay	3.6	30.2	40.7	28.6	23.2	19.9
Pay Per View	--	--	--	2.3	6.0	10.2
Advertising	--	0.3	1.8	3.6	5.3	6.3
Other	1.4	6.2	10.7	10.6	12.2	11.2

SOURCE: Paul Kagan Associates, The Kagan Cable TV Financial Databook (June 1990), p. 10, 12, 70.
NOTES: Advertising is "national and local spot." Other includes: expanded basic, second set hookup remotes, etc. Estimated expanded basic revenues were $440 million in 1990.
*Estimated. **Projected.

The projections in table 16 suggest that the relative importance of basic cable revenues will not change much in the next ten years. In 1990, basic fees were 54.9 percent of total revenues, while they are projected to drop only to 52.5 percent in 1999. While pay-per-view revenues are projected to increase significantly in relative terms, from 2.3 to 10.2 percent of total revenues, this development appears to reflect a switch from pay-per-channel to pay-per-view programming. The sum of pay and pay-per-view revenue shares hardly changes, according to the projections, with a 30.9 percent composite share in 1990 and a 30.1 composite share in 1999.

Cable subscription revenue is a measure of the value viewers place on cable service. The magnitude of viewer payment for cable is strikingly large. Cable operator revenues, not including advertising, in 1989 were 63.5 percent of total broadcast advertising revenues. Including cable network and local cable operator advertising, cable industry revenues were 71.8 percent as great as those of the broadcast industry, or 41.8 percent of the broadcast-cable total.[82] Yet cable, including distant signals and superstations, accounted for only 32 percent of viewing in 1989/90[83], and cable advertising remains far below its potential level. Clearly cable has succeeded in earning much more revenue per viewer-hour than broadcasting.

THE COMPETITIVE IMPACT OF CABLE ON BROADCASTING

In order to predict the future competitive impact of cable on broadcasting, it is necessary to examine the number of television households that will not be reached by cable and the expected viewing of broadcast programming in cable homes. The projections for 1999, reported in table 15, include an estimate that 35.2 million television households, 34.3 percent of the total, will not subscribe to cable. According to the Kagan projections, 6.8 percent of television households will not have the option of subscribing

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82 See table 2 above.

83 See table 6 above. The cable viewing fraction for 1988/89 was 29 percent. See Cabletelevision Advertising Bureau, Cable TV Facts, 1990 ed., pp. 12-13.

to cable and 27.5 percent will be passed by cable but choose not to subscribe. In 1990, 35.2 percent of television households could subscribe but chose not to do so.

If it is assumed that approximately one-third of 1999 television households do not subscribe to cable, then, at least in principle, broadcasting will retain a considerable advantage over cable in terms of access to large audiences. But the advantage in penetration enjoyed by broadcast television will be more than offset by a decline in viewing if a large enough proportion of cable households shifts enough of its viewing from broadcast to cable. On the other hand, to the extent that it improves the reception of over-the-air stations, cable may increase the audiences of those stations above what they otherwise would have been.

Both cable subscribership and viewing patterns in cable households depend on the menu of programming offered by cable. The projections in table 15 are, presumably, based on some assumptions about the content of cable programming. The relatively modest predicted increases in penetration of homes passed suggests that radical changes in the nature and popularity of cable programming are not anticipated. Likewise, extrapolation of trends in audience shares reported in table 6 above also suggests evolutionary rather than revolutionary changes in cable programming.

In order to assess the plausibility of this pattern, it is worth examining the range of cable offerings available today and identifying developments that might change it in such a way as to affect the growth of

cable relative to broadcasting. Changes that might increase the popularity of cable are more and better programming, innovations in payment mechanisms such as pay-per-view, increased channel capacity, and increased timeshifting capability. Miscellaneous other factors are also briefly discussed.

Prospects for New Programming

While basic cable channels as a group have a viewing share in the range of those of network affiliates, individual cable channels have, in general, much smaller audiences than network affiliates or stronger independent stations. The smaller audiences and revenues of basic cable networks have generally, despite viewer payment, resulted in less expensive programming than is shown on broadcast stations. As discussed below, increases in the revenues of existing cable networks, particularly their advertising revenues, can be expected to permit them to invest in more expensive programming. Such programming will further increase cable penetration, attract larger audiences, and, in turn, erode broadcast audience shares.

In 1990, program services available to cable systems included 73 nationwide basic networks, 14 regional networks, 24 regional sports networks, 9 pay channels, 8 home shopping channels, and 8 pay-per-view

channels.[84] Cable operators clearly have a large number of services and a wide variety of program types from which to choose. Indeed, due to the number of local and distant broadcast stations cable carries, and the local public, educational, and government access channels it provides, few cable systems can carry all of the national and regional services.

Table 17 displays prime-time and all-day ratings for the first quarter of 1991 for the most popular cable television channels. The programming

TABLE 17
CABLE NETWORK RATINGS, FIRST QUARTER 1991

	Prime Time	Total Day
CNN	3.7	2.9
WTBS	2.4	1.6
USA	2.4	1.3
TNT	1.5	0.9
ESPN	1.4	0.7
Lifetime	1.2	0.7
Nashville Network	1.1	0.5
Discovery	1.0	0.5
Nickelodeon	1.0	0.9
Family Channel	0.8	0.5
Headline News	0.7	0.6
MTV	0.6	0.5
VH-1	0.2	0.2

SOURCE: Multichannel News, May 6, 1991, p. 19 and May 20, 1991, p. 56, citing Nielsen Media Research.

84 Network Fin/Syn Comments, Volume I, pp. 76-78. See also Report in MM Docket No. 89-600 ("FCC Cable Report") 5 FCC Rcd 4962 (1990), para. 43 for an estimate that there were 181 existing and proposed pay television and satellite cable services.

of three of the five most popular cable networks in prime time--WTBS, USA Network, and TNT--can fairly be described as similar to that of independent broadcast stations. They offer movies (some old and some new), sports, and entertainment series (some first run and some off network). Clearly, cable's popularity is not based solely on narrowcasting or niche programming. The other two most popular networks--ESPN and CNN--are, of course, more specialized. Moreover, Nickelodeon, another specialized network (presenting childrens programming) is tied for fourth in the total day cable network ratings.

The strong demand for sports programming, and the important role of cable television in meeting it, are demonstrated not only by the performance of ESPN but also by the proliferation of regional sports channels. ESPN, the major national sports network, is available in virtually all cable households. This, and its high ratings (by cable standards), suggest that a substantial proportion of cable subscribers value it highly. The emergence of regional sports channels has been one of the most striking cable programming developments of the past several years. There are now 31 such channels, with 39.1 million subscribers.[85]

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85 Twenty-six of these are affiliated with either the Prime Network or Sportschannel America (SCA), both of which have a national feed with some regional selections. Programming from SCA is available to dish owners. Cablevision, January 28, 1991, p. 41; March 11, 1991, p. 30.

Cable networks can earn more revenue than broadcasters from audience of equal sizes. For basic cable networks, this is because they collect fees from both advertisers and subscribers. For pay networks, it is because viewers value programming more highly than advertisers value viewers.[86] This makes it possible for cable to outbid broadcasters for national or regional rights to programming, such as sports, where cable audiences are large. Some sports programming on cable did not and would not appear on broadcast television, but some of it has "migrated" or has been "siphoned" from broadcast television. The National Football League (NFL) packages on ESPN and TNT are the best but not the only examples of this phenomenon.

The NFL contracts with cable networks have increased the number of games available nationally to those with cable service. Moreover, because those contracts require the cable services to make their NFL games available to broadcast stations in the home markets of the teams that are playing, home town fans without cable service are not deprived of access to their teams' games. On the other hand, ESPN's multi-year contract with Major League Baseball increases the number of games available nationally to cable subscribers, but it has exclusivity provisions that have caused some over-the-air viewers to lose access to some baseball telecasts.

If a substantial additional amount of sports programming leaves broadcast television for cable, broadcast audiences could be reduced

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86 See chapter II.

significantly.[87] Such migration of sports events to cable raises issues of access and income distribution. To the extent that events previously available via broadcast television move to cable, households passed by cable end up paying for something that was previously available free. This constitutes a redistribution of income from consumers to the sports leagues and players and, to a lesser extent, to the cable networks. To the extent that homes not passed by cable had broadcast service available prior to the migration, a loss of access to the events in question and a loss of welfare to those households occurs. The structure of the professional sports leagues suggests that the additional income is unlikely to affect the quantity or quality of football, baseball, or basketball games. The basic problem appears to lie in market power in the production of popular sports events, not in cable networks purchasing the programming.[88]

A look at planned or announced new basic cable services provides additional insight into the range of programming that will be available to cable subscribers in the future. These services include comedy networks, networks devoted to legal matters, children's networks, a science fiction network, a cowboy network, a landscaping network, and several others.[89]

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87 It should be noted, however, that not all broadcast network sports programming has been profitable. See, e.g., Broadcasting, May 6, 1991, p. 19.

88 Political pressure is likely to keep at least some of the major sports events on broadcast television.

89 Network Fin/Syn Comments, Vol I, p 79.

Local programming, particularly news and public affairs, remains the single programming service provided by local broadcast stations that is not yet widely offered by cable. Recently, however, local cable news channels have begun to appear, making clear that cable systems can perform all the functions of local broadcasters. Some planned local cable news channels have delayed their launch for economic reasons, but it appears that many of these channels will, in fact, provide service in the future.[90] At the same time, economic factors have impelled some television broadcast stations to cut back their own news operations.[91]

Pay-Per-View

Pay-per-view programming may also affect the broadcast-cable balance. By charging for single highly-valued events, pay-per-view services come closer than conventional cable services to measuring consumers' tastes for programming, and can generate more revenues per viewer. Because of the higher revenues pay-per-view services generate, they may provide more expensive and more attractive programming. But since per-program fees

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90 "Mooney Urges Reregulation Fight," Broadcasting, April 1, 1991, p. 31. See also "Hearst Mines for Gold in California News," Broadcasting, April 22, 1991, p. 50; "Cox Hopes To Launch Cable News Channel This Year --With Broadcasters," Communications Daily, May 20, 1991, p. 4; "Time Warner Unveils Local News Channel," and "Other Hopefuls Still at Starting Gate," Cable World, May 20, 1991, pp. 1, 6. Most of these proposed channels appear to be in urban areas. It may be that access to a fairly large and concentrated audience is needed to make them viable.

91 Kevin Goldman, "More Stations are Signing Off on 11 p.m. News," Wall Street Journal, May 22, 1991, pp. B1, B9.

discourage viewing, it is not yet clear to what extent they will affect the size of broadcast audiences. Pay-per-view events are now mostly movies or sporting events such as boxing or professional wrestling matches, along with some concerts; the overwhelming majority of pay-per-view revenues now come from boxing and wrestling.[92] Particular events are offered at scheduled times and subscribers place orders for them, generally in advance. With state-of-the-art equipment, orders can be accepted at the last minute as well.

Table 18 provides current data and projections regarding pay-per-view subscription activity. In 1990, about 19 percent of homes passed by cable,

TABLE 18
PAY-PER-VIEW (PPV) SUBSCRIBERSHIP

	1990*	1995**	1999**
PPV Subscribers (Millions)	15.4	33.0	50.1
PPV Subscribers/Basic Subscribers (%)	27.9	54.1	74.2
PPV Subscribers/Homes Passed (%)	18.6	36.1	52.4
PPV Subscribers/TV Households (%)	16.7	33.6	48.8

SOURCE: Paul Kagan Associates, The Kagan Cable TV Financial Databook (June 1990), p. 10.
*Estimated. **Projected.

92 See note 63 above. One indicator of the potential of pay-per-view is the success of the recent Holyfield-Foreman boxing match, which earned between $55 and $60 million in pay-per-view revenues. Broadcasting, April 29, 1991, p. 39.

representing 30 percent of basic cable subscribers, purchased some pay-per-view service. Many of these subscribers purchased very little service; the average monthly pay-per-view revenue per pay-per-view subscriber in 1990 was only $2.25.[93] This is equivalent to at most one event per subscriber per month. However, as table 16 indicates, the total amount of cable operator pay-per-view revenues was a substantial $417 million.

The projected monthly revenue per pay-per-view subscriber in 1999 is only $6.51. Considering inflation, this is probably equivalent to about two events per month. While the number of pay-per-view subscribers is projected to increase substantially, to roughly three-quarters of basic subscribers and one-half of total homes passed, total pay-per-view revenue of cable operators is projected to be only $3.9 billion, or 11.6 percent of total cable operator revenues, up from 2.6 percent in 1990.

Technical factors will undoubtedly affect the growth of pay-per-view service. One is the availability of the necessary addressable converters. In 1990, only 38 percent of basic subscribers had addressable converters; in 1999, 84.4 percent are projected to be so equipped. Also, since programmers and cable operators find it advantageous to be able to cater to the impulse buyer, the ability to process a large number of orders almost instantaneously is important. Various methods, including automatic number

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93 The Kagan Cable TV Financial Databook, June 1990, p. 10.

identification, have been developed to handle the last-minute bulges in orders. As these become more widely applied, the pay-per-view ordering process will become easier, which should spur demand.[94]

The projections of growth in pay-per-view subscribership reported in table 18 appear to be based on the assumption that the nature of the pay-per-view business will not change significantly. They suggest that pay-per-view will probably be used infrequently by large numbers of customers, and so will probably have little effect on broadcast viewing. However, the developments described below under the headings of increased channel capacity and timeshifting could change the nature of the pay-per-view business radically. The assumptions underlying the predictions in table 18 would then be irrelevant, and pay-per-view use would likely be well above the predicted levels.

Increased Channel Capacity

Channel capacity also affects the demand for cable service. Table 19 shows that cable system channel capacity has increased steadily over time. In 1983, the earliest year for which disaggregated data are available, 48.7 percent of cable subscribers were served by systems with

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94 One proposed satellite service, SkyPix, plans to adapt its near video on demand satellite pay-per-view service for cable use. This would make it possible for subscribers without addressable converters, but with compressed video converters, to access impulse pay-per-view services. See Cable World, April 1, 1991, p. 27 and chapter VII below.

30 or more channels, while 21.9 percent had access to 12 or fewer channels.[95] In 1990, the comparable figures were 89.3 percent and 1.3 percent. Almost one-quarter of cable subscribers in 1990 had access to 54 or more channels. A small number of cable systems today offer 100 or more channels.

TABLE 19
CHANNEL CAPACITY OF CABLE SYSTEMS, SELECTED YEARS

	Percentage of Total Systems				Percentage of Total Subscribers			
	1975	1980	1985	1990	1975	1980	1985	1990
Channel Capacity								
54 and Over		8.6***	5.8	8.4	--	--	9.8	24.0
30-53	11.2*		35.9	50.4	--	--	54.8	65.3
20-29		18.1	27.5	14.3	--	--	12.3	7.3
13-19	10.4**	2.5	4.7	2.9	--	--	2.3	0.4
6-12	70.9	66.8	17.6	11.3	--	--	19.4	1.3
1-5	6.7	3.6	0.9	0.3	--	--	0.1	****
Not Available	0.8	0.4	7.7	12.4	--	--	1.4	1.7
Total Number of Systems/Subscribers	3,405	4,180	6,844	9,612	--	--	31,274,771	48,613,439

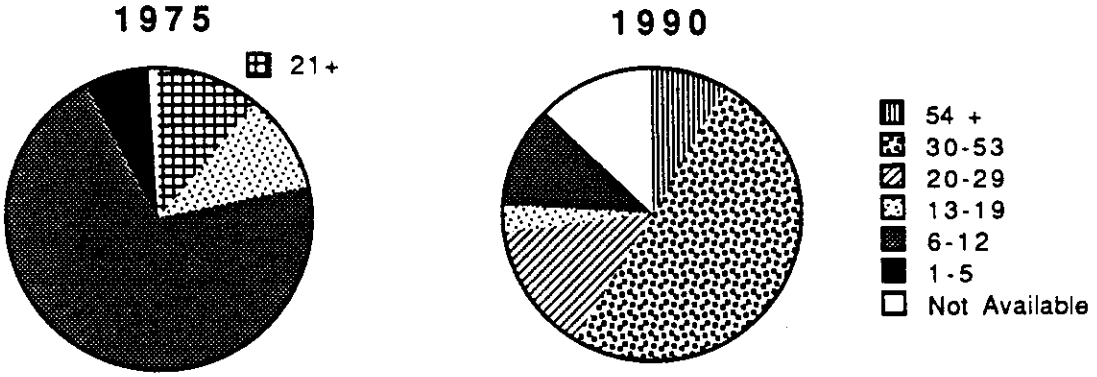
SOURCES: Warren Publishing, Inc., Television Factbook, 1990 ed., Cable and Services Volume, p. C-385; 1985 ed., Cable and Services Volume, p. 1385; 1980 ed., Cable and Services Volume, p. 86-a; 1976 ed., Services Volume, p. 73-a.

