

The Evolving Structure and Changing Boundaries of the U.S. Television Market in the Digital Era

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I. Introduction

The amount of video programming available to US citizens has expanded dramatically over the past 30 years. Although free-to-air television broadcast services remain the most popular, increasing competition from pay television distribution platforms such as cable and direct broadcast satellite (DBS) has reduced both the share and the absolute size of the broadcast audience.² However, the advertising revenues which finance broadcast television have not dropped in proportion to the decline in audience. For this reason, much of the television broadcasting industry remains quite profitable. But it is undeniable that television broadcasters face a series of strong competitive challenges.

This chapter describes the evolution of the television market in the U.S. over the last 30 years. It is a story of increasing citizen choice of content and increasing citizen control over when and how that content is displayed. It is a story of technological change that has simultaneously expanded the capacity and reduced the cost of video distribution to consumers. Surprisingly, however, it is not, at this point, a story of a significantly eroding free-to-air video market.

The expansion of citizen range of choice and control is due to a series of advances in distribution technology that permit distributors to deliver a much larger number of video channels and to charge viewers for access to those channels. At the receiving end, households now can customize their viewing experience in various ways, including time-shifting and editing out commercial advertisements.

Cable television provided the first major expansion in channel capacity and program offerings, and Direct Broadcast Satellite (DBS) service brought a further increase. In both cases, the capacity expansion was facilitated by the introduction of digital transmission technology. DBS service is now all-digital, and the overwhelming majority of cable subscribers have access to a digital tier of programming, although less than half of those subscribers currently choose to subscribe to the digital tier. U.S. free-to-air broadcasters have also introduced digital transmissions, but, particularly with respect to customer premises equipment, the transition is at an earlier stage than with DBS or cable. The digital transmission standards are quite flexible, permitting both "standard definition" and "high-definition" video. Thus distributors can use their digital capacity to expand the number of standard quality video streams or increase the picture (and sound) quality of existing video streams, or some of each. This opens up the possibility

¹ The authors alone are responsible the analysis and conclusions herein. Any opinions expressed are those of the authors and do not necessarily represent the views of the Federal Communications Commission or any other member of its staff.

² In U.S. terminology, "broadcasting" refers to free-to-air services only.

of increased revenue opportunities for pay television distributors and free-to-air broadcasters.

Internet distribution of video holds the promise of even more program variety. For example, a significant amount of video programming is currently available over the "public Internet" to consumers who wish to stream live or download such video. Some of this programming is offered for free, while other programming is made available on a fee or subscription basis. Content is selected from the distributor's web site by those who make their own arrangements for transmission capacity and access to the distributor's web site (*i.e.*, the subscriber acquires her own Internet connection).

But traditional video program distributors need not view the Internet as a competitive platform only. Traditional video program distributors can take advantage of the efficiency of Internet Protocol (IP) transmission for distribution of their own package of programming to multiple subscribers over the dedicated facilities controlled by the distributors. This may be done using the traditional cable, fiber and/or terrestrial wireless platforms that are currently being used to provide video, or it may be done using mobile devices and differing connective technologies based on the IP platform. But it is clearly too early to say what impact the Internet will have on traditional video distribution platforms, other than to note that they raise a host of public policy issues beyond the scope of this paper.³

Regardless of the distribution platform, however, digitization raises important intellectual property issues. Ever since the early days of the video cassette recorder (VCR) there has been unauthorized copying and commercial sale of video content. This activity has been and continues to be a target of law enforcement activity. However, casual home copying of video programming has not led to widespread redistribution of content under analog distribution models. The reason is that the quality of the copy of deteriorates fairly rapidly as additional analog copies are made. Digital content, on the other hand, may be copied and recopied with very limited quality deterioration. As more US households acquire broadband Internet access, it will become increasingly practical to implement such unauthorized redistribution on a widespread basis.

These developments have led content providers to seek measures to protect their digital content from massive copying and unauthorized redistribution. The type of content that get distributed digitally, and when in its lifecycle the content gets distributed digitally, depends at least in part on resolution of the intellectual property issues.

The ability to charge a subscription fee provides distributors and program producers with a second revenue stream, in addition to advertising (although not all pay television

³ For example, such distribution platforms could compete with broadcasting and other platforms which are subject to public interest obligations. The result could be that some of those obligations are less necessary due to the range of content provided over the new platforms, or the result could be that those obligations are less sustainable due to competition from a less-regulated platform. The international nature of the Internet may make it more difficult in practice for national authorities which aspire to impose regulation on Internet distributors to succeed in imposing regulation.

channels in the U.S. choose to carry advertisements). Subscription fees also provide a mechanism, albeit imperfect, for viewers to express the intensity of their preferences for programming. Although most cable and DBS programming is purchased in bundles of channels, some channels (such as the “premium” channels like HBO or Showtime) are purchased individually, and an increasing amount of programming is becoming available for purchase on a per-program basis “on-demand.” The fact that a little more than 85 percent of US television households subscribe to a pay television service⁴ suggests that these services are, in fact, highly valued and represent an overall increase in consumer welfare associated with video programming delivery. Nevertheless, a rigorous comparison of the welfare effects of different market structures is complex and beyond the scope of this (primarily descriptive) chapter.⁵

In addition to the increased number of video channels available, households have also benefited from the development of on-screen electronic programming guides (EPGs) and home recording and playback devices. The EPG provides the viewer with enhanced ability to search through their range of choices and identify desired programs. The VCR, the first home recording and playback device, provided consumers the capability to “time-shift” programming received via broadcast or pay television. It also opened up an additional distribution channel for video via the sale or rental of pre-recorded program material.

More recent devices have enhanced both the time-shifting and pre-recorded program distribution functions. The DVD player, for example, has improved the quality of pre-recorded programming, and both the DVD recorder and the digital video recorder (DVR) has significantly enhanced home recording capabilities. DVRs are digital recording devices with substantial hard-drive memory capacity. They are generally integrated with the cable or DBS operator’s set-top box and on-screen EPG. This makes it relatively easy for the consumer to search widely for programming of interest and record it automatically.

One consequence of VCR, DVD, and DVR recording capability is that viewers can more easily avoid watching commercial advertisements more easily. To the extent that this behavior eventually leads to significant reductions in advertising revenues, it could obviously threaten the business model of free-to-air commercial television. Already,

⁴ At year-end 2004, approximately 85 percent of all TVHH subscribed to an MVPD service. See Table 2 for TVHH, cable, DBS and Home Satellite Dish (HSD) data, which shows 82.6 percent of TVHH subscribing to cable or satellite service. As of year-end 2004, approximately 2.4 percent subscribed to other platforms. The 2.4 percent is based on an estimated 2.6 million HH, which is the average of the 2.7 million figure for June 2004 and the 2.5 million figure for June 2005 from *Implementation of Section 19 of the 1992 Cable Act (Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming)*, 2005 Report (“FCC 2005 Video Competition Report”) (2006), 21 FCC Rcd 2503, 2617 (Table B-1), and 2004 Report (“FCC 2004 Video Competition Report”) (2005), 20 FCC Rcd 2755, 2869 (Table B-1). “Cable basic subscribers” are always calculated based on the number of subscribers to the BST tier of cable service. Data on subscribers to CPST service are not collected. See discussion of cable tiers of service in Section II.

⁵ For a comprehensive basic discussion, see Bruce Owen and Steven Wildman, *Video Economics* (Cambridge, MA: Harvard University Press) 1992. They also discuss the public good nature of video programming and its implications for welfare.

many advertisers are experimenting with "product placements," (*i.e.*, placing references to their products in the actual program narrative itself, in order to make it harder for viewers to avoid exposure to the commercial message).

The remainder of this chapter contains four additional sections. Section II addresses the market structure, availability, and usage of broadcast television and the major multi-channel video program distribution (MVPD) platforms, cable and DBS.⁶ Section III reviews the revenue sources for broadcast television, cable, and DBS, while Section IV examines the competitive impact of MVPDs on broadcast television. Section V looks in more detail at technological advances, and Section VI contains a brief summary and conclusions.

II. Market Structure, Availability, and Usage of Video Media in the United States: 1975-2004

A. Introduction

This section reviews changes in the market structure, availability, and usage of video media in the U.S. over the past 30 years, with some attention to changes in the regulatory environment. It includes subsections on broadcast television and on major MVPD services. As a preliminary matter, at the end of 2004, there were 109.6 million television households (TVHH) in the U.S., compared with 69.6 million in 1976.⁷ During that time, the total number of commercial and noncommercial local television stations also increased from 953 to 1740.⁸

⁶ MVPD's are distributors that might well be referred to in other countries as "pay television" providers.

⁷ See Table 2. This represents about 98.2 percent of total households in the U.S. at year-end 2004. See Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Television, Television Households*, at <http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=tvhouseholds> (visited May 3, 2006).

⁸ The figures in this paragraph and the following paragraph come from Tables 1 and 2. As explained in footnote 4 above, approximately 2.4 percent of all U.S. TVHH subscribe to a service other than cable, DBS, or HSD. It is also important to note that a limited number of households subscribe both to cable and DBS and that the subscribership numbers are likely more reliable than the availability numbers. Any household with a clear line of sight view to the southern horizon could, in principle, receive DBS service, but an indeterminate number of households do not have this. The estimates of cable homes passed come from an industry source and some consider them biased upward. For a review of some other estimates and methodologies, see *Application of EchoStar Communications Corporation, General Motors Corporation, and Hughes Electronics Corporation, Transferors, and EchoStar Communications Corporation, Transferee*, Hearing Designation Order, CS Docket No. 01-348, 17 FCC Rcd 20559, 20611-12 (2002). Consumers also access video programming via pre-recorded media. The VCR first became a consumer product around 1980, at which time 1.1 percent of TVHH had such a device. The number rose to 68.6 percent in 1990, 85.1 percent in 2000, and 90.8 percent in 2004. Television Bureau of Advertising, Inc., *Research Central, Media Trends Track, Trends in Television, Cable Pay Cable & VCR Households*, at <http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=cable> (visited May 4, 2006). The DVD player became a consumer product in the late 1990's. In 2000, 8.8 percent of TVHH had one, while in 2004 the share had risen to 73 percent. Video Software Dealers Association, *VSDA Annual Report Now Available*, at <http://www.idealink.org/Resource.phx/vsda/annual-reports/index.htm> (visited April 3, 2006) and Veronis Suhler, COMMUNICATIONS INDUSTRY FORECAST 2001, at page 196.

In 1976, cable was the only significant pay television platform. It was available to one third of TVHH and 17 percent of TVHH subscribed. By 1990, cable was available to over 92 percent of TVHH and 55.5 percent of TVHH subscribed. In the same year, slightly less than one percent of TVHH subscribed to a Home Satellite Dish (HSD or C-Band dish) service, using roughly three-meter dish antennas. High-power DBS service, for which subscribers need a half-meter antenna, began in 1994. Subscribership has grown substantially in the last 10 years and, concomitantly, the number of HSD subscribers has dropped precipitously. By the end of 2004, industry estimates state that over 99 percent of TVHH have access to cable and 59.7 percent of TVHH subscribed, and 22.9 percent of TVHH subscribed to DBS or HSD. Thus 82.6 percent of US TVHH subscribed to either cable or satellite pay television.

This section will describe the structure of the US broadcast television distribution system and provide a history of competing pay television providers as offered by cable television and DBS satellite operators. In addition, this section will provide statistics regarding the number of broadcast television outlets available to US citizens, as well as statistics on the number of those who have and continue to subscribe to pay television services. The section also presents some statistics on the amount and type of programming content traditionally offered over these different television platforms to help delineate the usage of each delivery mechanism.

B. The US Broadcast Television Distribution System

The US broadcast television distribution system is made up of networks, owned or affiliated local broadcast stations, and "independent" local stations (those not affiliated with a network). Until the 1980s, there were three major commercial television networks in the US. From the mid-1980s to the mid-1990s, the number of networks expanded, but recently there has been some consolidation. The number of local broadcast stations has also increased substantially over the past 30 years.

The networks also function as sellers of national advertising. Television stations also sell advertising locally. Ultimately, both networks and stations derive all of their revenues from advertising, although some stations receive "network compensation," payments from the network to an affiliated station as part of the agreement for the station to retransmit the network's programming.

1. Networks

The networks function as national packagers and distributors of programming distributed by the stations. Networks distribute programming either via stations that they own or via stations with which they have signed affiliation contracts. The number of hours per week of programming provided by networks to stations varies, but in every case a significant amount of programming (mostly in the daytime, early evening, and very late night periods) is either produced or acquired by the local television stations that are also retransmitting the network's programming.