NOTE: 1985, 1990 are as of April 1; 1980 is October 15, 1979; and 1975 is September 1.

*21 and over **13-20 ***30 and over ****Less than 0.05

95 Warren Publishing, Inc., Television and Cable Factbook, 1982-83 ed., Services Vol., p. 1548.

FIGURE 8
CABLE SYSTEM CHANNEL CAPACITY



Capacity expansion is high on the agenda of most cable operators.[96] For example, Time-Warner has announced plans for a 150-channel system in New York that would offer interactive services and data information services.[97] Discussions of major capacity expansion stress new applications such as HDTV or video-on-demand rather than new forms of programming, though lack of channel capacity on cable systems appears to be an important impediment to the introduction of new program services. Expanded channel

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96 For the next several years, it is likely that digital signal compression, plus fiberoptic backbone, will be the preferred ingredients for enhancing cable system capacity. See chapter V above for a more extensive discussion of the technological options for capacity expansion.

97 "Time-Warner Constructing 2-Way Cable TV System," New York Times, March 8, 1991, p. D-5.

capacity, and the lower per-channel costs that it will make possible, will likely permit the development of new networks, in particular those aimed at narrow "niche" audiences as well as near video on demand services.

Increased Timeshifting Capability

Enhanced channel capacity (and enhanced satellite transponder capacity) will allow cable operators to offer significantly greater time diversity of programming to their customers.[98] For example, pay-per-view services could be enhanced by "near video-on-demand," a mode of delivery featuring multiple, staggered starts of programming such as recent movies. This would not provide viewers with instant access to the movie of their choice, but would make it available with a limited waiting time.[99]

Increased channel capacity also offers the potential for timeshifting of cable network schedules, or of broadcast network and even station schedules. Premium networks such as HBO and Showtime currently offer two time zone feeds each (keyed to the Eastern and Pacific time zones). Added satellite capacity could make it economical for them to transmit Central and Mountain time zone feeds as well. HBO has announced an experiment to take

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98 Cable networks and operators have touted the time diversity advantages of their service for a long time. Cable networks frequently exhibit the same program more than once per week.

99 Video on demand, discussed briefly in note 47 above, is unlikely to be available to many subscribers this decade. Currently, most pay-per-view revenues come from boxing and wrestling matches, for which there is not substantial demand for timeshifting. See note 63 above.

timeshifting one step further.[100] It will provide three separate channels of HBO and Cinemax (a total of six channels). Cable operators will have access to them at no additional charge. Each channel of HBO will carry the same programming, but it will be transmitted at different times. The Cinemax channels will operate the same way. At a recent cable industry convention, the chairman of the Fox network suggested that viewers would place a high value on timeshifted broadcast network primetime programming.[101] This could comprise multiple broadcasts of programs or episodes during a week[102], as PBS frequently does now, or making available the entire prime time schedule, with staggered starting times, on multiple cable channels.

Other Factors

Many cable subscribers may watch local broadcast channels rather than cable channels out of habit and ignorance of what is available on cable. Over time greater familiarity with cable offerings can be expected to cause viewers increasingly to turn to cable. Events that draw attention to cable, however, such as CNN coverage of the Persian Gulf War, may accelerate the process of change, increasing both cable subscribership and viewing of

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100 "HBO and Cinemax to Offer 3 Channels Each for Price of One," Communications Daily, May 9, 1991, p. 3. The Disney Channel plans to test a second channel to provide time diversity. Broadcasting, June 3, 1991, p. 52.

101 Communications Daily, March 26, 1991, p. 2.

102 ABC and Nick at Nite, a cable channel, have agreed to share a new situation comedy. Episodes will appear first on ABC and then, later in the same week, on Nick at Nite. Broadcasting, June 3, 1991, p. 33.

cable by subscribers.[103] A gradual shift in viewing patterns, however, is more likely than a radical change in the relative popularity of broadcast television and cable.

Willingness to subscribe to cable may also be sensitive to income. A small amount of evidence is available to support the conclusion that a smaller fraction of the very poor than of other income groups subscribes to cable.[104] This suggests that cable subscribership may rise over time with rising income. On the other hand, press reports indicate that the demand for basic cable has continued to increase rapidly despite the current recession, while pay cable revenues have stagnated and, in some cases, declined.[105] It is, of course, possible that increased videocassette rentals have cut into pay cable subscriptions and revenues. Basic cable may be a relatively affordable source of entertainment, even for those in the lowest income classes. For them, as well as for many with higher incomes, basic cable may have come to be considered a necessity, perhaps because it can substitute for more expensive forms of entertainment. As such, consumption may not vary substantially with the business cycle.

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103 But see Joan Sanchez, "Signs of Peace at CNN: Ratings Dropping, Tour Lines Hopping," Associated Press Wire, March 11, 1991. This article notes that CNN rtings have dropped from 9.4 on the night that the Persian Gulf war began to 2.2 by March 7, 1991. On the other hand, this still compares favorably with the network's 1990 average rating of 0.7.

104 Cabletelevision Advertising Bureau, Cable TV Facts, 1990 ed., p. 22.

105 Thomas R. King, "Slump Leads Pay TV to Fight Frill Image," Wall Street Journal, Feb. 7, 1991, p. B-1.

Nevertheless, changes in the services offered by either cable or broadcast television, or reductions in basic cable rates, could attract additional subscribers.

SUMMARY

Now that most homes are passed by cable, future growth is likely to come primarily from expansion in penetration of homes passed. Therefore, the most likely scenario is gradually increasing cable penetration and viewing and additional gradual declines in the broadcast audience share. This is consistent with the projected doubling (in nominal terms) of cable operators' basic subscription revenues. Pay-per-view and advertising revenues will increase in relative importance, helping to produce a greater proportional increase in total cable operator revenues than in basic revenues.

On the other hand, it is possible that substantial expansion in cable channel capacity, the crucial technical development on the horizon, could change substantially the viewing habits of the American public. If demand for pay-per-view services or new niche services increases dramatically, then the competitive position of broadcasting would deteriorate more rapidly. (Of course, viewing of prerecorded material and standard cable channels, basic and pay, would also be affected by such developments.)

Other programming developments, not tied so closely to technical factors, could also cause departure from the evolutionary pattern.

Wholesale migration of sports programming to nonbroadcast media, or a significant expansion in the provision of local programming such as news by cable, could also cut into the broadcast audience. On the other hand, cable's growth could be slowed by loss of the compulsory license to retransmit broadcast programming. This possibility, discussed in more detail in chapter X, could not only raise cable operators' program acquisition costs, but, by providing broadcasters with a second revenue stream (from subscriptions or "retransmission fees") could enable them to acquire more expensive programming. While this would have a positive effect on the competitive position of broadcasting, it alone is unlikely to counterbalance the inroads on broadcast audiences being made by cable networks and increased expenditures on cable programming.

VII. DIRECT-TO-HOME SATELLITE TRANSMISSIONS

Satellite-to-home service is a potentially significant multichannel video service that could increase competition to terrestrial television by offering large numbers of channels of programming directly from a satellite to a home receiving dish without an intervening cable system or terrestrial broadcast station. Direct-to-home satellite transmissions are a significant force today in areas not passed by cable and are likely to become more important in those areas.

In addition to serving uncabled areas, satellite services potentially could aggregate minority-taste audiences on a nationwide basis, thus offering programming that could not be supported otherwise and providing highly-targeted advertising opportunities. Moreover, the ability to aggregate small audiences from many different areas, coupled with the expense of HDTV transmission equipment, makes it likely that HDTV programming will be available via satellite before it is available terrestrially. On the other hand, unlike cable systems, satellites probably could not offer local broadcast channels.[106] Direct broadcast satellite systems, using high-powered signals that would permit use of small, inexpensive receiving equipment, may be able to challenge cable television

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106 Satellites are now used to deliver regional channels, mostly sports, but the potential is there for more, e.g., statewide news channels. The expanded channel capacity that signal compression may bring, plus spot beam technology, could eventually permit services targeted to narrower geographic areas.

directly in the future, but the success of home satellite in cabled areas is by no means assured.

In 1990, between 2.7 and 3 million home satellite dish systems were in use in the United States.[107] This represents roughly three percent of television households. A recent survey shows that 42.2 percent of dish owners are also passed by cable, and 11.3 percent of dish owners actually subscribe to cable.[108] This implies that approximately 20 percent of homes not passed by cable have home satellite dish systems.

The proliferation of home satellite dish systems depends on the following factors: (1) the cost of the reception equipment; (2) the availability of cable service; (3) the size of the dish antenna needed; (4) the availability and price of programming; and (5) the timing of the adoption of certain innovations, in particular digital signal compression. This chapter begins by surveying current and proposed satellite services. After that is an analysis of the prospects of those services in light of the above factors and a brief conclusion.

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107 The lower estimate is from Satellite Business News, November 14, 1990, p. 1; the higher is from Paul Kagan Associates, Marketing New Media, September 17, 1990, p. 7.

108 Satellite TV Week survey, reported in SatVision (the magazine of the Satellite Broadcasting and Communications Association) October 1990, p. 7.

CURRENT AND PROPOSED SATELLITE SERVICES

Satellite services can be divided into three categories: C-band, medium power Ku-band, and high power Ku-band.[109] The categories differ significantly with respect to satellite spacing and permissible transponder power, which together influence receiving antenna size, and with respect to program supply. The high power Ku-band has been allocated by international agreement to the "broadcast satellite service." It is known in the United States as DBS, "true DBS," or high power DBS. Of the three categories, this is the only one originally intended for transmissions directly to the general public. The other two categories are in the "fixed satellite service," and were intended primarily for point-to-point or point-to-multipoint transmissions directed at cable system headends, terrestrial broadcast stations, or other local distributors, which would then retransmit the material to individual households. However, there are operating and planned services in both of these categories that provide programming directly to home satellite dish (HSD) owners.

The C-Band

Today virtually all home satellite dish systems are C-band systems, although a significant minority have Ku-band capability as well. Current C-band antennas are usually ten feet or so in diameter, making them

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109 This section draws on Reinhart for background information on these three categories of system.

impractical in many congested urban areas. In addition to the issue of sheer availability of space, considerations of safety, esthetics, and municipal regulations (i.e., zoning rules) also affect the decision to install a home satellite system. One source estimates that a complete C-band HSD system costs between $2000 and $4000.[110]

Cable programmers use the C-band for delivering programming to cable system headends, and employ the Videocipher II (VC II) technology to encrypt it.[111] Prices, particularly for annual subscriptions, are comparable to or below cable subscriber rates.[112] There are roughly 710,000 legally authorized subscribers to C-band services and at least that many additional signal "pirates" (i.e., households with decoders altered to permit theft of scrambled satellite services).[113] Recently the major cable programmers signed long term leases for transponders on the new generation of C band satellites. Thus, for at least the next ten years, cable networks will almost certainly

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110 Reinhart, p. 417.

111 See FCC Encryption Standards Report.

112 See Satellite Orbit (May 1991), pp/ B3, B7-B9; FCC Cable Report, para. 20 and appendix F, tables 1B and 9; Satellite Broadcasting and Communications Association, SBCA Home Satellite Subscription Information, (May 1990); Second Report in Gen. Docket No. 86-336, 3 FCC Rcd 1202 (1988), paras. 38-50.

113 The General Instrument Corporation (GIC) is the patent holder and primary manufacturer of Videocipher II equipment. GIC figures for April 30, 1991 show 459,000 legally authorized Videocipher II and 251,000 legally authorized Videocipher II Plus decoders. Chapter V contains a brief discussion of signal theft issues.

use C-band transmissions for program distribution, so the home dish market be able to "piggyback" on this programming source during that period.

Medium Power Ku-Band Systems

One medium power Ku-band system is operating and a second one is scheduled to launch soon. PrimeStar is currently offering a package of superstations and pay-per-view services in this band. SkyPix plans to begin its service in the summer of 1991, offering 80 channels of programming by utilizing an eight-to-one signal compression ratio.[114] Most of this capacity will be used to offer popular current movies, each one transmitted several times per evening with staggered starting times, perhaps every half hour. This scheduling provides a service close to video on demand that may be seen as a substitute for cassette rental. Some industry observers believe that, in order to prosper, SkyPix will have to gain access to additional programming, such as popular basic cable channels.

SkyPix plans to sell its reception equipment for $699, while PrimeStar equipment costs $595 installed. Both services claim that an antenna rougly three feet in diameter is needed for reception, both expect to break even

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114 The information in these paragraphs on Primestar is drawn from Satellite Business News, April 3, 1991, p. 4; Nov. 28, 1990, pp. 7, 14; Nov. 14, 1990, pp. 1, 22; Electronic Media, Nov. 5, 1990, p. 12; and Satellite Communications, April 1990, p. 6.

The description of SkyPix is drawn from Satellite Business News, May 1, 1991, pp. 1, 22-23; March 20, 1991, pp. 1, 22; and Oct. 3, 1990, pp. 1, 21.

with 300,000 subscribers, and both plan to move from their leased space on medium power satellites to high power Ku-band satellites (DBS) when such satellites become available later in the 1990's.

High Power DBS

True DBS (i.e., high-powered Ku-band satellite service) is on the horizon. Eight DBS permits have been issued and one application is still being evaluated.[115] The permittees have made varying degrees of progress toward constructing their satellites. None have yet launched, but some launches are currently scheduled for 1994.[116] DBS home reception equipment will likely include a dish antenna 18 inches in diameter. Eventually, antennas may be as small as 12 inches in diameter. Estimates of the initial cost of the systems range from $500 to $700, with one source predicting that equipment costs will fall "rapidly" to from $700 to $300 or less.[117]

ANALYSIS

The growth of the home dish market is difficult to predict. Notwithstanding the relatively high fraction of current dish owners passed by cable, because of the high cost of receiving equipment, the most promising

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115 RAND DBS Report, p. 8.

116 See Satellite Business News, May 15, 1991, pp. 1, 21; June 12, 1991 pp. 1, 22, 23.

117 For information on proposed DBS services, see Broadcasting, April 8, 1991, p. 66 and Feb. 18, 1991, pp. 29-30; Satellite Business News, July 11, 1990, p. 37; and Communications Daily, April 19, 1991, p. 4.

area for expansion in the near term appears to be homes not passed by cable. As table 15 indicates, there are now eight million such homes; in 1999 there will probably be seven million.

Reception Equipment Cost and Availability of Cable Service

In a recent study on cable-DBS competition, Johnson and Castleman conclude that DBS could be competitive with cable in many parts of the country with equipment costs in the $300 to $500 range and that it could be viable in uncabled areas with even higher equipment costs.[118] Equipment cost estimates for the various medium and high power DBS services range from $500-$700, with one prediction that the price will drop to $300. Thus, if Johnson and Castleman are correct, DBS is unlikely to be a major factor in cabled areas, at least initially. The presence today of an estimated 1.2 million C-band home satellite systems in cabled areas suggests that the Johnson-Castleman criteria cannot be mechanically applied. It is clear, however, that the competitive conditions facing DBS are different in cabled and uncabled areas. Satellite service is likely to grow first in uncabled areas and then, possibly, expand to compete directly with cable.

One key component of satellite reception equipment is the decoder. Should DBS services develop with incompatible encryption systems, subscribers could be faced with the need to purchase more than one decoder, or a

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118 See RAND DBS Report, pp. 15-38.

multistandard decoder. This would add to their equipment cost and could limit the number of households choosing to access satellite services.[119]

Dish Antenna Size

Many segments of the satellite industry have placed a high priority on reducing the size of the home dish, believing that the size of the potential market is inversely related to the size of the dish. Currently, the relatively large size of the dish antenna--10 feet in diameter for C-band--presents problems with respect to esthetics, zoning, and even safety (particularly in cases where the antenna needs to be mounted on the roof of a dwelling).

Medium power Ku-band and DBS services will employ dishes one to three feet in diameter, while advances in receiver technology might support the use of four-foot antennas in C-band, if the spacing of satellites is not reduced

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119 Cable subscribers would not be affected significantly by such a situation. The cable operator would presumably provide them with a standard converter box. Since cable operators need to be able to provide all channels on their systems simultaneously, they need a separate receiver and decoder for each channel anyway. If those decoders do not all embody the same encryption system, their costs are hardly affected. See chapter V above for a more detailed description of this issue.

as planned to two degrees.[120] As the size of the antenna declines, more households will likely find HSD systems attractive. It is not clear, however, whether a drop in dish size from ten to four feet or so would spark a substantial increase in the demand for HSD systems. While the industry appears to believe that a drop in size to 18 inches or under would cause a substantial increase in demand, this belief is not based on actual market experience.

With or without a decline in dish size, relaxation of local zoning regulations could result in additional penetration of satellite equipment.[121] In 1986, the Commission preempted certain state and local zoning regulations

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120 C-band satellite operators are currently in the process of implementing a Commission decision, made in 1983, to reduce the spacing between satellites from three degrees to two degrees. That is, new C-band satellites are launched into orbital slots spaced two degrees apart. Elements of the HSD industry, principally makers of home reception equipment, have petitioned the Commission to retain three degree spacing, at least for the satellites used for video distribution. They believe that this would permit good reception by HSD systems with four to five foot antennas. See Petition for Rulemaking In the Matter of Amendment of C-Band Satellite Orbital Spacing Policies to Promote the Development of Video Distribution to the Home, filed Jan. 25, 1991, RM-7628, esp. pp. 11, 21-22, and Reply Comments of General Instrument Corporation in RM-7628, filed April 19, 1991, pp. 17-18 and Attachment A. There is some disagreement on the engineering analysis of the minimum antenna size needed for adequate reception with three degree spacing.

121 The FCC Cable Report notes that the use of HSD antennas is restricted by zoning regulations (para. 103), records the impressions of some commenters that there was "uncertainty at the local level" regarding the Commission's preemption of regulations (para. 135), and recommends that Congress act to prohibit "local governments from regulating installation of reception equipment beyond those provisions reasonably related to a clearly defined health, safety or reasonable aesthetic objective" (para. 142).

that discriminate against HSD antennas.[122] The Commission has before it two petitions that, in essence, request more vigorous enforcement of the Commission's preemption order.[123] Such enforcement might have a significant impact on HSD system sales, and thus might indirectly influence the competitiveness of HSDs with cable, broadcasting, and other video delivery media.

Programming Availability and the Adoption of Certain Innovations

Because of the demonstrated popularity of cable services, it appears that, in order to be competitive, satellite services need to offer cable networks (or close substitutes for them) or new services that are highly valued. Access to cable programming seems assured only for the C-band service. The programming is already being encrypted and delivered to cable headends via C-band so the marginal cost of delivering it to dish owners is quite low (the conditional access and billing system are the primary added expenses).

While DBS cannot deliver local broadcast signals, satellites can deliver the nationally-distributed programming that comprises a large share of local

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122 Report and Order in CC Docket No. 85-87, 57 Fed Reg 5519 (Feb. 14, 1986), esp. paras. 1, 40.

123 Petition of Joseph Carino for Declaratory Ruling, DA 91-145, filed Jan. 21, 1991, and Petition for Declaratory Ruling Clarifying the FCC's Preemption of Local Zoning Ordinances That Discriminate Against Home Satellite Earth Stations, And Instituting Procedural Reforms, Satellite Broadcasting and Communications Association, filed April 16, 1991.

television stations' broadcasts. Currently, distant broadcast stations, both independents and, in some areas, network affiliates, are available via satellite, as are regional services. If the major broadcast networks offered programming directly to viewers (e.g., directly to the home via satellite, or directly to the home via cable) without broadcast stations as intermediaries, DBS's lack of local broadcast signals would become less of a disability.

Services that DBS might be able to offer that are not available on cable, or that might become available on satellite before cable can offer them, include near video on demand and very narrowly targeted programming. With respect to near video on demand, satellite services may have a head start on cable by virtue of their possible earlier implementation of video compression technology. Should these services prove highly valued by consumers, DBS might overcome any comparative disadvantages due to high equipment costs or restricted access to conventional cable programming.[124]

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124 While compressed video services probably will be available in 1991 via satellite, industry sources estimate that compression will not be introduced on cable until 1994. See Cable World, April 1, 1991, p. 44; Communications Daily, March 28, 1991, pp. 2-3. Satellites may have an advantage in the aggregation of narrow preferences because a single orbital slot can serve the entire contiguous United States, while cable faces a significant marginal cost for each additional home passed. By one estimate, the per-channel cost of reaching all television households is $3.7 million via satellite and $378 million via cable. (Calculations based on data in RAND DBS Report, p. 17 and RAND Broadband Services Report, p. 86.) At least one DBS entrepreneur asserts that cable operators will not find it economical to devote channel capacity to services with very narrow appeal. See Broadcasting, April 8, 1991, p. 66.

SUMMARY

Direct-to-home satellite distribution systems, including DBS, are likely to expand, particularly in the non-cabled areas, and particularly if the satellite services gain access to programming at reasonable rates. The effect on the broadcast audience of expanded DBS use in uncabled areas is unclear. Many of the areas not now cabled have very sparse broadast service, so there may be very little audience to erode. On the other hand, while DBS cannot bring local broadcast service to these areas, it can provide superstations and network stations pursuant to the satellite carrier compulsory license (17 U.S.C. 119).

In cabled areas, DBS equipment cost projections and uncertainty regarding access to cable programming suggest that, at least initially, DBS will not be a strong head-to-head competitor delivering conventional cable programming. However, if DBS were to offer popular <u>new</u> services at moderate prices, it could make inroads into both broadcast and cable audiences.[125] The leading possible categories appear to be near-video-on-demand and niche programming. The key unresolved question is what new services will have a significant impact on viewing.

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125 These services could also increase total viewing, but, given the current level, it seems unlikely that the increase would be great. Thus, the primary effect of these new services would be to divert audiences from existing services.

Should significant DBS competition to cable develop, cable systems would likely respond by reducing prices and improving service, thus making cable more attractive relative to over-the-air viewing. DBS competition therefore could cause broadcast viewing shares to fall faster than current projections indicate.

VIII. OTHER VIDEO MEDIA

Videocassette recorders and wireless cable systems provide additional sources of video programming. While unlikely to have the massive effect of cable and, conceivably, satellite service, these media clearly expand viewers' options and affect the broadcast television market. The cumulative effect of several additional alternatives may be considerable. We describe these media briefly below.

VIDEOCASSETTE RECORDERS

VCRs expand the choices available to television households by providing pre-recorded material as well as recording and playing material received over the air. VCRs allow viewers to see material in the home that commercial broadcast TV stations could not offer because it would not be attractive to advertisers or is inappropriate for broadcast, and even of material too specialized to be offered by cable. They also allow viewers to control the time at which they view over-the-air programs. Because VCRs both provide additional options and increase the convenience of over-the-air viewing, in theory they might either increase or decrease the amount of time spent viewing over-the-air material. Some broadcasters also fear that the ability to fast-forward through commercials may reduce the effectiveness of commercial messages.

Videocassette recorders were introduced in the early 1970's and by 1990 were used by over two-thirds of television households, as shown in table 20.

By early 1991, 76.6 percent of television households had VCRs.[126] The Television Bureau of Advertising predicts that penetration will exceed 90 percent by the end of the decade.

TABLE 20
VCR PENETRATION

Year	VCR Households (1000's)	% of TV Households
1975	--	--
1980	840	1.1
1985	17,660	20.8
1990	63,180	68.6
1995*	82,270	84.3
1999*	93,500	91.7

SOURCE: Television Bureau of Advertising, Inc., "Trends in VCR Usage," April 1990, pp. 3, 5.

NOTE: 1975-1990, VCR's, February of each year; households, January of year; 1995-1999, beginning of year.

*Projected.

Table 21 shows that television households with VCRs use their television sets to view nonrecorded material directly or to record it slightly more hours than other households use their television sets.[127] This result would

126 "VCR penetration climbs to 76.6%," Variety, May 31, 1991, p. 45.

127 The differences are small and are unlikely to be statistically significant.

suggest that what little effect VCRs have on time spent watching nonrecorded television programming is positive. Since VCR households probably value television programming more highly than others, however, it is possible that they would have viewed much more broadcast programming than non-VCR households in the absence of a VCR and the option of viewing prerecorded programming. If so, VCRs have a negative effect on viewing that does not appear in the data.

TABLE 21
TELEVISION USAGE OF NON-VCR AND VCR HOUSEHOLDS
(Average Hours Per Day)

Year	Non-VCR Households	VCR Households*		
		Total	Regular Usage	Record with Set Off
1987	6.9	7.1	6.9	0.2
1988	7.0	7.0	6.8	0.2
1989	7.0	7.1	6.9	0.2

SOURCE: Television Bureau of Advertising, Inc., "Trends in VCR Usage," April 1990, p. 6.
NOTE: Data prior to September 1987 based on NTI Audimeter Sample; from September 1987 on, based on NTI People Meter Sample.
*Includes VCR recording with set off but does not include any playback activity.

Time spent using a VCR is shown in table 22. The average time spent both recording and playing has declined since 1986, but the difference between the two, the time apparently spent watching prerecorded material, has increased.[128] Compared with the total time spent with television,

128 This interval, 1.8 hours, is consistent with the viewing of one prerecorded movie per week. This estimate may understate the time spent watching prerecorded material because households may record over-the-air material but never play it back.

however, the numbers remain small: time spent playing a VCR was only 8.0 percent as great as time spent directly watching broadcast or cable television, and time apparently spent watching prerecorded programming was 3.7 percent as great. So even if the number of households with VCRs increases as projected, the effect on aggregate viewing of broadcast television will be modest, probably not more than an additional 1 percent. Prerecorded videocassettes appear to be a closer substitute for pay cable than for broadcast programming, and the fact that pay cable's share of viewing has not increased since the 1982/83 season suggests that VCRs have primarily affected pay cable viewing rather than advertiser-supported cable or broadcast viewing.

TABLE 22
TIME SPENT RECORDING AND PLAYING VCRS
(Average Hours Per Week)

Year	Record	Play	Difference
1986	2.9	4.6	1.7
1987	2.6	4.3	1.7
1988	2.4	4.4	2.0
1989	2.1	3.9	1.8

SOURCE: Television Bureau of Advertising, Inc., "Trends in VCR Usage," April 1990, p. 7.

Expenditures on video programming, however, are large. Consumer spending on rental and purchase of videocassettes in 1989 was reported to be $9.6 billion, which is two-thirds of the amount spent on cable subscriptions

and almost twice the amount of theater box office revenues.[129] This works out to $2.92 per VCR household per week, or roughly the cost of the rental of one videocassette per week. Videocassette expenditures are projected to increase to $16.5 billion by 1995.[130] The expenditures on videocassettes make clear that viewers are willing to spend large amounts for small quantities of highly-valued programming.

WIRELESS CABLE

An alternative multichannel distribution medium is provided by the Multichannel Multipoint Distribution Service (MMDS), commonly called wireless cable. These systems use microwave frequencies to transmit up to 32 channels of programming that can be received by conventional television sets with the aid of a converter. Wireless cable has developed as a pay service that is a closer substitute for cable than for over-the-air broadcasting. In fact, wireless cable systems are considered to provide more promising competition for existing cable systems than do competing second cable systems ("overbuilds") because they can serve small numbers of customers with a relatively small capital investment.[131]

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129 See table 2.

130 NBC, citing Paul Kagan Associates, Motion Picture Investor, Dec. 28, 1989.

131 Cable systems must pass large numbers of homes with cable whether they subscribe or not, while wireless cable systems need only provide a headend and receiving equipment for actual subscribers.

Wireless cable systems use frequencies originally allocated to the Instructional Television Fixed Service (ITFS) and the Private Operational Fixed Service (OFS) in addition to the MMDS channels. Wireless cable providers may lease excess capacity on ITFS channels from the licensees, which are schools and other educational institutions. Aggregating enough channels for a commercially viable service, however, is often difficult. In addition, the maximum number of channels is much smaller than that provided by the majority of cable systems. Expansion of wireless cable systems has been hindered by lack of access to programming, allegedly because programming has been withheld by cable programmers.[132]

Wireless cable systems' penetration has been modest to date, but has grown rapidly, more than doubling since 1988. Current subscribership is about 180,000, or about 0.2 percent of television households, and current revenues are $54.4 million.[133] At least for the next several years, wireless cable systems are expected to succeed in niche markets rather than as major competitors to cable.[134] To the extent that they offer competition to cable systems, however, they will constrain cable systems to offer better service at lower prices. The effect on over-the-air broadcasting will be to

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132 For an extensive discussion of program availability to wireless cable systems, see FCC Cable Report, paras. 100, 114.

133 Channels, December 3, 1990, p. 59, citing Paul Kagan Associates, Inc.

134 Ibid.

reduce audiences somewhat because of greater subscribership to multichannel media.

IX. THE ADVERTISING MARKET

Sale of advertising time and payments from advertiser-supported networks comprise, for practical purposes, the sole sources of revenue for broadcast stations. Consequently the state of the overall advertising market, and competition from other advertising media, crucially affect the health of broadcast television. Here we examine the overall market for advertising and the sub-markets in which broadcast networks, television stations, and cable systems operate, and briefly consider non-video advertising options.

TOTAL ADVERTISING AND VIDEO ADVERTISING

Television advertising is one component of a larger advertising market. Total advertising grew rapidly as a percentage of GNP until the mid-1980's (table 23).[135] Recently the pie has ceased to expand: advertising volume has grown at roughly the same rate as GNP since 1985, and is expected to continue to do so. Video advertising (including broadcast and cable television) grew as a proportion of total advertising through 1984, then declined slightly. Industry projections indicate that advertising, and the video component of advertising, are expected to grow at about the same rate

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135 Forecasts of advertising expenditures are most commonly based on projections of GNP growth with some ad hoc corrections for events such as Olympic and election years and subjective adjustments for structural changes in the economy. "Advertising Revenue's Great Expectations," Broadcasting, April 15, 1991, p. 82. Consequently such predictions are subject to considerable error and should not be given excessive weight. More important for our analysis than precise predictions are the direction of trends and the relative positions of competing media.

as GNP through 1995. Thus the rapid historical growth of television advertising is believed to have come to an end.

TABLE 23
VIDEO ADVERTISING AND GNP

	Ad Volume ($ Billion)	Video Ad Volume ($ Billion)*	Ad Volume/GNP (%)	Video Ad Volume/ Ad Volume (%)	Video Ad Volume/ GNP (%)
1975	27.9	5.3	1.75	18.9	0.33
1980	53.6	11.5	1.96	21.4	0.42
1985	94.8	21.0	2.36	22.2	0.52
1990**	130.5	28.9	2.38	22.1	0.52
1995**	182.7	40.2	2.38	22.0	0.53

SOURCE: 1975-1985, McCann-Erickson, Inc., "Estimated Annual U.S. Advertising Expenditures," prepared for Advertising Age, April 1991; 1990-1995, Television Bureau of Advertising, "Trends in GNP, Ad Volume, and TV Ad Volume 1960-1995," August 1990.

*Includes national syndication and cable. **Projected.

The growth of total advertising expenditures, according to Veronis, Suhler and Associates, has been slowed by corporate restructuring--changes in corporate ownership, leveraged buyouts, and the like--which has retarded the growth of advertising expenditures, in particular shifting advertisers' focus from long-term advertising designed to build product images to short-term promotions. Veronis, Suhler predict a rebound after 1992.[136] Others predict a continuation of a twenty-year trend away from media advertising to

136 Communications Industry Forecast, p. 24.

direct-response advertising and special promotions.[137] Whatever the case in the long term, video advertising expenditures are also in a short-term slump due to the current recession.

The video advertising market consists broadly of two sub-markets, the national market and the local market. The national market involves sales of advertising time by networks, syndicators, and broadcast stations to national advertisers. Broadcast networks sell time they receive from their affiliates in return for programming and payments called "compensation." Syndicators also sell time received from stations, usually through barter for programming. Local stations, both affiliates and independents, sell time in the "national spot" market. Basic cable networks, some national and some regional, sell advertising time in the national market and also charge cable systems for programming on a per-subscriber basis.