The major commercial networks include ABC, CBS, and NBC (the original “big three”), Fox, founded in the mid-1980s, and three other networks formed in the mid 1990s - UPN, WB, and Paxson.⁹ The Public Broadcasting Service (PBS) functions like a network for noncommercial educational television (and radio) stations. PBS, however, owns no stations itself. There are also some commercial stations that are not affiliated with one of the major networks. Some of these stations are parts of specialized networks (e.g., Spanish language networks such as Telemundo or Univision, religious networks such as Trinity Broadcasting) and some are not affiliated with any network at all. Also, some noncommercial stations are independent.

There have been substantial changes in the television network business since the mid-1990s. One important catalyst for change was the repeal of the Commission’s financial interest and syndication rules.¹⁰ These rules had effectively prohibited television networks from owning the production arm of their prime-time entertainment programming.¹¹ In the wake of repeal, the television networks substantially increased the amount of prime-time programming that they produced for themselves. The movie studios, which had been the major producers of prime-time television programming, (apparently) became concerned that it would become harder for them to market their programs to television networks. It is thus probable that ensuring a distribution outlet for their programming was an important reason why studios Viacom and Warner Brothers started television networks. Similar concerns may have influenced Disney’s decision to purchase ABC and Viacom’s decision to purchase CBS.

Another regulatory change, relaxation of the Commission’s “dual network” rule, also contributed to the restructuring.¹² That rule had prohibited any company from owning more than one television network. The rule currently only prohibits mergers involving more than one of the big four commercial networks. Thus, it did not preclude common ownership of CBS and UPN, nor would it preclude common ownership of UPN and WB.

⁹ Recently, UPN (launched in 1995 by Viacom, which purchased CBS in 1999 and recently split into two public corporations, one of which is the CBS Corporation) and WB (launched by Warner Brothers) have announced plans to merge. CBS Corporation, *CBS Corporation and Warner Bros. Entertainment Form New 5th Broadcast Network* (press release), January 24, 2006, at <http://www.cbcorporation.com/news/prdetails.php?id=173> (visited May 3, 2006); Viacom, Inc., *Viacom Board of Directors Approves Creation of Two Publicly Traded Companies Following Spin-off* (press release), June 14, 2005, at <http://www.cbcorporation.com/news/prdetails.php?id=62> (visited May 3, 2006).

¹⁰ The so-called “Fin-Syn rules” prohibited the then-dominant television networks from obtaining a financial interest in independently-produced programming and from syndicating any program domestically. See *Amendment of Part 73 of the Commission’s Rules and Regulations with Respect to Competition and Responsibility in Network Television Broadcasting*, 23 F.C.C.2d 382 (1970); *Amendment of the Syndication and Financial Interest Rules*, 94 F.C.C.2d 1019, 1057-63 (1983). See also *In re Review of the Syndication and Financial Interest Rules*, 10 FCC Rcd 5672 (1995) and 10 FCC Rcd 12165 (1995) (eliminating the Fin-Syn rules).

¹¹ A comprehensive discussion of the program production market is beyond the scope of this paper.

¹² *Implementation of Sections 202(c)(1) and 202(e) of the Telecommunications Act of 1996 (National Broadcast Television Ownership and Dual Network Operations)*, 11 FCC Rcd 12374 (1996).

Networking appears to be an efficient mechanism for distributing programming and selling advertising. Notwithstanding the recently-announced plan to consolidate two broadcast networks, the overall pattern of entry over the past decade is consistent with this conclusion. The broadcast networks are now all parts of larger corporations, so precise data on profitability are generally not available. Nevertheless, most observers suggest that, taken together, the networks do not make much money.¹³

Although further evolution in network programming is likely, the basic distribution mechanism will remain viable for the foreseeable future. Networks are seeking additional revenues streams by releasing DVDs of popular series and also by making episodes available “on demand” via cable or for downloading via the Internet, generally for a fee. It is also possible that networks could gain revenue if their owned and affiliated stations were to secure “retransmission consent” payments from cable and DBS operators in exchange for station permission to retransmit the broadcast signal (see discussion later in this section).¹⁴

Perhaps the most compelling reason for optimism about the future of broadcast networks is the continuing profitability of broadcast stations, detailed below. Historically, networks paid “network compensation” to many of their affiliated stations as part of the agreement for the station to carry network programming. Network compensation payments have been declining over time. There is no reason, in principle, why the flow could not be in the other direction, with affiliated stations contributing directly to the networks to finance programming. In fact, as explained below, affiliates of at least one network make payments to the network. Another possible mechanism would be a change in the division of advertising availabilities within and adjacent to network programs, some of which are assigned to affiliates.

2. Stations

¹³ See, for example, Victor Miller, Christopher Ensley and Tracy Young, TELEVISION INDUSTRY SUMMIT 2002, Bear Stearns Equity Research, January 2003, at page 109; (aggregate broadcast network profitability was \$340 million in 1999, \$798 million in 2000, and \$135 million in 2001) and Raymond Katz, Katie Manglis, Michael Kelman, DIVERSIFIED ENTERTAINMENT: WE ARE FAMILY, Bear Stearns Equity Research, May 2002, at page 9 (stating that the big three commercial networks were marginally profitable in the 1980's and that in 2002, the six major commercial networks, taken together, would lose money).

¹⁴ To date, most stations have been unsuccessful in extracting cash payments in exchange for retransmission consent. A more frequent scenario involves payment to the stations in kind, perhaps agreement by the cable or DBS system to carry a cable channel owned by the same company that owns the broadcast network (e.g., ABC stations may condition retransmission consent on carriage of ESPN2). The National Association of Broadcasters says that in most markets a single cable company is no longer the sole MVPD and other MVPDs (e.g., DBS) are ready and willing to pay broadcasters cash for the carriage of television broadcast signals. National Association of Broadcasters, Comments in *Inquiry Required by the Satellite Home Viewer Extension and Reauthorization Act on Rules Affecting Competition in the Television Marketplace*, MB Docket No. 05-28, March 1, 2005, at page 18-19, and Reply Comments March 31, 2005, at page 17-18, available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517505230 and http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517394991 (visited May 3, 2006).