Broadcast stations also sell time to local advertisers. Local cable systems currently do little program origination (with notable exceptions such as local news channels), though they sell some advertising time on national cable networks to local advertisers.

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137 Jib Fowles, "The Upheavals in the Media," New York Times, January 6, 1991, p. 13.

According to McCann-Erickson, Inc., broadcast network advertising makes up about a third of total video advertising.[138] Cable accounts for only about 6 percent (table 24).[139] At least since 1980, the network share has dropped continuously and substantially. Since 1980 the cable network and national syndication shares have each risen from close to zero to roughly 5 and 6 percent of the market, respectively.[140] National spot and local advertising have been more stable, with the share of the former falling slightly and the latter rising slightly. While the components of video advertising are all predicted to grow, the rates of increase are expected to vary greatly, with the cable and national syndication categories gaining in share at the expense of the others.

Television advertising revenues are a function, broadly speaking, of the size of the audience watching the medium or the program in question. While the demographic composition of the audience also affects advertising sales, advertisers apparently purchase time on the basis of a small number of

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138 McCann-Eriskson is viewed as the most authoritative source of data on advertising revenue, and is the basis for standard statistical sources such as the Statistical Abstract of the United States. The McCann-Erickson time series goes back to 1935.

139 Paul Kagan Associates' estimate of cable advertising revenue is about 40 percent higher than the McCann-Erickson estimate. Paul Kagan Associates, Inc., The Kagan Cable TV Financial Databook, June 1990, p. 70.

140 The national syndication category has grown rapidly, largely because it includes Fox Network advertising revenue.

TABLE 24
COMPONENTS OF VIDEO ADVERTISING

	1975	1980	1985	1990*
Video Ad Volume ($ Million)				
Total	5,263	11,469	21,022	28,405
National	3,929	8,494	15,178	20,153
Broadcast Network	2,306	5,130	8,060	9,383
National Spot	1,623	3,269	6,004	7,788
National Syndication	--	50	520	1,589
Cable Network	--	45	594	1,393
Local	1,334	2,975	5,844	8,252
Local Spot	1,334	2,967	5,714	7,856
Cable (Non-network)	--	8	130	396
Percent of Total				
National	74.7	74.1	72.2	70.9
Broadcast Network	43.8	44.7	38.3	33.0
National Spot	30.8	28.5	28.6	27.4
National Syndication	--	0.4	2.5	5.6
Cable Network	--	0.4	2.8	4.9
Local	25.3	25.9	27.8	29.1
Local Spot	25.3	25.9	27.2	27.7
Cable (Non-network)	--	0.1	0.6	1.4

SOURCE: McCann-Erickson, Inc., "Estimated Annual U.S. Advertising Expenditures," prepared for Advertising Age, April 1991.

*Preliminary.

demographic criteria, sometimes collapsing the decision to the size of the audience in a single target demographic group.[141] The decline over time in broadcast networks' advertising share and the increase in the shares of cable and national syndication, shown in table 24, are roughly consistent with the movement of audiences away from network television and toward cable and independent stations.

As viewing shifts from broadcast television to other media, audiences for television advertising will decline. If viewers move to non-advertiser-supported media, such as prerecorded tapes or pay cable, total video advertising audiences will decline, and broadcast stations and networks may be able to raise prices per viewer in consequence of the reduced supply (assuming the remaining audiences are qualitatively similar to those in the past). On the other hand, if viewers move to basic cable, advertising audiences will remain undiminished (to the extent that cable advertising is a substitute for broadcast advertising), but broadcasters' share will fall. Thus the consequences for broadcasters of basic cable viewing are potentially more serious than those of pay cable viewing. It should be noted that basic cable has a much larger share of viewing than pay cable, and its share has been growing rapidly.

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141 As discussed below, fragmentation of both video and print media have recently been accompanied by more targeted advertising, which places advertisements in media that attract groups of viewers or readers likely to have an interest in the product.

NETWORK ADVERTISING

Historically, broadcast network advertising was considered far superior to any alternative for advertising many products. The advantage of network advertising is greatest for types of advertising, particularly those introducing new consumer products, where near-universal coverage is considered essential. Networking reduces transactions costs by permitting the purchase of advertising that will reach large audiences in a single transaction. While it is possible to reach an equivalent national audience through a combination of national spot and cable network advertising, buying broadcast network time is much easier for advertising agency time buyers. Whereas broadcast network advertising can in principle reach essentially the entire population, cable advertising at best misses about 40 percent of the households in the country because they do not subscribe to cable. While basic cable channels as a group recently achieved an audience share equivalent to that of a single network, individual cable channels have only small shares of viewing.[142]

In addition, audience measurement techniques for cable are not well developed, so that advertisers cannot be sure how large an audience they are reaching. Network advertising has a lower cost per viewer than national spot

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142 "Growth of basic-cable's steady," Variety, September 17, 1990, p. 34.

advertising.[143] Advertising agents claim that it has a higher perceived quality and status than the alternatives. Thus, despite the audience erosion of recent years, many advertising agents continue to believe that network advertising has no good substitutes.[144] This perception, however, appears to be changing.

If all viewer exposures are considered equivalent, other media can substitute for network television. Then declining network audiences will result in at least proportionate declines in network revenue. To the extent, however, that advertisers do not view other media as equivalent to the broadcast networks, whether because of higher transactions costs to reach an equivalent audience, poor audience measurement, or for some other reason, the decline in network audiences will reduce the supply of network-quality advertising exposures and may allow the networks to raise their prices per viewer. The decline in network audience size, however, will reduce the transactions cost advantage of buying network advertising, as will increased audience size for the popular cable networks. This effect may counterbalance the networks' ability to raise prices in response to the decreased supply of exposures. The collapse in 1991 of the so-called upfront network advertising market, in which advertisers buy time in advance for the coming season, may

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143 Television Bureau of Advertising, "Trends in Media," August 1990, pp. 3-7.

144 Based on conversations with executives of advertising agencies.

indicate that the networks no longer are able to increase the price per viewer, thus indicating a shift in advertiser thinking.[145]

Table 25 shows the rate of growth of revenues for various categories of video advertising, adjusted for inflation. Total video advertising appears in the first column. Trends in advertising revenues must be interpreted with caution because video advertising fluctuates with the business cycle and tends to increase in Olympic years election years. Nevertheless, table 25 shows that total inflation-adjusted video advertising grew rapidly over the early 1980's but much more slowly later in the decade, and fell slightly from 1988 on.

Network advertising revenues reached a peak in real terms in 1984 and have declined since. (See figure 9). Real network advertising revenues increased 28.6 percent between 1980 and 1984 Sut decreased 3.2 percent between 1984 and 1988, and continued to fall through 1990.[146] Since 1979, network advertising has fallen steadily relative to GNP, except in 1982-84. The networks' share of national television advertising has fallen from 59 percent in 1975 to 47 percent in 1990.

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145 "Neck and Neck at the Networks," Business Week, May 20, 1991, p. 36; "Nervous Nets Wheel Early Deals," Variety, May 20, 1991, p. 21.

146 These years were chosen for comparison because network advertising revenues are believed to peak in years of the Olympics and the Presidential election campaigns. Based on data from McCann-Erickson, Inc., "Estimated Annual U.S. Advertising Expenditures," April 1990, and Cabletelevision Advertising Bureau, Cable TV Facts, 1989, pp. 12-13.

TABLE 25

INFLATION-ADJUSTED VIDEO ADVERTISING REVENUES, 1975-1990

(1982-84 Dollars)

	Total	Network ($ Million)	National Syndication* ($ Million)	Television Station** ($ Million)	Cable*** ($ Million)	% Change in Real GNP
1975	9,783	4,286	--	5,496	--	
1976	11,812	5,021	--	6,791	--	4.9
1977	12,561	5,710	--	6,852	--	4.7
1978	13,735	6,097	--	7,638	--	5.3
1979	13,986	6,335	--	7,652	--	2.5
1980	13,919	6,226	61	7,568	64	-0.2
1981	14,132	6,095	83	7,826	129	1.9
1982	15,167	6,367	155	8,424	221	-2.5
1983	16,826	6,983	301	9,209	333	3.6
1984	19,103	8,006	404	10,175	518	6.8
1985	19,537	7,491	483	10,890	673	3.4
1986	20,877	7,611	547	11,938	781	2.7
1987	21,042	7,482	671	12,041	848	3.4
1988	21,713	7,753	762	12,187	1,011	4.5
1989	21,686	7,347	1,039	12,069	1,231	2.5
1990****	21,677	7,179	1,216	11,969	1,369	0.9

SOURCE: McCann-Erickson, Inc., "Estimated Annual U.S. Advertising Expenditures," prepared for Advertising Age, April 1991; consumer price index, Economic Report of the President, transmitted to the Congress February 1991, U.S. Government Printing Office, (Washington: 1991), p. 351.

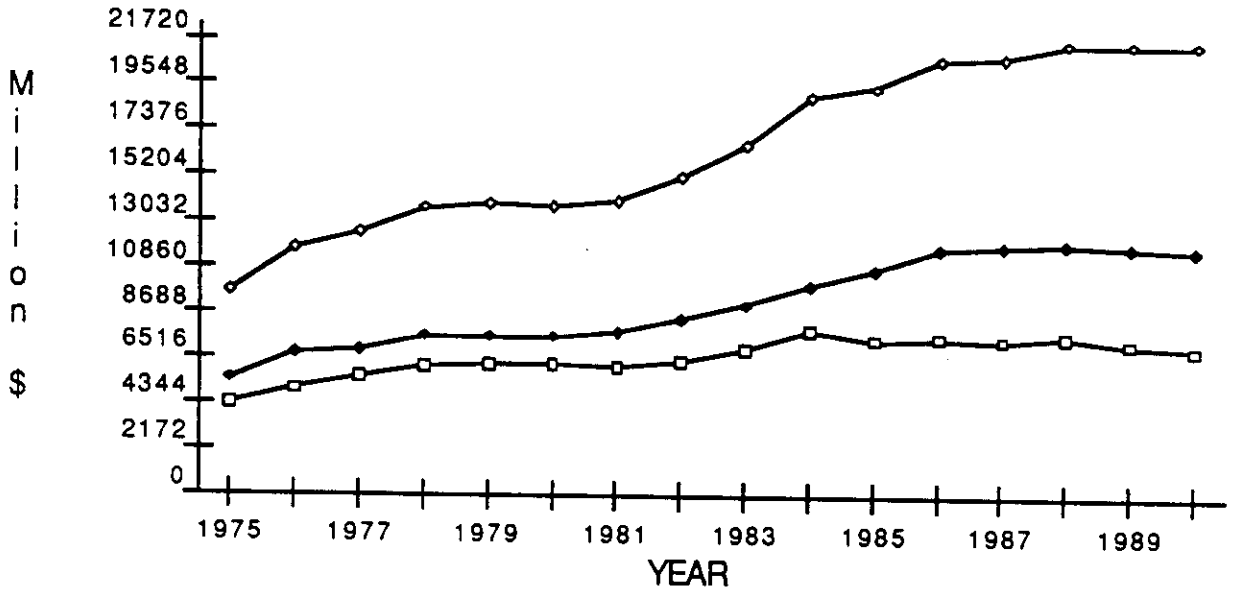
*Includes Fox network advertising, 1988-90.

**Includes national and local spot advertising.

***Includes network and non-network cable advertising.

****Preliminary.

FIGURE 9
TOTAL VIDEO AND NETWORK ADVERTISING REVENUE
(1982-84 Dollars) (millions)



*Total includes network, television station, national syndication and cable advertising.

During the fifteen years between 1975 and 1990, network viewing declined steadily and by a much larger proportion than advertising revenues. Network prime-time ratings fell 12.0 percent (not points) between 1980 and 1984 and 13.6 percent between 1984 and 1988. Households reached in prime time fell 6.5 percent and 9.6 percent in the two periods, respectively.[147] Clearly changes in advertising revenues have trailed declines in network audiences.

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147 Communications Industry Forecast, p. 45. See also chapter III, table 7.

The networks may retain an ability to attract mass audiences for special events, such as the Super Bowl, and smaller but still relatively large audiences in prime time, but for much of their schedule, the networks' audiences are in the range of those of some of their competitors in prime time. The daytime three-network rating (percentage of all television households) averaged 4.8 each, and the late-night three-network rating averaged 3.7 each, in the 1989-90 season.[148] In 1990 the Fox network had a prime-time average rating of 6.2, while the ratings of the three major networks ranged between 11.0 and 12.3. Thus Fox's prime-time rating was more than half of any of the big three networks' prime-time ratings and considerably larger than their ratings in other time periods. In 1990, four basic cable channels had prime-time ratings of 1.0 or better.[149] By the first quarter of 1991, three basic cable networks had prime-time ratings of 2.0 or better, and six more had ratings of 1.0 or better.[150] Of course the demographic characteristics of audiences in other time periods may be different from those in prime time, so the ratings are not exactly comparable. But while still lower than the three networks' in most cases, the ratings of other media clearly offer plausible alternatives for advertisers.

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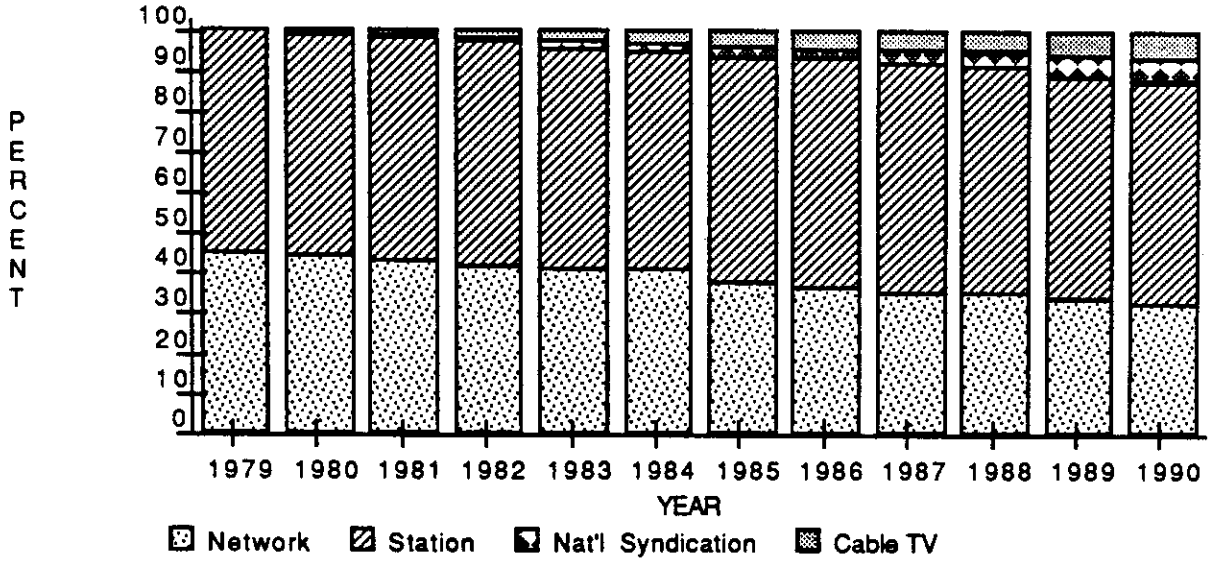
148 M-F daytime and M-F late night, September-April, 1989-90. CBS, citing Nielsen Television Index.

149 Household prime-time averages, January 1-November 2, 1990, Los Angeles Times, November 11, 1990, Calendar, p. 7, citing Nielsen Television Index and network estimates.

150 Multichannel News, May 6, 1991, p.19, citing Nielsen Media Research. See table 17.

Closer substitutes for the networks are clearly appearing. (See figure 10.) The Fox network now reaches 91 percent of households in the country, and through deals with cable operators where it is unavailable over the air hopes to reach another 5 percent.[151] Fox programs only five evenings a week, but is attempting to expand its schedule. Independent station revenues jumped in 1989, apparently as a result of Fox's success.[152]

FIGURE 10
SHARE OF TELEVISION ADVERTISING REVENUE



151 "Tele-Communications Deal Extends Fox's Cable Reach," New York Times, September 7, 1990, p. D-6; "With Cable as Partner, Fox Dances in the Ratings," New York Times, September 10, 1990, p. D-9.