Television stations are licensed by the FCC on a local community basis. The FCC provides a larger number of allotments in communities with larger populations. For audience measurement purposes, Nielsen Media Research, a private company, has divided the US into 210 television markets.¹⁵ There is a limit on national television station ownership that applies to all companies, including network companies. Originally the limit was couched in terms of the number of stations any entity might own. Currently, there is no limit on the number of stations a company can own, but no company can own stations that reach more than 39 percent of US TVHH.¹⁶

As mentioned above, television stations derive virtually all of their revenues from selling advertising locally and participating in the national spot market. Some stations that are affiliated with networks also receive “network compensation” payments from the network as part of the agreement for the station to retransmit the network’s programming. As the number of networks has increased, the number of stations affiliated with a network has also increased, such that the overwhelming majority of commercial stations are affiliated with a network.

As Table 1 indicates, the number of commercial and noncommercial local television stations has increased steadily between 1975 and 2004. The total number of stations almost doubled, from 953 to 1740, with the largest increases coming in the 1980s. As of 2004, roughly four-fifths of stations were commercial (1361 commercial and 379 noncommercial). According to Nielsen Media Research, the number of television stations available over-the-air to the average US TVHH was 16.4 in 2004, having risen from 11 in 1985.¹⁷

Table 1: Television Stations On Air

Number of Stations	1975	1980	1985	1990	1995	2000	2004
Total	953	1,011	1,197	1,442	1,532	1,619	1,740
VHF	609	625	641	672	688	688	718
Commercial	514	516	520	547	562	564	591
Educational	95	109	121	125	126	124	127
UHF	344	386	556	770	844	931	1,022
Commercial	192	218	363	545	599	684	770
Educational	152	168	193	225	245	247	252
Total Commercial	706	734	883	1,092	1,161	1,248	1,361
Total Educational	247	277	314	350	371	371	379

¹⁵ Nielsen Media Research, Inc., *210 Designated Market Areas*, at <http://www.nielsenmedia.com/DMA.html> (visited May 2, 2006).

¹⁶ This limit was set by Congress. See 47 U.S.C. § 202(c)(1) of the 1996 Telecommunications Act, as amended by Consolidated Appropriations Act, 2004, Pub. L. No. 108-199, §. 629, 118 Stat. 3 (2004). See 47 CFR 73.3555 (d) For the earlier history of this rule, see *In re 2002 Biennial Regulatory Review -- Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996*, 18 FCC Rcd 13620 (2003) (“FCC 2002 Biennial Review”), *aff’d in part, remanded in part, Prometheus Radio Project v. FCC*, 373 F.3d 372 (3rd Cir. 2004), *stay modified on rehearing*, No. 03-3388 (3d Cir. September 3, 2004), *cert. denied*, 125 S.Ct. 2904, 162 L.Ed.2d 310, 73 U.S.L.W. 3539 (U.S. June 13, 2005) (No. 04-1168).

¹⁷ Nielsen Media Research, *TELEVISION AUDIENCE 2004*, at page 12. In 2004, Nielsen revised its methodology to include digital as well as analog television signals. This raised to 15.4 the number of stations available to the average TVHH in 2003.

Source: Warren Communications News, TELEVISION AND CABLE FACTBOOK, STATIONS VOL., 2005 ED., at page C-1.

Note: Figures in this table are as of January of year indicated.

Data in Section III below indicate that a broad range of television stations, in fact, are profitable. Closer examination shows that the profitability of individual television stations varies widely. Among the factors affecting profitability are size of market, number of competing stations in the market, and network affiliation. While generally a single firm is not allowed to own more than one station in a single market, in some circumstances over the past several years, a single firm has been permitted to own two television stations in a single market instead of only one.¹⁸ Although data on the experience of the roughly 100 so-called “duopolies” are not available, this type of combination could affect profitability as well.

C. MVPD Service – Major Players: Cable and DBS

1. History

The first cable systems were created specifically to carry television signals into areas where over-the-air reception was either non-existent or of poor quality because of interference or topography. In the early years, cable provided limited amounts of locally distributed non-broadcast programming to boost operator revenue. The creation of nationally distributed non-broadcast programming, however, so significantly boosted subscribership and cable operator revenues that a market for cable services was effectively opened in heavily populated urban areas as well as the predominantly small-rural areas they first served. This allowed cable to become the competitive medium for the dissemination of news, information, and entertainment that it is today.

Home satellite dish (HSD) technology was developed not long after national cable network satellite distribution technologies were introduced. HSD technology uses the same C-Band satellite system used by cable operators to receive network signals for delivery over their terrestrial cable systems. First developed for individual home use in 1976, HSD technology was commercialized around 1979.¹⁹ HSD owners use an eight foot dish to receive hundreds of channels of unscrambled “feed” programming for free, and scrambled programming purchased in a secondary market from licensed program packagers.²⁰ Space considerations and zoning regulations, however, restrict many viewers’ ability to install the large dish needed for HSD reception, which has thus limited the competitiveness of HSD.

As the amount of programming made available over subscription television services increased in the 1980s and 1990s, so did the competitive impact of such programming.

¹⁸ 47 C.F.R. Sec. 73.3555(b)(2).

¹⁹ See Jonathan Levy, Marcelino Ford-Livene, and Anne Levine, *OPP Working Paper No. 37, Broadcast Television: Survivor in a Sea of Competition* (“FCC Working Paper No. 37”) (2002), at page 53, available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-226838A22.doc (visited May 3, 2006).

²⁰ In later years the size of the dish was reduced to nearly four feet in diameter, still much larger than the 18 inch DBS dish.

CNN was the first non-broadcast news network to be considered formidable competition to the news provided by the well-established broadcast networks. In addition, while there were some non-broadcast networks providing general interest fare in the format of the traditional broadcast networks, many provided highly-specialized programming geared towards a particular audience interest (e.g., sports, weather, news, children), resulting in the segmentation of the available audience. Regionally distributed non-broadcast networks also began to flourish in the 1980s through the 1990s. More than 25 regional networks commenced service in the eighties and more than 51 regional networks commenced service in the nineties.²¹ These networks provided regional sports, regional and local news, or other various regional-interest programming.

By the mid 1990s, most cable operators began upgrading their infrastructure to expand channel capacity to allow for the provision of an increasingly large amount of non-broadcast programming. In 1990, there were still only about 70 non-broadcast networks available to MVPDs for carriage, and cable systems offered an average of 35 channels of video programming.²² By June 2004²³, there were more than 388 national non-broadcast networks available for carriage, and at least 96 regional non-broadcast networks, including 38 sports channels, and 40 regional and local news networks. Cable systems were providing an average of 74 analog channels of video programming in addition to offering an extra tier of digitally compressed channels.