152 It is not clear whether enough independent stations remain to make yet another broadcast network viable. Fox now has 134 affiliates; 94 markets have a second independent, and 58 have a third. Arbitron, Television Market Guide, 1989-1990.

For statistical purposes, advertising revenues of the Fox network and national syndicators are combined. This revenue category, adjusted for inflation, is shown in the third column of table 25. While not a clear measure of Fox revenues, this category does provide a measure of competition to the major networks from national suppliers of advertising time.[153] Revenue from these sources was about 16 percent of three-network advertising revenues in 1990, or close to half of the major-network average. National syndication is expected to continue to grow rapidly.[154]

In other media, interconnects among local cable systems are developing to reduce transaction costs for advertising purchases, and nationwide mechanisms may also develop. In the future, DBS or some combination of DBS and cable probably will provide nationwide service. These developments will increase the supply of advertising time and reduce the transactions cost of purchasing national (or at least very broad) coverage, and may further erode network revenues.[155]

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153 Fox network revenues in fact are expected to be about $500 million in the most recent fiscal year, which amounts to about a third of the total "National Syndication" category. Kathryn Harris, "Making money on rotten ratings," Forbes, May 27, 1991, p. 42.

154 Communications Industry Forecast, p. 94.

155 The increased supply of advertising time is believed to be a cause of lower network advertising rates. John Lippman, "CBS Strikes Out with Sports, Posts $156-Million Loss," Los Angeles Times, February 14, 1991, p. D-8.

Industry predictions show the network share of television advertising revenues, which fell from 44.7 percent in 1980 to 33.8 percent in 1990, continuing to fall. The Television Bureau of Advertising predicts a network share of video advertising of 31.9 in 1995; Veronis, Suhler and Associates predicts a share of 32.4 percent in 1994.[156] The Television Bureau of Advertising prediction implies network advertising growth slightly slower than the growth of GNP, 26.4 percent as compared with 33.2 percent, in nominal terms, over five years.

These predictions of advertising revenues are likely to overestimate future network revenues for several reasons. The Veronis and Suhler predictions are based on optimistic assumptions for the networks: no recession, slower ratings declines, and a stronger national advertising market. The network rating predictions may be optimistic because even if the growth of cable subscribership slows, cable viewing by cable households will almost certainly continue to increase. In addition, until recently networks have been able to raise the price per thousand viewers for advertising time.[157] Prices for network advertising time plunged in late 1990 and spring 1991, however, indicating that the networks may no longer have that ability.[158]

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156 Television Bureau of Advertising, "Trends in GNP, Ad Volume, TV Ad Volume, 1960-1995," April 1991; Communications Industry Forecast, pp. 22, 50, 52-53.

157 Television Bureau of Advertising, "Trends in Television," p. 11.

158 "CBS Strikes Out With Sports, Posts $156-Million Loss," Los Angeles

TELEVISION STATION ADVERTISING

Local television stations received $15.9 billion in advertising revenues in 1990, divided approximately equally between national spot and local advertising.[159] National spot advertising is considered a substitute for network and national cable advertising. Local station advertising is the closest television substitute for local cable advertising, though local cable advertising appears to compete more directly with local radio.

Inflation-adjusted television station advertising revenues are shown in the fourth column of table 25, which shows the sum of national spot and local advertising. Advertising is not the sole source of revenue for broadcast stations because both the three major networks and Fox pay compensation to their affiliates, though compensation also reflects sale of advertising time by the networks.[160] Aggregate television station advertising revenues grew

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Times, February 14, 1991, p. D-8; Paul Farhi, "'Recession-Resistant TV Networks Feel Pinch," Washington Post, October 27, 1990, p. C-1; "Nervous Networks Wheel Early Deals," Variety, May 20, 1991, p. 21.

159 McCann-Erickson, "Insiders Report," December 1990.

160 Network compensation has also been declining recently, and is expected to continue to decline. "Big 3 affiliates adapting to changes in economy," Electronic Media, May 20, 1991, p. 39; "No quick end foreseen to network economic woes," Electronic Media, January 14, 1991, p. 20. Compensation averaged 4.5 percent of gross revenues for all affiliates in 1989, ranging from an average of 2.2 percent in the top ten markets to an average of over 9 percent in markets below 120. NAB, Television Financial Report, 1990.

much faster than GNP from 1981 through 1986 but more slowly after 1986, and declined in real terms in 1989 and 1990.[161]

Veronis, Suhler predict that television stations' share of total television advertising will fall through 1992 and then increase slightly as the rate of growth of cable slows. They predict that television station advertising will grow faster than network advertising, but still more slowly than GNP.[162] As noted above, the predictions are likely to be optimistic.

Because the number of stations has increased, the growth rate of advertising revenues per station has been lower than that of aggregate station advertising revenues. Dividing television station advertising revenues in table 25 by the number of commercial stations shows that advertising revenues per station in fact have fallen in the neighborhood of 4 percent per year in real terms from 1987 on.[163] The downward trend clearly began well before the current recession, so it is not a cyclical phenomenon.[164]

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161 Communications Industry Forecast, p. 49; "$3-Billion Syndication Business Feels a Pinch," Los Angeles Times, January 21, 1991, p. F-12.

162 Communications Industry Forecast, pp. 22, 51.

163 Data on numbers of stations are taken from Television Bureau of Advertising, Inc., "Trends in Television," April 1990, p. 9.

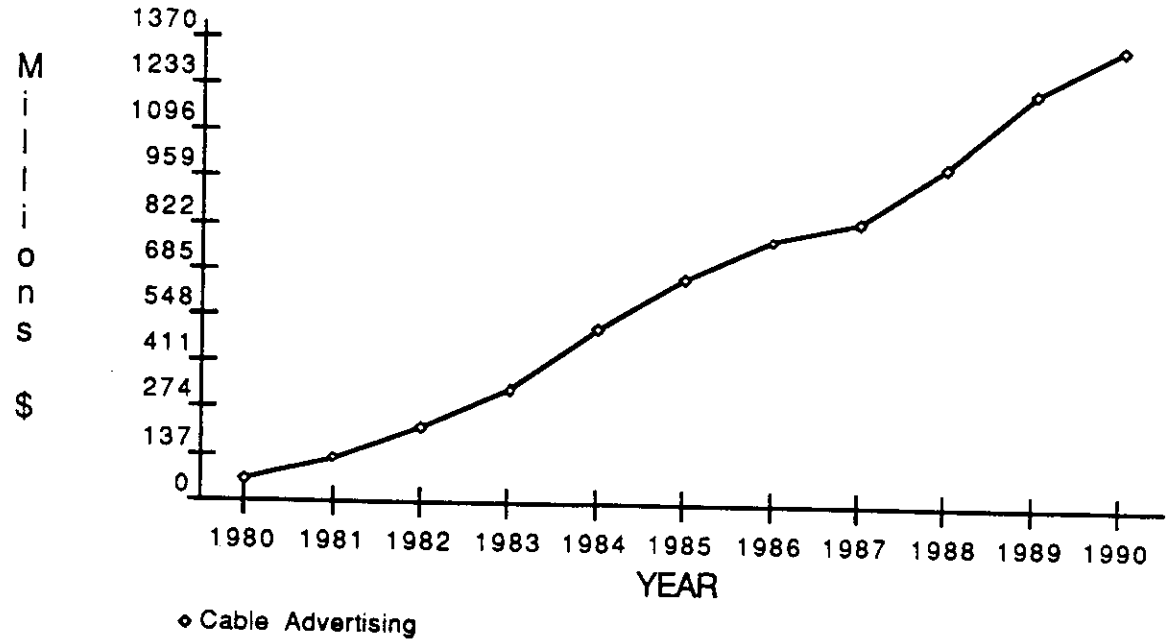
164 Like the data reported here, the NAB data on average station revenues reported in chapter IV, which are disaggregated into several station categories, show rapid growth in the early eighties, ending in 1985 or 1986. The NAB data, however, show less pronounced declines in recent years than are shown here, and show a slight recovery for independents in 1989. See table 12.

Stations that are imported as distant signals by cable systems reduce local station audiences but benefit little, in general, from their additional audiences because much of their advertising is local. However, superstations that have wide cable audiences (e.g., WTBS, WGN) can sell advertising in a national market and charge commensurate prices. So, for purposes of advertising, the audiences of distant stations are in some cases lost to broadcasters and in some cases transferred from local stations to superstations.

CABLE ADVERTISING

Inflation-adjusted cable advertising revenues are shown in the final column of table 25. Unlike broadcast advertising, cable advertising grew rapidly--between 9 and 22 percent a year in real terms, according to McCann-Erickson--over the late 1980's, though it started from a low base. (See figure 11.) Cable advertising can be divided into network and spot categories. The revenues of cable network advertising are, by various estimates, between 18 and 25 percent as large as the revenues of national spot broadcast advertising, its closest broadcast substitute. Cable spot advertising consists mainly of time sold by the cable operator, primarily to local advertisers, and is most likely to be a substitute for local television or radio advertising. Such advertising generates between 5 and 8 percent as much revenue as local television broadcast advertising, by various estimates, but is growing very

FIGURE 11
CABLE ADVERTISING REVENUE (1982-84 DOLLARS)



rapidly.[165] So to date, cable advertising has succeeded better in competing with broadcast advertising at the national than at the local level.

As noted above, cable advertising remains an imperfect substitute for broadcast television, and particularly network, advertising, though that situation may be changing. Cable advertising has major advantages for some advertisers. Cable subscribers have higher incomes and more education, on average, than the general population, and consume more of many advertised goods and services, making cable subscribers desirable targets for

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165 The lower estimates are based on McCann-Erickson data presented in table 24; the higher estimates are from Paul Kagan Associates, The Kagan Cable TV Financial Databook (June 1990), p. 70.

advertisers.[166] So far, cable advertising has had a far lower cost per thousand viewers than broadcast advertising.[167]

Cable offers advertisers an opportunity to target advertising more efficiently by delivering audiences with specialized interests, while the economics of broadcasting requires mass-appeal programming and advertising. Many of the most successful cable channels, however, have been those with the most middle-of-the-road programming, and some cable channels are attempting to widen their audiences by showing more general-interest programming. To the extent that they succeed, they will become closer advertising substitutes for the broadcast networks. The extent to which the two strategies achieve success will depend in the long run on the distribution of program tastes in the population. With many channels, cable systems can pursue both strategies and attract both general-interest and niche audiences.

Cable systems cover smaller geographic areas than broadcast stations, so local cable advertising can target a narrower geographic audience. Because of its narrow reach and low cost, local cable advertising is considered a substitute for radio and even newspaper advertising as much as for local television advertising. Many local advertisers who would never advertise on broadcast television many find cable an attractive medium.

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166 Cabletelevision Advertising Bureau, Inc., Cable TV Facts 90, pp. 20-23.

167 "Changing Nature of Cable Advertising," Broadcasting, April 15, 1991, p. 78.

In sum, cable advertising can reach desirable audiences, can target audiences more narrowly than broadcasting by interests and geographic location, and has a lower cost per viewer. Its limitations are higher transactions costs to reach the same audience and smaller total audiences. The disparity in price between broadcast and cable advertising suggests an opportunity for developing interconnects among cable systems and other institutions to facilitate purchase of cable advertising.

Industry observers see great potential for growth in the cable advertising market, particularly the local market. Cable advertising is the fastest-growing segment of the video advertising market, with inflation-adjusted revenues growing at 22 percent in 1989. But considering that basic cable (i.e., cable-originated channels carrying advertising) comprises 6 percent of the video advertising market, by one estimate, but accounts for 20 percent of total viewing and 22 percent of viewing of channels carrying advertising, the potential remains for much greater growth, independent of likely increases in cable subscribership and viewing.[168] Moreover, advertisers are reported to believe that network advertising was overpriced in 1990, and to be considering cable as an alternative because of increased cable ratings.[169]

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168 See tables 6 and 25.

169 "'Upfront' Study Finds Weakness For Networks," Wall Street Journal, April 2, 1991, p. B-1.

OTHER ADVERTISING MARKETS

Advertising alternatives to the video market include radio, newspapers, magazines, direct mail, yellow pages, and outdoor advertising. More distant alternatives include promotions such as coupons, conventions and trade shows, and point-of-purchase displays. Direct mail is the only national advertising medium with a share of advertising volume in the range of television's, 18.2 percent as compared with 22.1 percent. Expenditures on direct-mail and yellow-page advertising have in fact increased as a percentage of total advertising. The percentage of video advertising, which rose continuously through 1984, has fallen slightly since that time.[170] Still, none of the alternatives is believed to have the immediacy and effectiveness of television commercials. In addition some of the advertising substitutes for television, such as magazine publishing, have experienced a proliferation of outlets and audience fragmentation similar to that in television. Nevertheless, magazines are reportedly being considered as an alternative by many network advertisers.[171]

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170 Television Bureau of Advertising, "Trends in Advertising Volume," May 1991.

171 "'Upfront' Study Finds Weakness For Networks," Wall Street Journal, April 2, 1991, p. B-1.

SUMMARY

The rapid growth of the video advertising market appears to have ended. The share of the networks in that market has been falling for a decade, and the share of cable has been growing. Since the mid-1980's real advertising revenues of the networks, and per-station real advertising revenues of broadcasters, have been falling. Network revenues have fallen less rapidly than audiences, but as audiences continue to decline, and as cable advertising becomes a better substitute for network advertising, the decline can be expected to worsen. Cable now has a much smaller share of advertising revenues than of viewership of channels carrying advertising, so cable advertising has great potential for growth.

The lag between audience loss and advertising loss has bought time for broadcasters and networks, but in the long run advertisers can be expected to adjust to actual viewing patterns in the market. The current recession may hasten the adjustment by making advertisers more cost-conscious and causing them to buy time on the basis of cost per viewer rather than habit or notions of prestige or status.

X. THE PROGRAM MARKET

Growth in the number of video outlets has increased demand for programming. Because direct-payment media can charge on the basis of viewers' rather than advertisers' valuation of programming, and in some cases these media receive both advertising and subscription revenues, direct-payment media receive more revenues than advertiser-supported broadcasters from audiences of the same size. Thus they are able to present programming that would not be financially viable for broadcasters, and they may be able to purchase more expensive, and presumably more attractive, programming.

The ability to provide programming at the mix of quality and price that viewers want is crucial to success in the mass media. Entrepreneurs starting new ventures with DBS or MMDS often consider access to programming a key element in determining their success or failure, and more likely to be an impediment than the technical ability to deliver additional channels.[172] The Fox network's role in reversing the fortunes of many independent stations makes clear the importance of programming that appeals to viewers' tastes, as well as the efficiency of networking.

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172 "1990: Pivotal Year for DBS Hopefuls," Multichannel News, January 7, 1991 p. 4; "Pies in the Sky?" Channels, Dec. 3, 1990, p. 51; "Of Lobbies and Lawsuits," Channels, Dec. 3, 1990, p. 59. See also FCC Cable Report, para. 114.

This chapter briefly discusses trends in network, syndicated, and local broadcast programming, and in cable programming. It then considers the determinants of program prices and how the media are likely to be affected by price changes. Then it examines the ability of broadcast and cable media to compete in program acquisition. Finally, the effects of the compulsory copyright license on that competition are considered.

NETWORK PROGRAMMING

The broadcast networks act as intermediaries between program producers and broadcast stations and, ultimately, audiences, matching programming with audience tastes in order to produce advertising exposures. Historically the networks acquired their pre-eminent positions by using low-cost program distribution techniques and aggregating large audiences, which gave them the advertising revenues to purchase expensive programming.

In the days before multimedia competition, the primary way networks could increase advertising revenues was to increase audiences. The networks could increase the total audience--either by adding television households or by increasing hours of viewing of existing viewers--or they could increase their audience shares by luring viewers away from other networks. In both cases, increasing program expenditures in an effort to produce more popular programming--as long as doing so resulted in equal or greater increases in advertising revenues--was a rational strategy.

In the current market, however, audiences may not respond to additional network program expenditures as they have in the past. Because of changes in demographics and work behavior, viewing per houshold appears to have peaked. Additional mass-appeal programming by Fox and some cable channels has divided the audience into smaller shares, and specialized programming on cable channels has diverted some of the audience from middle-of-the road programming. Even among the networks, more diversity seems to be appearing. Fox, for instance, aims programming at a younger audience than the conventional networks. These changes appear to be permanent. In this environment, increasing program expenditures almost certainly will not bring back the networks' old audience shares, as CBS's unsuccessful attempt to increase its audience share by purchasing expensive sports programming suggests.