The most significant motivation for cable operators to expand channel capacity was the entry of direct broadcast satellite (DBS) services into the market. DBS initially offered and continues to offer greater channel capacity than most, if not all, cable systems. High-power direct broadcast satellite service is also known simply as DBS. Each DBS operator currently transmits over 200 channels of video programming to subscribers. Since launching in 1994, DBS has advanced substantially as a competitor to cable and broadcast television. Currently, there are two major DBS operators offering service: DirecTV, and Echostar Corp.

2. Cable Television and DBS Service Today

This subsection provides a qualitative description of cable and DBS service. The following subsection presents data on availability and subscribership of cable and DBS service.

Today, some people subscribe to cable television with the sole intent of obtaining better reception of local broadcast signals, though it is not known exactly how many. The vast majority, however, subscribe to cable in order to obtain increased programming options, though many of those subscribers also benefit from the improved reception of local broadcast stations. Yet others subscribe to cable television to receive better reception

²¹ See FCC 2002 Biennial Review, 18 FCC Rcd at 13659.

²² See *Rate Deregulation & the Commission's Policies Relating to the Provision of Cable Television Serv., Report on Competition*, MM Docket No. 89-600, Report ("FCC 1990 Cable Report"), 5 FCC Rcd 4962, 5106-07 (1990).

²³ FCC 2004 Video Competition Report, 20 FCC Rcd at 2763-4 and 2771-2 (page 9-10 and 17-18).

of local broadcast stations, while seeking increased programming options through subscription programming services from a non-cable subscription video provider such as DBS.

Cable television service is subject to some regulation both at the local level and by the FCC.²⁴ Local authorities are entitled to require cable operators to obtain a franchise and may regulate the basic service tier (BST), provided that the local cable system is not subject to "effective competition." Moreover, franchise authorities may require cable operators to set aside channels for public, educational, or government use ("PEG" channels). Cable operators are also subject to signal carriage regulation, implemented by the FCC.

Pursuant to the Communications Act, cable operators are required to carry local television stations in every market they serve, and have an obligation to set aside a specified number of channels, based on their total channel capacity, for the carriage of these signals. Commercial broadcasters may elect to be carried pursuant to "must-carry" status or "retransmission consent." Where a station elects "must-carry," it is generally guaranteed carriage, but it is prohibited from receiving compensation for this carriage. Under "retransmission consent," the broadcaster and cable operator negotiate an agreement that may involve compensation in return for permission to retransmit the broadcast signal. These rules currently apply to the carriage of analog television stations only.²⁵

Currently, most cable system operators offer five categories of service. The BST is the lowest level of service offered by cable operators, and is legally required for any additional level of service. The BST includes, at minimum, all local broadcast signals distributed by the cable operator, along with any public, educational, and government (PEG) access channels that the local franchise authority requires the system operator to carry. At the discretion of the cable operator, the basic service tier may also include additional program services such as national or regional satellite-delivered cable origination networks. Many cable systems voluntarily carry non-broadcast networks such as TBS, Discovery, CNN, and ESPN on the BST. As of January 2004, the flat-fee, industry-wide average monthly price of the BST was \$13.80.²⁶ With a few exceptions

²⁴ A detailed discussion of cable and DBS regulation is beyond the scope of this paper.

²⁵ See 47 C.F.R. Part 76, Subpart D for Commission regulations on signal carriage. The must-carry provisions of the 1992 Cable Act also directed the Commission to initiate a proceeding to establish any changes in the signal carriage requirements of cable television systems necessary to ensure cable carriage of what it called at the time "modified standards," now referred to as digital television (DTV) broadcast signals. In the 1996 Act, Congress stated that no ancillary or supplementary broadcast service shall have must-carry rights. In February 2005, the Commission affirmed its tentative conclusion not to require cable operators to carry both a broadcaster's analog and digital signals (*i.e.*, dual carriage) during the transition from analog to digital signal transmission. See *Carriage of Digital Television Broadcast Signals: Amendments to Part 76 of the Commission's Rules*, Second Report and Order and First Order on Reconsideration, CS Docket No. 98-120, 20 FCC Rcd 4516 (2005). See also Section V below for a more detailed discussion of digital broadcast signal carriage.

²⁶ Cable operators change their rates effective January for the upcoming year. See, *e.g.*, *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report*

(e.g., PEG access channels, public television stations), most of the programming offered on the BST is advertiser-supported.

The cable services programming tier (CPST) provides all analog video programming distributed over the system that is not on the basic service tier and for which the operator does not charge a fee on a per-channel or per-program basis. Subscribers do not need to subscribe to the CPST to subscribe to other, higher tiers of cable service such as premium or pay-per-view, but they must subscribe to the BST in order to subscribe to the CPST. Most of the programming carried on the CPST is advertiser-supported national and regional cable origination networks. As of January 2004, the flat-fee, industry-wide average monthly price of the CPST was \$27.24.²⁷

Premium cable services or “pay-TV” services are channels of service offered on an à la carte (*i.e.*, channel by channel) basis or are marketed in groups of channels for special discounts. Some networks offer multiple feeds (called multiplexes) that can be purchased in a group for an added fee above the single network price. This model allows consumers to pay for those networks that have the most value to them, as opposed to purchasing groups of programming that includes programming a subscriber may or may not want. Premium cable services include such well-known cable networks as HBO, Showtime, and Cinemax. These services rarely include advertising and derive revenue primarily through the subscription fee charged for each service. In 1990, there were five premium networks available for carriage over cable systems. Now, there are over 40 premium cable networks available for delivery over cable systems.

Pay-per-view services offer video programming on a program-by-program basis for a fee. Programming offered includes movies, sporting events, concerts, and other similar programming. This model allows consumers to pay for those programs that have the most value to them. Pay-per-view services rarely include advertisements and derive revenue primarily through the fees charged per-program.

The so-called “digital tier” was introduced commercially in 1996 and provides additional channels of basic and premium services through the use of digital compression technologies. Digital tier service was initially offered by cable operators as a response to the competitive pressure from high-capacity DBS which offered and in many cases continues to offer greater channel capacity than cable systems and also provides superior video quality. As of year-end 2004, there were approximately 25.4 million digital video subscribers, and it is estimated that by 2010, there will be more than 40 million digital video subscribers.²⁸

Initially, the digital tier was used simply to compress more analog-quality channels into the same bandwidth. However, digital transmission also allows for higher picture and

on Average Prices for Basic Service, Cable Programming Services, and Equipment, Report, (2005) (“FCC 2004 Price Survey”), 20 FCC Rcd 2718, 2721 (page 4).

²⁷ FCC 2004 Price Survey, 20 FCC Rcd at 2721 (page 4).

²⁸ FCC 2005 Video Competition Report, 21 FCC Rcd at 2526 (page 24); Kagan Research, LLC, BROADBAND CABLE FINANCIAL DATABOOK 2005, August 2005 (“Kagan Cable Databook 2005”), at page 11.

sound quality than would be obtained by converting a standard analog signal to digital. Beginning in early 2003, some cable operators began to augment their digital offerings by adding high-definition formatted programming (HDTV). By the end of that year it was available to approximately 37 million subscribers. The National Cable and Telecommunications Association (NCTA) estimates that as of September 2004, 90 million homes were passed by a cable system that offers programming in HD format, covering 177 markets, including the top 100. On most systems, HDTV is offered as part of the "digital tier," and requires an HD set-top box, which only a relatively small share of digital cable subscribers currently choose to lease. Cable HDTV offerings typically include a mix of broadcast and non-broadcast channels (some "basic" and some "premium"). Fifteen non-broadcast networks offer HDTV programming. On the broadcast side, as explained in some detail in Section V, the DTV standard is flexible enough to permit HDTV, multiple standard definition channels (SDTV), ancillary services, or various combinations of these options. As of September 2004, cable operators were carrying the digital signals of 454 broadcast stations.²⁹

Some cable operators have also begun to offer their customers video-on-demand (VOD) service. VOD programming, like Pay-per-View (PPV) services, includes mostly advertising-free material on a program-by-program basis. In contrast to the PPV model in which programming is essentially cablecast (the same) to every home at network-selected times, VOD subscribers choose from a wide array of programming and are able to pick the exact time of viewing. Some operators are opting to offer VOD via the subscription model (SVOD). In the SVOD model, the subscriber pays one monthly fee for unlimited access to a finite library of select programming. This model more closely resembles the premium service tier, and may offer fewer programming options than standard VOD services. VOD systems, both subscription and standard, utilize a server located in the cable operator's headend (or central office). Consumers select from a library of video programming at virtually any time, and can view the programming with VCR-like pause and rewind capabilities.

DBS service is primarily national, but "spot-beam" technology makes it feasible to regionalize certain channel transmissions. Unlike cable, DBS does not require any local franchise, nor is it subject to rate regulation. DBS is subject to "must-carry" and retransmission consent regulations, but not on the same basis as cable. In the case of DBS, the rules apply on a market-by-market basis. If a DBS service retransmits one local station in a market and takes advantage of the statutory copyright license to do so, then the DBS service must retransmit all local stations in the market, subject to any retransmission consent agreements that local stations and DBS carriers may conclude.

Initially, DBS providers could not retransmit television signals on a "local-into-local" basis.³⁰ This limitation, a consequence of copyright law and of technical limitations on

²⁹ The high-definition tier of programming requires subscription to the digital service and a high-definition set-top box. To obtain the full visual effect of HDTV, a cable subscriber also needs an HDTV set. Data include some digital signals that may be DTV and not HDTV. FCC 2004 Video Competition Report, 20 FCC Rcd at 2784 (page 30).

³⁰ 17 U.S.C. § 119.

channel capacity, impeded the ability of DBS to compete effectively with cable television. In 1999, Congress passed the Satellite Home Viewer Improvement Act of 1999, which established a statutory copyright license that permitted satellite providers to retransmit television broadcast signals on a local-into-local basis.³¹ The license lasted for five years, but in 2004, Congress extended it for an additional five years. The law extending the license also added the option for DBS providers to carry broadcast stations deemed “significantly viewed” by the Commission.³²

DBS channel capacity has continued to grow, as the providers launch additional satellites, including those with “spot beams.” Concomitantly, the providers continue to increase the number of markets where they deliver local broadcast television stations (local-into-local service). As of December 2004, local-into-local service was offered by at least one DBS operator in 155 of 210 television markets (*i.e.*, designated market areas, or DMAs), which cover 95 percent of all US television households.³³

3. MVPD Availability and Subscribership

Between 1948 and the late 1960s, cable television grew to serve just over one million subscribers.³⁴ The introduction of non-broadcast programming increased interest in cable television services, such that, as indicated in Table 2, by 1976, total subscribership had reached 11.8 million. By 1980, cable television was available to 34.9 million households, and approximately 55 percent of those households subscribed to cable television service (about 19.2 million subscribers). There were approximately 20 nationally-distributed non-broadcast networks and an unknown number of regionally distributed non-broadcast networks available for distribution on cable television systems in 1980.³⁵

Table 2 indicates that the share of “homes passed” by cable has increased to the point where almost all have access to cable now.³⁶ By 1990, at least 92 percent of television households had access to cable television, and approximately 60 percent of those chose to subscribe (51.7 million cable television subscribers).

³¹ See *Implementation of the Satellite Home Viewer Improvement Act 1999: Broadcast Signal Carriage Issues, Retransmission Consent Issues*, 16 FCC Rcd 1918 (2000); *Implementation of the Satellite Home Viewer Improvement Act of 1999: Broadcast Signal Carriage Issues*, 16 FCC Rcd 16544 (2001); *Implementation of the Satellite Home Viewer Improvement Act of 1999: Retransmission Consent Issues: Good Faith Negotiation and Exclusivity*, 16 FCC Rcd 15599 (2001).

³² *Implementation of the Satellite Home Viewer Extension and Reauthorization Act of 2004 to Amend Section 338 of the Communications Act*, 20 FCC Rcd 14242 (2005). A “significantly viewed” signal is an out of market station that receives sufficient viewing to be treated as a local station.

³³ FCC 2004 Video Competition Report, 20 FCC Rcd at 2795 (page 41).

³⁴ Kagan World Media, CABLE TV INVESTOR, May 24, 2002, at page 8.

³⁵ FCC 1994 Video Competition Report, 9 FCC Rcd at 7589-92; see also FCC 2002 Video Competition Report, 17 FCC Rcd at 26989-91.