At the same time, the inputs used to produce network programming also can be used to produce programming for other outlets.[173] The increased demand for programming to fill additional channels has bid up the prices of the inputs into programming, leaving networks facing higher prices for programs of similar quality. Increased expenditures on programming probably buy smaller increments in program attractiveness than in the past.

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173 See John Dempsey, "Star-studded cable stable," Variety, June 10, 1991, pp. 1, 25, 32, and Reply Comments of the Association of Independent Television Stations, Inc. in MM Docket No. 89-600 (filed April 2, 1990) (INTV Reply Comments, pp. 34-37.

For some kinds of mass-appeal programming, probably including many network series and much other programming made for television, reasonably good substitutes, in terms of audience size, can be created, and the possibility of expanding supply limits potential price increases. Other kinds of programming, including unique sports events such as the Super Bowl and the World Series, have high value to a large percentage of viewers and cannot be duplicated. These programs would generate high subscription revenues and are likely candidates to be bid away to pay or pay-per-view services.[174]

As a consequence of both declining audience shares and increased program prices, additional expenditures on progamming are likely to be less effective than in the past in increasing audiences. Thus the profit-maximizing strategy for networks may be to reduce program expenditures and thus offer programs of lower perceived quality than in the past, particularly if the decline in audience shares is believed to be permanent and irreversible. If revenues are expected to be lower than in the past for the long-term future, the networks may have no choice but to reduce program expenditures over the long term. The three conventional networks in fact are reported to be introducing programs in less expensive genres in order to cut costs, and appear to be cutting back on news operations.[175] The cutbacks may in part simply involve

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174 Considerable political pressure has arisen to keep highly valued sports events on free television.

175 Tom Shales, "CBS Network Eliminates 400 Jobs," Washington Post, April 6, 1991, p. D-1; Jane Hall, "Networks' New News Strategy," Los Angeles Times, March 28, 1991, p. F-1.

more efficient use of resources, but they will also undoubtedly have some effect on program quality. These changes may to some extent be a response to a cyclical decline in revenues, but the long-term pattern in audience shares and program prices makes it likely that a long-term shift in strategy is at work as well.

The networks face the risk that large cutbacks in program expenditures may reduce the perceived quality and distinctiveness of network programming and further reduce the networks' ability to attract audiences, and that a downward spiral of program expenditures and audiences will result.[176] The outcome will depend on audience tastes in programming, and remains to be seen. At present, total audiences of individual networks in prime time remain several times as large as those of their nearest rivals, and, as shown below, for the foreseeable future the networks' revenues appear large enough to permit them to outspend cable networks on programming overall, though possibly not on particular programs such as made-for-TV movies, sports, and non-continuing series. While cable networks have the advantage of both advertising and subscription revenues, both are still based on relatively small audiences.

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176 Indeed the Association of Independent Television Stations, Inc. (INTV) states that such a downward spiral has already begun. INTV Reply Comments, p. 37.

SYNDICATED PROGRAMMING

Non-network programming is distributed through the syndication market, and independent stations acquire most of their programming through that market. Historically the distribution techniques used for syndication were inherently more expensive than those used by the networks, and independent stations had relatively small audiences. Consequently syndicated programming was comprised primarily of low-cost programming, including game shows and off-network reruns. Much syndicated programming in recent years has been acquired, at least in part, by barter for advertising time rather than for cash alone.

The expansion in the number of independent stations over the past decade considerably increased the demand for syndicated programming, and satellites have reduced the cost of distribution. The syndication market in recent years has produced large numbers of new first-run programs. In fact, 18 of the 25 most popular syndicated programs, and eight of the top ten, are first run.[177] The others are off-network series. The syndication market has been highly profitable.

Recently, however, demand for syndicated programs, not counting Fox programming, has declined for two reasons. First, 35 percent of independents have now affiliated with the Fox network, which has reduced the demand for

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177 Nielsen Station Index, Report on Syndicated Programs, November 1990.

other syndicated programming. Second, many independent stations are in a weak financial position because of overexpansion and because of the current recession. Recently prices paid for syndicated programming are reported to have fallen.[178]

LOCAL PROGRAMMING

Local programming, particularly news and public affairs, is the single program service that, at least for the present, remains primarily the domain of local broadcasters; a desire to foster programming responsive to the needs of the local community provides the primary rationale for the FCC's public policy interest in local broadcast stations. Local news appears to be highly valued by viewers and profitable to stations. Network affiliates are reported to derive as much as a third of their revenues from local news.[179]

Smaller audiences for broadcast stations will mean declining revenues, which may lead to reduced expenditures on local programming (depending on expectations concerning the effects of program expenditures on audiences). The effects will vary greatly among stations, however. Major stations in large markets have sufficiently high profits that they may sustain

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178 "$3-Billion Syndication Business Feels a Pinch," Los Angeles Times, January 21, 1991, p. F-12.

179 Paul Farhi, "The Great Big Broadcast of 1991," Washington Post, March 11, 1991, p. F-1.

considerable audience erosion without substantially reducing costs. In the largest markets, too, cable penetration appears to be lower than in smaller markets because of the large number of over-the-air alternatives, so that audiences probably will erode less there than elsewhere.

In smaller markets, however, the need to cut costs may in fact reduce expenditures on local programming, which may reduce the quantity or quality of news and public affairs programming. Local programming by independent stations, except those in the largest markets, probably will be affected little because, as indicated above, most independents spend relatively little on local programming in any case. (See chapter IV.) The number of broadcast stations may fall, but the stations most likely to leave the market are the marginal ones that probably spend little on local programming.[180]

In all markets, a reduction in the number of stations may increase the audiences and revenues of the remaining stations. These stations may find it

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180 A large percentage of small markets have independent stations. In 1989-90, of the 109 markets ranked below 100, 52 had one or more independent stations. Twenty had four or more affiliates. (At least some of these, however, were overlapping markets, so all stations probably do not reach the whole area.) Arbitron, Television ADI Market Guide, 1989-1990. Further, the financial performance of affiliates in small markets was better than that of independents. In 1989 at least 75 percent of independents in markets ranked below 100 reported losses, while between 50 and 75 percent of affiliates in markets 101-150 reported losses and between 25 and 50 percent of affiliates in markets 151-209 reported losses. NAB, Television Financial Report, 1990, pp. 44-49, 71. These figures suggest that independent stations are far more at risk than affiliates, and that the number of viewers that might lose the programming of network affiliates is small.

profitable to increase expenditures on local programming in competition with other stations in the market. Increased expenditures may be effective in picking up audiences from rival broadcast stations even though such expenditures could not halt long-term erosion to other media.

CABLE PROGRAMMING

The growth in the number of cable networks has resulted in a major increase in the quantity of programming produced, and a qualitative change in the types of programming offered as well. Where large numbers of channels are available, particularly with viewer payment, a profitable strategy for programmers is to offer kinds of programming that are highly valued by relatively small segments of the audience, rather than competing with programming similar to what is already being offered for a share of the mainstream audience.[181] The final distribution of programming will, of course, depend on the distribution of viewers' tastes. But to the extent that programming tailored to the tastes of smaller groups in the audience becomes available, these viewers' preferences will be met more closely, and many viewers will be made better off. Mainstream viewers also will be made better off if more choice becomes available within highly popular program categories. On the other hand, to the extent that viewer payment causes programming that would otherwise be available over the air to move to cable, viewers that do

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181 Bruce M. Owen, Jack H. Beebe, and Willard G. Manning, Television Economics (Lexington, MA: D.C. Heath and Company, 1974), pp. 81-90.

not now subscribe to cable will be made worse off because they will be unable to receive or will have to pay for service that was previously available without direct payment.

The expansion in the number of cable networks appears to be slowing down for the time being, however, in part because of cable systems' limited channel capacity. In the near future, however, video compression techniques will bring large increases in channel capacity, which will allow further innovations in programming, as well as more flexible scheduling.[182]

Cable programming has produced several general-interest networks that attract large audiences.[183] In addition, many other cable networks have attempted to defined themselves by creating programming that appeals to narrowly-defined audiences, and to rely on the specialized character of the programming to attract audiences.[184] All but three basic cable channels have ratings of less than 1 percent of televison households, but in the aggregate they account for a substantial share of viewing.[185] So cable presents a

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182 See chapter V above. Also see "Cable Industry Undergoes Shakeout as Networks Fight for Viewers," Washington Post, Dec. 19, 1990, p. D-1; Brian Donlon, "Enthusiasm for cable at 'all-time high,'" USA Today, March 22, 1991, p. A-1.

183 Among the most popular basic cable channels are WTBS, USA, ESPN, and TNT. See chapter VI for a discussion of cable program offerings.

184 Geraldine Fabrikant, "Channels Seek Identity in Made-for-Cable Films," New York Times, April 1, 1991, p. D-8.

185 See table 17 in chapter VI.

spectrum of programming, ranging from general interest to niche programming for small audiences.

Basic cable channels are increasing program expenditures, and are moving toward made-for-cable programming, including movies and first-run series. As cable advertising grows, moreover, cable operators will increasingly have an incentive to increase viewing as well as simply numbers of subscribers, and so to offer general-interest programming and otherwise behave more like the broadcast networks.[186] Programming on most basic cable channels, however, remains less expensive than that of the broadcast networks.

The most highly valued programming, such as first-run movies and certain sporting events, has been offered on pay channels or on a pay-per-view basis. Pay cable networks are reported to have shown as many original movies as the three major broadcast networks combined in 1990, in many cases paying as much and even more than broadcast networks do.[187]

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186 INTV points out that cable networks are increasingly developing and buying mass appeal programming like that on broadcast networks. INTV Reply Comments, pp. 32-38.

187 For instance, HBO recently spent a record $9 million for "The Josephine Baker Story." Electronic Media, November 12, 1990; Wall Street Journal, p. B-1, December 17, 1990. See also INTV Reply Comments, p. 34, and Network Fin/Syn Comments, Vol. I, pp. 82-83.

PROGRAM PRICES

Both the number of channels to be programmed and the funds available for program purchase have increased greatly in recent years. The additional expenditures have resulted both in production of more programming and in dramatically higher program prices. As noted in chapter III, higher program prices have contributed to the reduced profits of broadcast stations and networks.

Prices of network programming are determined by negotiation between networks and studios, and the outcome depends to a large extent on their relative bargaining power. To the extent that broadcast networks ever had market power in the program acquisition market, additional purchasers of programming have eliminated that market power, allowing program producers to raise prices and reap more of the profits.[188] To the extent that some programs are uniquely popular and cannot be duplicated, increased demand can allow producers to maintain high prices and profits for an indefinite period. In such cases much of the profit generated by large audiences will be captured by the talent (directors, actors, athletes, etc.) that create the programs.[189] On the other hand, leaving aside the top hits, the long-run supply of

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188 For an analysis of network program pricing see FCC, Network Inquiry Special Staff, "An Analysis of Television Program Production, Acquisition and Distribution," in New Television Networks: Entry, Jurisdiction, Ownership and Regulation, October 1980, pp. 591-602.

189 "NBC Faces Tough Decision on Its Costly, Aging Shows," New York Times, February 18, 1991, p. 34.

programming may increase readily in response to increased demand. To some extent the price increases for programming may have resulted from short-run difficulties in expanding the supply of programming, in which case the the price increases may prove to be largely transitory.[190]

Syndicators typically appropriate some of the advertising revenues generated by their programs by charging stations on the basis of market size rather than charging a flat fee per program, and often by acquiring advertising time through barter.[191] Thus, the price of a program will vary greatly between large and small markets, even though the product reaching viewers is the same. As broadcasters' audiences fall, prices paid for programs can be expected to adjust to the revenue potential of the market, as has in fact occurred through the use of barter, where the value of the advertising spots traded depends on the audience. So the decline in program quality may be less than would be expected from the decline in expenditures.

Broadcast stations and networks will remain important programming outlets for the foreseeable future. Therefore, in order to keep this distribution system healthy, program suppliers are likely to absorb part of the effects of smaller audiences by accepting lower license fees. (Cases of

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190 A great demand for programming from DBS operators or other new outlets, on the other hand, could cause prices to continue to rise.

191 See Noll, Peck, and McGowan, Economic Aspects of Television Regulation, pp. 70-79 for a discussion of non-network program pricing.

marginal programming in small markets, where the cost of distributing a program may approach the revenue it can produce, are exceptions.)[192]

As prices broadcasters can afford to pay fall, however, it seems likely that outlets having both advertising and subscription revenues will increasingly be able to outbid broadcasters for some programming, particularly that which is highly valued by large audiences. Broadcast network executives believe that cable networks will be able to outbid them for major sports events, and public television is already losing some programs to cable.[193] Again cable networks' ability to outbid broadcasting networks depends on the distribution of audience tastes. But because prices broadcasters face for programs depend in part on the audiences they can attract, and because the long-run supply of much broadcast programming appears easily expanded, we expect that much programming will remain available at prices broadcasters can afford to pay, though the most popular talent and programming may be lured away to competing media.

REVENUES FOR PROGRAM PURCHASE

Large-scale participation of cable networks in the market for program acquisition may both bid up prices of inputs and increase the general level

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192 For programming produced in house, such as news, the price of program inputs, with the possible exception of salaries of a few stars, does not vary with audience size as does the price of purchased programming.

193 "Public TV's once-unique niche threatened by cable look-alikes," Electronic Media, October 22, 1990, p. 3.

of program prices, which could lead to broadcasters being outbid for specific popular programs. If popular programming moves to cable, the movement of audiences from broadcast to cable viewing will accelerate. Although pay and pay-per-view channels do not compete directly with broadcasters for advertising dollars, all cable channels compete with broadcasters for viewers.

Financial data from broadcast and cable networks can shed light on trends in the revenues of both advertiser-supported broadcasters and cable networks and on their ability to compete in program purchase.[194] It should be noted that the ability of various media to purchase programming of a given quality is a different issue from market power in program purchase. Here the question is whether given purchasers have the ability to make roughly comparable program expenditures, not the ability of firms to behave anticompetitively.[195]

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194 Declining revenues, at least in the short run, do not automatically result in declining program expenditures. Commercial broadcast and cable networks strive to maximize profits, and the profit-maximizing level of expenditure on programming will depend on the response of audiences, and advertising revenues, to program expenditures.

195 The relevant market for the purpose of the financial interest and syndication rules, for example, includes not only broadcast and cable, but theatrical movies and home video as well. In this market, individual broadcast networks have small market shares. A large number of cable networks are independent purchasers in this market, and some pay high prices for programming. For a discussion of network market shares in this market, see Robert W. Crandall, "The Economic Case Against the FCC's Television Network Financial Interest and Syndication Rules," Network Fin/Syn Comments, Appendix C.

Though the data are limited, rough comparisons can be made of revenues and program expenditures between broadcast and cable networks. Data on gross advertising revenues for the three broadcast networks are available from McCann-Erickson. The Television Bureau of Advertising makes projections of expenditures based on these data.[196] Total program expenses can be estimated by extrapolating the proportion of gross revenues expended for programming from earlier years, assuming that, in the future, networks will be able to spend at least as large a proportion of gross revenues on programming as they have in the past. An assumed ratio of programming expenditures to gross advertising revenues of 0.65 was used to estimate current program expenditures and to project programming expenditures out to 1995.[197] Three-network revenues are $9.4 billion in 1990 and projected to be $12.2 billion in 1995. Network program expenditures are estimated at $6.1 billion in 1990 and $7.9 billion in 1995.

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196 The projections assume growth of GNP of 24.7 percent between 1990 and 1995. During that period three-network advertising revenues are projected to grow 30.1 percent.

197 Data from the FCC TV Broadcast Financial Data compilation show that for networks the ratio of program expenses to gross advertising revenues rose from 0.59 to 0.65 between 1975 and 1980. The networks are now reported to spend between 75 and 85 percent of their budgets on programming. John Lippman, "Networks Push for Cheaper Shows," Los Angeles Times, February 19, 1991, p. D-1. In 1980, according to FCC data, networks' net revenues were 80.6 percent of gross advertising revenues. If budgets are based on 100 percent of net revenues, estimated program expenditures are calculated to lie between 60.5 and 68.5 percent of gross revenues.

Data are available from Paul Kagan Associates on revenues and programming expenditures of basic and pay cable networks.[198] Projections of program expenditures are made on the assumption that they will remain the same percentage of gross revenues as in 1990. The result is revenues of $4.6 billion in 1990 and $7.3 billion in 1995, and program expenditures of $2.4 billion in 1990 and $3.8 billion in 1995, for all cable networks. Revenues of cable networks were thus 49 percent of those of broadcast networks in 1990, and are projected to increase to 60 percent in 1995. Cable network program expenditures were 39 percent of the broadcast network total in 1990 and are projected to be 48 percent in 1995.

The cable revenue data reported here should be interpreted with caution, and should probably be considered a lower bound for cable program expenditures. Information about individual cable networks suggests that the cable program expenditures reported here may be lower than actual expenditures. Cable networks are reported to have spent almost $700 million on original non-sports programming in 1990 and almost $2 billion on sports rights in 1989-90, as compared with the $2.3 billion total reported here.[199]

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198 Paul Kagan Associates, "Cable TV Programming," August 31, 1990, p. 2, and Paul Kagan Associates, "The Pay TV Newsletter," April 24, 1990, p. 3. Pay-per-view networks are not included, but their total gross revenues were only $136 million in 1990. "PPV and DBS: Partners in Uncertain Future," Broadcasting, February 18, 1991, pp. 49-50.

199 Separate Statement of Commissioner James H. Quello, Mass Media Docket No. 90-162, pp. 6-7; Goldman, "Cable-TV Networks Strive to Stand Out From the Crowd with Original Programs," Wall Street Journal, December 17, 1990, p. B-1.

Cable networks are reported to have spent about the same amount in total on made-for-TV movies as broadcast networks.[200]

Cable program expenses in 1990, according to the Kagan data, made up about 16 percent of the total including the conventional broadcast networks, the Fox network, stations, and syndicators. This is a modest amount, considering that in 1990 cable programming attracted 32 percent of total viewing, and that viewers have to pay for cable service. Excluding distant signals and superstations, for which cable operators apparently pay below-market prices through the Copyright Royalty Tribunal, cable viewing still makes up 26 percent of the total.[201]

Revenues of basic cable networks are derived from advertising and from license fees, which are the per-subscriber fees paid by cable operators to networks. License fees, the "second revenue stream" available to basic cable in addition to advertising, accounted for 33.2 percent of gross revenues of basic cable networks in 1990. The share of license fees is projected to fall over time as advertising revenues rise, but to remain at 30.7 percent in 1999.[202] These percentages are smaller than expected, since industry reports

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200 Ibid.; Cable World, May 20, 1991, p. 1.

201 See the discussion of the compulsory copyright license below.

202 Calculated from Paul Kagan Associates, "Cable TV Programming," August 31, 1990, p. 2.

suggest that about half of cable networks' revenues come from license fees.[203] Pay cable networks, of course, receive 100 percent of their revenues from subscription fees. Kagan's data show basic cable revenues--and program expenditures--rising much faster than comparable pay cable figures.

The cable revenues reported here are spread over a large number of networks (currently nine pay networks and 111 basic networks, not counting home shopping networks) with a wide range in programming strategies from from low-cost niche programming to high-cost first-run mass-appeal programming. Consequently average per-channel revenues of cable systems are very low. But the variation in revenues among cable networks is high. Consequently the more popular cable networks have the potential to spend much more on programming than the comparisons here would suggest.[204] Considering the difference in the numbers of broadcast and cable networks, we can conclude that some cable channels have the revenues to compete as serious rivals in the program acquisition market, but for the near-term future broadcast networks will still be able to outspend them.

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203 In a 1986 filing with the FCC, ESPN, for instance, stated that subscription fees accounted for "almost half" of its revenues. Comments of ESPN, Inc., in General Docket 86-336, filed October 17, 1986, p. 3.

204 Press reports of quarterly earnings of Turner networks imply that CNN has annual revenues above $400 million, and that TBS and TNT combined have annual revenues greater than $500 million. Geraldine Fabrikant, "Turner Broadcasting Profit Fell 11.6% in First Quarter," New York Times, May 7, 1991, p. D-19. ABC Video Enterprises, which consists primarily of ESPN, had revenues of $546 million in 1990. "Down Year in Profits for the Big Three," Broadcasting, May 6, 1991, p. 19. These revenues compare with an average of $3.1 billion apiece for the three major broadcast networks.

The ability of cable to attract viewers with relatively inexpensive programming--even when viewers have to pay for it--suggests the great value viewers place on breadth of choice and on programming narrowly tailored to specialized tastes. At the same time, the large programming expenditures of the broadcast networks may suggest that broadcast networks' programming funds are being spent inefficiently. The networks' high program expenditures also suggest the possibility that some of the profits of broadcasting are being passed on to the program production industry in high payments for top actors and other talent, and that reduced expenditures on programming might not result in commensurate reductions in quality.

In some cases, the combination of viewer payment and large audiences has allowed cable networks to pay higher prices than the broadcast networks could profitably pay. Sports programming on ESPN, TNT, and other networks appears to be an example. Another example is loss of programming to cable from public television, whose source of revenue is voluntary viewer payment rather than advertising.

In assuming that cable program expenditures will remain a constant percentage of revenues, these projections may understate future cable program expenditures. Cable networks, particularly basic networks, now spend a far lower percentage of their gross revenues on programming than do broadcast networks. Because of economies of scale, broadcast networks' non-programming costs are probably lower than cable networks'. But also cable networks' subscription and advertising revenues have grown rapidly, and program

expenditures may have lagged; basic cable network program expenditures have in fact fallen as a percentage of gross revenues. Furthermore, because profit margins for cable networks such as ESPN, TBS, and CNN appear to exceed substantially the broadcast networks' margins, it appears that at least the most successful cable networks could increase their program expenditures considerably.[205] Press accounts report that cable networks are in fact increasing program expenditures, while broadcast networks are experiencing losses and are attempting to slash program costs.

COMPULSORY COPYRIGHT LICENSE

A factor affecting both broadcast and cable revenues and program expenses is the compulsory copyright license, under which many television broadcast signals are retransmitted by cable television systems. Royalties paid by cable operators under the compulsory license are distributed to copyright holders by the Copyright Royalty Tribunal.[206] While the bulk of these royalties go to the producers of entertainment series and to the various sports interests, a small fraction, roughly 5 percent of the total, goes to

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205 See, e.g., "Down Year in Profits for the Big Three," Broadcasting, May 6, 1991, p. 19, and Turner Broadcasting System Annual Report for 1990.

206 The compulsory copyright license raises the issues, discussed in chapter II, of conflict between efficient production and efficient distribution of programming. Requiring cable systems to pay market prices for programming would improve the incentives for program production, but would probably raise prices to viewers and cause service to be denied to some viewers who would place some value on it. See chapter II above.

television broadcast stations, as compensation for the programming, such as news, that they produce themselves.[207]

The compulsory copyright license allows cable systems to acquire the programming of broadcast stations for license fees that are believed to be, in in general, below the market price for the programs.[208] Local stations are essentially free to cable systems, and fees for distant signals appear, in most cases, to be below the market price. Cable systems thus benefit from programming that broadcasters paid for but that the cable systems, for the most part, did not. This underpriced programming gives cable systems a competitive advantage relative to broadcasters. It also distorts program choices by giving cable systems an incentive to offer distant signals rather than cable networks, and creates more competition to local stations from distant signals than otherwise would be the case. If the cable systems had to pay the market price for the programming, they might choose to purchase original programming, presenting viewers with a different range of choices.

Because a substantial amount of the viewing of cable households is of television broadcast signals, were the compulsory license to be eliminated and full copyright liability imposed on cable systems, the potential would exist for a "second revenue stream" for television broadcast stations and networks. An end to the compulsory license and imposition of retransmission

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207 Copyright Royalty Tribunal, "Summary Fact Sheet," February 1991.

208 Report in General Docket 87-25, 4 FCC Rcd 6562 (1989), paras. 67-75.

consent would allow broadcasters to negotiate for payment for the use of their programming by cable systems that reflected the value of the programming to the cable system, and might give broadcasters more revenue with which to purchase more expensive programming.[209]

SUMMARY

Broadcast networks and stations will have declining audiences, revenues, and program expenditures in the future. Much of the decline in expenditures will occur through a reduction in prices, so that the decline in broadcast revenues will be shared with the program production and syndication industries. Nevertheless, for both networks and stations, the quality and distinctiveness of programming will probably also be adversely affected. The quality of local programming, comprised mostly of news and public affairs, may also decline.

Because of the large number of channels available, basic cable can present both general-interest programming resembling that of the networks and highly focused special-interest programming. While pay and pay-per-view cable present some expensive, highly popular programming, overall expenditures on cable programming, particularly basic cable programming, are lower than those

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209 A CBS representative estimates, based on fees paid by cable systems to cable networks, that retransmission consent would result in fees of $72-$160 million per year for CBS and its affiliates. "CBS Believes Retransmission Consent Plan is 'Ahead of Schedule,'" Communications Daily, June 3, 1991, p. 3.

for broadcast network programming, though cable expenditures are rising and basic cable has begun to present first-run series and other programming resembling that of the broadcast networks. Cable is estimated to account for only 16 percent of total program expenditures but about 32 percent of audiences.

Broadcast networks and stations will continue to have access to sufficient funds to outspend cable for programming--at least until the end of this decade--but their ability to do so is declining, and program expenditures do not necessarily translate into audiences. The ability of broadcasters to compete on even terms for programming would be enhanced by an end to the compulsory copyright license and imposition of retransmission consent.

XI. THE FUTURE OF BROADCAST TELEVISION

The broadcast television industry has suffered an irreversible long-term decline in audience and revenue shares, which will continue through the current decade. The effects will differ greatly, however, for various groups of firms in the market and for different groups of viewers.

TELEVISION STATIONS

Broadcast television stations will experience declining revenues and increasing program costs. Network compensation will fall with network advertising revenues, and national spot advertising will erode partially to cable. The potential for greatly increased competition from cable in local advertising is clear as well.

The effects of these trends will vary greatly across stations and markets. The current revenues and profits of broadcast stations vary enormously with market size. In large markets, audiences probably will remain large enough to support many television stations, particularly since over-the-air alternatives are so plentiful in these markets that cable penetration remains relatively low. Broadcasters in large markets will see their profits fall and probably will have to cut costs. But in the largest markets, profits and costs are so far above the minimum required to operate a station that for many of the largest stations, great declines in revenue could probably occur without appreciably affecting service. In addition, program prices likely will fall as the revenue potential of the programs falls, so only part

of the effect of reduced expenditures will be felt in reduced program quality. Some broadcasters may scale back program production, and to the extent that they do, the quality of local programming may suffer. Since we have little ability to measure how viewers value local programming, it is not clear how much the welfare of viewers would be affected. Some marginal stations in large markets will probably leave the market, but many healthy stations can be expected to remain.

In smaller markets the effects on television broadcasting probably will be more severe. In markets below the top ten, more than half of all independent stations are already experiencing losses, at least on paper.[210] Here, a reduction in the number of stations may occur, which would reduce over-the-air choice. One can speculate, however, that local programming will be affected little by stations leaving the market, since marginal stations apparently spend very little on local programming. In the short run, the revenues of remaining stations would increase; the long-run effect on revenues and programming of remaining stations is unclear. The number of markets in which broadcast stations provide a competitive check on cable systems probably will decline.

Public television stations, though not supported by advertising, may also face declining revenues because of declining audiences. Supported by

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210 NAB, Television Financial Report, 1990, pp. 1-16.

voluntary viewer payments and government and charitable contributions, public television was created as a response to the failure of the advertiser-supported program market to produce programming to suit the tastes of small audiences. With the advent of commercial viewer-supported programming on cable, many of the needs public television was intended to fill have begun to be met by cable. In the future, government funding of public television may have to be justified on different grounds.

Despite a decline in viewing, a substantial audience for broadcast television will remain in 1999. About one-third of households in the United States probably still will not receive cable. Even if cable households shift their viewing increasingly toward cable channels, these non-cable households will still provide large audiences for television advertisers. The households that do not subscribe to cable will be less valuable to broadcasters, on average, than cable households would have been because they will disproportionately be low-income households that advertisers find relatively less valuable, or they will not subscribe to cable because they watch little television or receive satellite service. But as long as most broadcast stations are carried by cable, they will still be able to draw audiences from among cable subscribers as well as non-subscribers.

For the foreseeable future, a considerable broadcast audience will remain and will continue to provide broadcasters with advertising exposures to sell. In addition, broadcasters have an opportunity to diversify by using their expertise in programming to offer programming to cable channels and

other media. This opportunity will be most valuable to large-market stations that have extensive programming operations. The overall result of these changes is likely to be a smaller over-the-air television industry (i.e., fewer stations).

NETWORKS

For the three conventional television networks the decline in audience shares will probably slow over the decade as cable matures and as marginal independents go dark. On the other hand, cable subscribers' viewing will shift increasingly to cable-originated channels. In 1989/90, each of the three major networks averaged roughly 19 percent of prime time viewing and 12 percent of all-day viewing. (See tables 8 and 9 above.) Since the trend away from broadcast viewing will continue, one could speculate that by 1999 average network prime time viewing shares might fall to 15 percent, while their average all-day viewing shares could well sink to 8 percent. As cable advertising becomes a better substitute for network advertising, prices of network advertising time will fall, and advertising revenues will fall along with audiences.

Networks have responded to reduced revenues by cutting costs, particularly program expenditures, and will almost certainly continue to do so. Another way for networks to cut costs will be to reduce compensation to affiliates, which may result in affiliates' carrying less network programming, further reducing network audiences. Less expensive network programming, coupled with better programming on competing outlets, will erode the

reputation for superior production quality that historically distinguished the broadcast networks. Viewers will increasingly see cable and broadcast programming as interchangeable. The Fox network will provide a close substitute for the traditional networks in terms of both audience perception and nationwide advertising reach. Other nationwide distribution media may develop through some combination of cable and DBS. The networks will continue to lose their uniqueness to both audiences and advertisers, leaving them increasingly three program packagers among a large number.

As program packagers, networks have the flexibility to serve various distribution channels. As the broadcast advertising market shrinks, the networks will have an incentive to diversify into other markets. Indeed, to the extent that regulations restrict their ability to expand their broadcast activities, the networks will have significant incentives to diversify into non-broadcast media. Two of the three broadcast networks already have interests in cable programming ventures, and their programming is delivered to home satellite dishes in areas where it is not available over the air. In the future the networks may provide programming for DBS or MMDS systems as well. Thus the networks' long-term prospects are not wholly tied to the fortunes of over-the-air broadcasting, and at some point the networks may find it more profitable to supply programming directly to cable or other media, or directly to the home, than to broadcast affiliates.

For the short term the continued viability of networking is suggested by the success of the Fox network and its affiliates. Fox's success,

ironically, is to some extent attributable to the growth of cable, since many Fox affiliates are UHF stations that depend on cable carriage for much of their coverage. Moreover, in some cases, Fox supplies its programming directly to cable systems if no local broadcast affiliate is available. It is not clear whether enough independent stations remain to make yet another broadcast network viable. For the near future, the three major broadcast networks will attract larger total audiences than the alternatives, and will outspend their competitors on programming.

VIEWERS

For viewers, the effects of additional video competitors so far appear to have been highly beneficial. Not only do viewers have the choice of purchasing additional program services, but the number of advertiser-supported channels has increased, providing more choice even to those who do not pay for programming.

In future, however, the number of broadcast television stations is likely to decline, and the quality of broadcast service may deteriorate. The effects will vary for different groups of viewers who face reduced broadcast service. For households that subscribe to cable or another multichannel service, a reduction in the number of broadcast stations they can receive or movement of some programming from broadcast to basic cable will cause little or no welfare loss because the cable system almost certainly will replace the lost station with another channel. The only possible loss may be a less desired mix of programming. But since the station that left the market

presumably will be the one with the least popular programming, the loss is probably small. We have noted that marginal stations probably produce little local news or public affairs programming, so the loss of local content probably will be negligible. If broadcast programming moves to a pay (or particularly a pay-per-view) service, viewers will be worse off because they will have to pay for what was previously free. But that effect must be balanced against the supply of previously unavailable programming that would be supplied on a subscription basis.