³⁶ See footnote 80 below for the reliability of homes passed estimates. Some consider the figures from commercial sources such as those in Table 2 to be overestimates. *Application of EchoStar Communications Corporation, General Motors Corporation, and Hughes Electronics Corporation, Transferors, and EchoStar Communications Corporation, Transferee*, Hearing Designation Order, CS Docket No. 01-348, 17 FCC Rcd 20559, 20611-12 (2002).

Table 2: MVPD Subscribers and Homes Passed

	1976	1980	1985	1990	1995	2000	2004
TV Households (mil)	69.6 ⁽¹⁾	79.9	85.9	93.1	95.9	102.2	109.6
Basic Cable							
Cable Homes Passed (mil)	23.1	34.9	64.7	86.0	92.7	98.9	108.6
Cable HP/TVHH (%)	33.2%	43.7%	75.3%	92.4%	96.7%	96.8%	99.1%
Basic Subscribers (mil.)	11.8	19.2	36.7	51.7	61.6	66.6	65.4
Basic Subs/TVHH (%)	17.0%	24.0%	42.7%	55.5%	64.8%	65.2%	59.7%
Basic Subs/Cable HP(%)	51.1%	55.0%	56.7%	60.1%	67.0%	67.3%	60.2%
Premium ("Pay") Cable							
Premium Subscriptions (mil)	1.0	9.1	29.9	39.9	51.2	66.8	90.8
Premium Households (mil)	1.0	9.1	21.8	23.9	27.6	28.5	28.1
Digital Cable							
Digital Cable Subscribers (mil)	-	-	-	-	-	8.5	25.4
Digital Subs/Basic Subs (%)	-	-	-	-	-	12.8%	38.8%
Satellite Subscribers (mil)							
C-Band Subscribers (mil)	-	-	0	0.8 ⁽²⁾	4.6	16	25.1
DBS Subscribers (mil)	-	-	0	0	2.2	14.8	24.8
Satellite Subs/TVHH (%)	-	-	0.0%	0.9%	4.8%	15.7%	22.9%
Cable+Satellite Subscribers (mil)							
Satellite + Cable/TVHH (%)	17.0%	24.0%	42.7%	56.4%	69.6%	82.7%	82.6%

Sources: TV Households (1975-2004): Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Television, Television Households*, at

<http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=tvhouseholds> (citing Nielsen). Cable Data (1976-1980): Kagan World Media, *Year-End Cable and Pay TV Revenues*, CABLE TV INVESTOR, May 24, 2002, at page 9; Cable Data (1985-2004): Kagan Research LLC, *BROADBAND CABLE FINANCIAL DATABOOK* 2005, July 2005, at pages 9 and 11; Kagan Research LLC, *CABLE TV INVESTOR*, November 29, 2004, at page 9. C-Band Subs (1991): 1995 FCC Video Competition Report, 11 FCC Rcd 2060, 2180-2181 (Table G-1); C-Band Subs (2004): Kagan Research LLC, *MEDIA MONEY*, January 31, 2006. DBS and C-Band Subs (1995-2000): Kagan World Media, *ECONOMICS OF BASIC CABLE NETWORKS* 2002, September 2001, at page 25. DBS: (2004): Echostar Communications Corporation, *SEC Filing 10-K for the Year-Ended December 31, 2004*; DirecTV Group Inc., *SEC Filing 10-K for the Year-Ended December 31, 2004*.

⁽¹⁾ 1976 data is a September estimate for the upcoming calendar year.

⁽²⁾ Data is as of 1991.

Moreover, the share of television households with access to cable that chose to subscribe jumped from 60.1 to 67.3 percent between 1990 and 2000. As a share of total television households, cable subscribership jumped from 55.5 percent in 1990 to 65.2 percent in 2000. By 2004, cable subscribership and penetration (of homes passed and of TVHH) had declined.

Satellite services, first HSD and then DBS, have provided an alternative to cable for those interested in multi-channel pay television service. HSD service was commercialized around 1980, but the relatively large dish size made it impractical in

many parts of the country.³⁷ At its peak of popularity in 1994, there were an estimated 4.5 million active HSD users, roughly half of whom subscribed to one or more programming services.³⁸ The number of HSD subscriptions appears to have peaked in 1995, with an estimated 2.4 million authorized subscribers, and has now dropped to fewer than 300,000.³⁹

Particularly after DBS service began in 1994, most of those homes not passed by cable were able to access subscription video services via a satellite service. Indeed, it is fair to say that DBS is available to almost every US television household. At the end of its first year, DBS service had approximately 600,000 subscribers, and a year later there were more than 2.2 million DBS subscribers. By year-end 2000, DBS providers had nearly 14.8 million subscribers, a number that rose to 24.8 million at the end of 2004.

Despite the fact that not every household is reached by cable television and not every household capable of receiving cable television subscribes to cable television service, it appears that cable is reaching a saturation point. In fact, much of the rapid growth of the subscription video services market over the last ten or so years has been due to direct to home satellite services, particularly DBS. The flattening in cable growth as of 2004 is illustrated by the slow growth in homes passed as a fraction of television households, (99.1 percent as of year-end 2004 as opposed to 96.8 percent as of 2000), the decrease in cable penetration of total television households (from about 65 percent at year-end 2000 to about 60 percent at year-end 2004), and the decrease in subscribers as a percentage of homes passed (from about 67 percent at year-end 2000 to about 60 percent at year-end 2004). Given the virtually nationwide presence of DBS and the cost of building cable infrastructure in areas with low population density, many of the homes not passed by cable may never be served by cable.

The usage of cable and satellite services combined appears to be leveling off at around 83 percent of television households. As of year-end 2004 approximately 15 percent of television households did not subscribe to some form of MVPD service.⁴⁰ Projections for 2010 cable and satellite subscribership indicate that usage will continue this pattern.⁴¹

Historically, there has always been some overlap between cable and DBS subscribership. Particularly in markets where DBS does not provide local signals, some

³⁷ Kagan World Media, *THE STATE OF DBS 2002*, July 2002 at page 4.

³⁸ *How Many DTH Households Are Out There Anyway?*, SKYREPORT, October 1994, Volume 1; Number 9, at page 1.