Viewers who are passed by cable but do not subscribe will experience a loss of welfare if the number of broadcast stations or the quality of programming declines.[211] Those who value television highly but cannot afford to subscribe will suffer the greatest loss. Those who currently choose not to subscribe because they do not value television programming highly or because over-the-air programming suits their tastes will experience a smaller loss. Some will continue not subscribing to cable and experience a reduction in service. The associated welfare loss will depend on their taste for television as well as the magnitude of the reduction in service. Some will subscribe to cable, choosing to pay for service that, while more valuable than what is available off-air, may be inferior to what they previously received without charge.

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211 About 35 percent of television households are passed by cable but do not subscribe. See table 15.

Viewers not passed by cable will also experience a loss of welfare if broadcast service deteriorates. They can acquire a partial substitute for broadcast service with videocassettes or, in most cases, with home satellite dishes, which, although now expensive, will probably drop in price over the coming decade. While both offer great quantities of programming, neither satellite dishes nor VCRs provide local service. On the other hand, uncabled areas are frequently remote areas where broadcast reception is poor, so the lost over-the-air service may have had little value. This group of viewers is small: 8.8 percent of television households are not passed by cable. About 20 percent of those households have home satellite dishes, and in future DBS service will almost certainly be available in most cases.

In large markets, over-the-air service probably will remain plentiful. Large populations will still be able to support many stations, and good over-the-air service will keep cable penetration lower than in other areas. In smaller markets the loss of one station would have a much larger impact on the overall quantity of over-the-air service. In these markets, where over-the-air service offered less variety to begin with, the gap between what is available from broadcasters and from multichannel providers will probably widen. However, these developments will affect relatively few television

households.[212] Moreover, it is important to remember that by historic standards, the existing level of service is high: the number of commercial television stations in operation is 50 percent greater than in 1980, and recipients of multichannel services have enormously greater choice available to them. For those to whom cable or other multichannel service is unavailable, or who cannot afford such service, however, the loss of broadcast service would be a significant loss.

QUALIFICATIONS

These predictions assume a continuation of current trends. Some dramatic departure from these trends may drastically alter the outcome. One such occurrence could be early development of a highly successful DBS service. A DBS system could provide nationwide coverage, even in areas not reached by cable or broadcasting; could aggregate audiences with unusual tastes even more efficiently than cable; and could have enough channels to offer near video on demand. The single obvious drawback of DBS is that it probably could not offer local programming, though regional programming would be technically possible. A popular DBS service would accelerate the migration of audiences away from terrestrial broadcasters.

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212 Only 15.2 percent of television households live in small television markets, i.e., those below the top 100. Moreover, those markets are now served by 35.1 percent of the total number of television broadcast stations in the United States. See Arbitron Ratings Company, Television ADI Market Guide 1989-1990.

If, contrary to expectation, the networks networks were to decouple from their local affiliates, television broadcasting would be substantially less popular. Decoupling might at some point be profitable to the networks if other media could pay as much for programming as the networks derive from broadcast advertising. This probably would leave the former affiliates with less attractive program choices, though as the gap in quality between network and other programming narrows, the potential loss to the affiliates also will fall. The affiliates would lose network compensation but would regain advertising spots to sell. The success of the Fox network, and of some cable networks, however, suggests that, at least on some scale, broadcast networking can still be highly profitable.

Further, the cable industry may evolve in ways that make it a closer substitute for broadcast television. Nothing prevents cable systems, or groups of them, from producing and transmitting local programming. Local cable news channels are increasing in number and are beginning to duplicate the last remaining unique service of broadcast stations. And while no one appears to be contemplating such a service, free, (i.e., having no subscriber fee whatever) advertiser-supported cable channels could conceivably garner some of the remaining audience of nonsubscribers. If so, cable and DBS between them could offer all the services now provided by over-the-air broadcasters.

On the other side of the ledger, new technologies could allow broadcasters to compete more effectively with multichannel media. Video

compression techniques, for instance, could allow several channels of programming to be offered on a single six-megahertz broadcast channel, offering much more diversity and choice and a service more closely resembling cable. Interactive technologies, permitting over-the-air shopping and opinion polls, could increase the attractiveness of broadcast television.

Television broadcasters, and the networks that supply them, will clearly decline in relative importance and probably in number or size as well over the next decade. The power of the networks that the Commission has historically sought to curb has succumbed to technology and competition. Broadcast television, however, will remain a reasonably prominent feature of the American landscape.

IMPLICATIONS FOR REGULATION

Changes in regulation may permit television broadcasters to achieve efficiencies that could allow them to become more effective competitors in an increasingly multichannel environment. Rules imposed to curb network or station market power or concentration of control over programming when television broadcasters were the video marketplace may be counterproductive in today's competitive market.

The business of broadcast television is attracting audiences for sale to advertisers by purchasing, producing, scheduling, and distributing programming. The technical aspects of delivering broadcast signals are a small component of the business: in 1989, engineering expenses averaged less

than 9 percent of total expenses for all size classes of stations.[213] Allowing networks and stations to apply their expertise in acquiring and distributing programming in ways they find advantageous, both within broadcasting and in other media, will improve broadcasters' ability to provide service the public values. This will permit them to compete more effectively.

Commission rules that restrict stations' and networks' ability to deliver service should be reconsidered. Among these are the various rules restricting ownership of broadcast stations and ownership of other media along with broadcast properties. In today's market, for instance, common ownership of larger numbers of broadcast stations nationwide, or of more than one station in a market, may permit exploitation of economies of scale and reduce costs or permit improved service. Joint newsgathering operations, for instance, might permit improvements in the quality of local news coverage. For these reasons, the Commission should eliminate its broadcast multiple ownership rules, relax the duopoly rules to permit common ownership of television stations unless their grade A contours overlap, and consider eliminating the duopoly rules for unaffiliated UHF stations.

Similarly, allowing combinations between broadcasters and other media, as long as they did not decrease the competitiveness of local broadcast markets, could allow efficient use of programming and other resources. Hence, Congress should repeal the broadcast-cable crossownership prohibition and

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213 NAB, Television Financial Report, 1990, pp. 1-16.

the Commission should eliminate its own prohibition, perhaps subject to certain conditions. Rules that prevent vertical integration of the major broadcast networks into program production and syndication, despite the fact that their competitors appear to find such integration valuable, also cause broadcasters to operate under a competitive handicap and should be reconsidered. In particular, the Commission should eliminate its broadcast network-cable crossownership ban.

The efficient adoption of the new technologies described above also will require some regulatory action. The dual networking rules, for instance, may hinder the offering of multiple channels by a single broadcaster, and network dominance, which the rules were intended to curb, will scarcely be an issue in the future multiple-provider environment.

The evolution of the broadcast industry may entail considerable change in the use of spectrum. In the short run, the number of broadcast stations is likely to decline. In the longer run, video compression techniques will allow the transmission of multiple channels in the spectrum now used for a single channel, or to broadcast HDTV in an NTSC channel. Such changes will reduce the value of spectrum for broadcasting. The Commission will have an opportunity to allow broadcasters to acquire an additional source of revenue by using their spectrum for other, higher-valued purposes in addition to broadcasting.

In the shorter run, allowing broadcasters and program producers to receive market value for the use of their programming by cable systems would

redress the competitive balance between broadcasting and cable. Full copyright liability for cable systems and retransmission consent for local broadcast stations might give broadcasters an additional source of revenue.

Economic and technological developments over the past 15 years have vastly expanded the array of video choices available to the American public. Increased time diversity, choices, and new technologies have given, and increasingly will give viewers the ability to control their television viewing. The new video marketplace is making it possible, therefore, for viewers to signal their preferences far more precisely than before, and programmers are responding by producing more targeted programming to serve the increasingly segmented market. Advertisers are adjusting their purchases of commercial time to target the geographic and demographic groups most valuable to them. These trends will continue producing a diverse viewer-centered video marketplace. Broadcast television will have its place in this new world but as one player among many.

APPENDIX

DEMOGRAPHIC TRENDS AND BROADCAST AUDIENCES

Changes in the nation's population, family structure, and work behavior in the next decade will greatly affect both tastes for video services and the resources households have to purchase these services. Because changes in the population will almost certainly have a considerable effect on broadcast viewing, we examine some of the more important trends here.

Table 26 shows past and projected population trends in the United States. In the period since 1975 the population has grown at roughly 1

TABLE 26
POPULATION OF THE UNITED STATES, 1975-2000

YEAR	TOTAL POPULATION	% CHANGE IN 5 YEARS	MEDIAN AGE
1975	215,973		28.7
1980	227,757	5.5	30.0
1985	239,279	5.1	31.5
1990*	249,891	4.4	33.0
1995*	259,619	3.9	34.8
2000*	267,747	3.1	36.5

SOURCES: 1975-1987, U.S. Bureau of the Census, Statistical Abstract of the United States, 1989 (109th Edition.) Washington, D.C., 1989, p. 13; 1990-2000, U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1017, Projections of the Population of the United States by Age, Sex, and Race: 1988 to 2010, U.S. Government Printing Office, Washington, D.C., 1988, pp. 20-21, 29.

*Projected.

percent per year. Fewer births and growing life expectancy have resulted in an aging population: the median age rose from 28.7 years in 1975 to 32.7 years in 1987.

The population of the United States is projected to grow much more slowly over the next decade than in the past. Total population growth, according the the Census Bureau's mid-range projections, will be 3.9 percent between 1990 and 1995 and 3.1 percent between 1995 and 2000. About 30 percent of the growth will result from immigration.[214] The median age will continue to rise to 36.5 years in 2000. The proportion of working-age people in the population will rise slightly relative to the numbers of children and the elderly.[215]

Family structure continues to change. As shown in Table 27, young people are marrying later, marriage rates continue to fall, and divorce rates remain close to the historic peak.[216] As a result, a larger percentage of the population is single or divorced. Birth rates remain low

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214 U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1017, Projections of the Population of States, by Age, Sex, and Race: 1988 to 2010, U.S. Government Printing Office, Washington, D.C., 1988, p. 27.

215 Ibid., p. 10.

216 Statistical Abstract, 1989, p. 85.

TABLE 27
SELECTED FAMILY CHARACTERISTICS, 1975-1987

	1975	1980	1985	1987
Median Age at 1st Marriage				
Men	22.7	23.6	24.8	
Women	20.8	21.8	23.0	
Marital Status				
(% of Population 18 or Over)				
Single	17.5	20.3	21.5	21.8
Married	69.6	65.5	63.0	62.9
Widowed	8.3	8.0	7.9	7.5
Divorced	4.6	6.2	7.6	7.8
Average Family Size	3.4	3.3	3.2	3.2
Births to Unmarried Women	14.2	18.4	22.0	
(% of All Births)				

SOURCE: Statistical Abstract, 1989, pp. 42, 66, 86.

by historic standards.[217] Between 1975 and 1990, as shown in Table 28, married-couple households declined from 66.0 percent to a projected 56.3 percent of households, while families headed by a single person increased from 12.1 to a projected 14.5 percent of the total. Only 70.8 percent of the population were projected to live in married-couple families in 1990.[218] Between 1975 and 1986, births to unmarried mothers increased from 14.2 to 23.4 percent of the total.[219]

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217 Ibid., p. 61.

218 Ibid., p. 48.

219 Ibid., p. 66.

TABLE 28
HOUSEHOLDS OF VARIOUS TYPES, 1975-2000
(Percent of All Households)

Year	Families		Nonfamily Households	Total
	Married Couple	Single Householder		
1975	66.0	12.1	21.9	100
1980	60.8	12.9	26.3	100
1985	58.0	14.3	27.7	100
1990*	56.3	14.5	29.2	100
1995*	54.7	14.8	30.4	100
2000*	53.1	15.1	31.8	100

SOURCE: Statistical Abstract, 1989, p. 45.
*Projected

The proportion of individuals living alone and of single-parent families is expected to continue to rise, as shown in Table 28. According to the Census Bureau's mid-range projections, which assume a reduction in the rate of change in marriage and divorce rates, married-couple families will fall to 53.1 percent of total households by 2000.

Work behavior is changing as well. As shown in Table 29, the proportion of women in the labor force has risen strikingly, from 46.3 percent of women over 16 in 1975 to 56.0 percent in 1987. Even more dramatic has been the change among women of child-rearing age. By various measures labor force participation rates for this group, even those with young children, have risen by about 20 percentage points over the period since 1975. Labor force participation rates are higher for divorced than

TABLE 29

CIVILIAN LABOR FORCE PARTICIPATION RATES, 1975-2000

(Percent)

Year	Total	Male	Female			Wife, Husband Present	
			Total	25-34 Years	35-44 Years	Children < 2 yrs.	Children < 1 yr.
1975	61.2	77.9	46.3	54.9	55.8	30.8	44.9
1980	63.8	77.4	51.5	65.5	65.5	39.0	54.3
1985	64.8	76.3	54.5	70.9	71.8	49.4	61.0
1987	65.6	76.2	56.0	72.4	74.5	51.9	65.2
1995*	67.2	75.3	59.8	79.2	81.0		
2000*	67.8	74.7	61.5	82.3	84.2		

SOURCE: Statistical Abstract, 1989, pp. 376, 386.

NOTE: Civilian noninstitutional population 16 years old and older.

*Projected.

for married women. In 1987, 56.8 percent of married women with preschool children and 70.5 percent of divorced women with preschool children worked at least part time outside the home.[220] Labor force participation rates of men have declined slightly during this time period. As shown in Table 29, labor force participation rates for women are projected to continue to increase through 2000, but at a decreasing rate.

Family structure has a major effect on family income. In 1987, the median income of all families was about $31,000. For married couples with the wife employed, it was $41,000; with the wife out of the labor force, it was $27,000. Married couples with children had a median income of $36,000; female family heads with children had a median income of $11,000.[221]

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220 Ibid., p. 386.

221 Ibid., p. 448.

The rate of poverty remains far above the 1973 low.[222] Poverty among the elderly has declined, but poverty among children has increased.[223] In 1986 about 15 percent of all families with children were poor, but 46 percent of female-headed families with children were poor.[224] The rate of poverty among blacks and Hispanics is much higher than among whites. In 1987, 10.5 percent of whites, 28.2 percent of Hispanics, and 33.1 percent of blacks were poor.

Ethnic minorities will make up an increasing proportion of the working population, and particularly of the younger population, because of immigration and higher birth rates among minority groups. Between 1988 and 2000, two-thirds of new entrants into the labor market will be Hispanic, Asian, black, or female.[225]

Education requirements for jobs will continue to rise, but educational attainments of the population are not growing commensurately.[226] High school completion rates have remained about constant since 1973, though they have

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222 Economic Report of the President, transmitted to the Congress February 1990, U.S. Government Printing Office, (Washington: 1990), p. 167.

223 Statistical Abstract, 1989, p. 454.

224 Ibid., p. 456.

225 Economic Report of the President, 1990, p. 148.

226 Ibid., pp. 149-153.

increased for blacks during the period. College graduation rates have actually decreased since 1977. Hispanics' high school completion rates and both blacks' and Hispanics' college completion rates lag far below those of whites.

How will these changes affect television viewing? The largest and probably most important change has been the increasing percentage of women in the labor force. Women aged 18-49 are a demographic group highly valued by advertisers, and this age group has experienced the greatest increase in labor force participation. A probable reduction in daytime viewing is an obvious result, but a decrease in leisure time for these women, and other family members as well, will probably also reduce viewing at other times.

Slower population growth will also mean that the potential audience will grow more slowly than in the past. An aging population will have implications for program tastes, which will be particularly important for advertiser-supported broadcasters since older age groups will have higher incomes than in the past and should be more attractive to advertisers. More importantly, possibly, an older population will mean a larger percentage of the population working and smaller daytime audiences. A larger percentage of foreigners in the population may mean less interest in mainstream programming and more time spent watching foreign-language videocassettes, for instance.

Changes in family structure may result in a population that will be increasingly divided between well-off single-person and two-earner households and struggling single-parent families. Two-earner families will have the income to buy advanced electronic equipment and program services, but not necessarily the leisure to use them. Single-parent families, on the other hand, are likely to lack the resources to purchase expensive services, which will work to the advantage of broadcast television. A mismatch between the increasingly sophisticated skills needed and those available in the work force may similarly divide the population into economic strata and affect purchase of program services.

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