³⁹ Kagan World Media, *ECONOMICS OF BASIC CABLE NETWORKS 2002*, September 2001, at pages 25. FCC 1995 Video Competition Report, 11 FCC Rcd 2060, 2180-2181 (Table G-1). Much of the decline in HSD subscriptions is the result of owners switching to DBS services. Future growth of the HSD industry is unlikely. Nevertheless, HSD remains the subscription video choice for a niche contingent of subscribers. Many HSD transponder leases extend past 2010, and in 2000, six new cable distribution satellites capable of serving the HSD industry were launched. Furthermore, although most C-Band satellite receivers are analog and do not receive digital signals, new digital decoder/receiver equipment for C-Band HSD systems continue to be developed and made available to subscribers.

⁴⁰ See footnote 4 above.

⁴¹ Kagan Research, LLC, *MEDIA TRENDS 2005*, December 2004, at pages 38 and 94.

households subscribe to basic cable in addition to DBS primarily in order to receive local broadcast signals. The decline in cable penetration of television households is undoubtedly due in part to the introduction of local broadcast signal delivery by DBS providers. The pattern of consumer demand for new or improved video and non-video services offered by cable and DBS will likely also affect penetration patterns in the future. For example, cable operators provide or will provide high-speed Internet access and cable telephony, as well as VOD. Strong consumer take up of these services (not all of which can be provided in a comparable way by DBS) could lead to a higher than expected cable subscribership in the future.

III. Revenue Sources for Broadcast Television, Cable Television, and DBS

A. Introduction

Advertising is virtually the sole source of revenue for television broadcast stations and networks. Hence, changes in advertising revenues or revenue shares are important indicators of the impact of competition on television broadcasting.⁴² This makes it useful to examine aggregate trends in advertising on television and the other platforms. To complete the revenue picture, this section also discusses the other revenue sources of cable and DBS. The primary one is subscription fees. Cable television systems are increasingly using their infrastructure to provide non-video services, such as telephony and high-speed data, and information on those is also provided.

Advertising is generally designed to provide information about goods and services offered for sale and to persuade consumers to buy the advertised product. Not surprisingly, there has been a reasonably stable relationship of advertising to Gross Domestic Product (GDP) over the years.⁴³ In 2004, total advertising volume for all sources was 2.31 percent of GDP, up from 2.25 percent in 1985. The 1975 share was 1.7 percent. Video advertising volume as a share of GDP rose from 0.32 percent in 1975 to 0.50 percent in 1985 to 0.58 percent in 2004, while the share of broadcast television advertising in GDP has been relatively stable, amounting to 0.32 percent in

⁴² This paper does not purport to examine rigorously the degree of substitution of advertising among different media. The changing pattern of video programming viewing over time (an increase in cable shares at the expense of broadcast television, documented below), along with the changing composition of video advertising expenditures over time (an increase in cable shares at the expense of broadcast television) is at least consistent with the proposition that cable and broadcast television advertising are substitutes to some extent. The analysis herein assumes that the two are, in fact, substitutes.

⁴³ The aggregate time series data available are imperfect. They depict gross payments by advertisers (including agency commissions), rather than the actual revenues that the sellers of advertising receive. The data are thus primarily useful for examining trends. The figures in this paragraph are drawn from data compiled by the Television Bureau of Advertising. See Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in GDP-Total Ad Volume-TV Ad Volume, GDP Total Ad Volume & TV Ad Volume 1960-2005*, at <http://www.tvb.org/rcentral/mediarendstrack/gdpvolume/gdpvolume/gdp.asp?c=gdp1> (visited May 1, 2006) and Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Ad Volume 1948-2004*, at http://www.tvb.org/rcentral/mediatrendstrack/Trends_In_Advertising_Volume.asp (visited May 6, 2006).

1975, 0.48 percent in 1985, and 0.39 percent in 2004. There is no reason to assume a significant change in the overall relationship of advertising expenditures to GDP.

The video advertising sector includes both broadcast and cable advertising. Broadcast advertising includes four segments—network, national spot, local spot, and syndication. Cable advertising includes two segments—network and non-network.

Broadcast networks sell advertising slots in network programs to national advertisers. The major broadcast networks reach close to 100 percent of TVHHs. They distribute their programming to local stations for delivery to viewers. Because the national broadcast networks use regional satellite feeds to distribute programming to affiliates, they can sell regional as well as national exposures.

The syndication segment consists of advertising sold by syndicators in the programming that they distribute.⁴⁴ Syndicated programs are sold on a market-by-market basis by the program owner and may be “first-run” or “off-network (already aired on a network). The program owner typically attempts to arrange distribution in as many markets as possible and then sells its advertising based on the market coverage attained.

Television stations sell both national and local spot advertising. Advertisers purchase national spot advertising to reach a number of markets simultaneously in order to reach a desired target area. The target areas may be a large region of the country.⁴⁵ Local spot advertising is sold by each individual station’s local sales force to local advertisers wishing to target the local market.

Cable advertising refers to advertising sold in non-broadcast networks. These networks are frequently referred to as “cable networks,” but they are distributed via other platforms as well, in particular DBS. These networks are not quite as widely available as broadcast networks, but have been increasing their coverage over time. As of year-end 2004, 14 non-broadcast networks reached more than 80 percent of TVHHs but none reached more than 90 percent.⁴⁶ Thus, cable network advertising can reach a very large portion of the national audience, but not as large as that reached by the broadcast networks.

Cable networks sell most of the advertising slots in their programming to national advertisers, but the distributor of the network frequently has the right to sell some advertising slots as well. This is the “non-network” segment of cable advertising. Non-network advertising is sold by local cable systems and also by DBS carriers, based on the audiences that they reach.

⁴⁴ See <http://promoprof.babson.edu/Glossary/s/GlossaryS.htm> (visited May 2, 2006); see also <http://www.itvx.com/glossary.asp> (visited May 3, 2006).

⁴⁵ See Journalism.org, *The State of The News Media 2005*, at http://www.stateofthenewsmedia.org/2005/narrative_locltv_economics.asp?cat=4&media=6 (visited May 2, 2006).

⁴⁶ See Kagan Research LLC, *ECONOMICS OF BASIC CABLE NETWORKS 2006*, December 2005, at page 32, for household reach of basic cable networks. Total television households for 2004 are 109.6 million. See Table 2.

Table 3 presents aggregate data on expenditures for various categories of video advertising. As noted above, these data are imperfect measures of advertising revenues, because they depict gross payments by advertisers (including agency commissions), rather than the actual revenues that the sellers of advertising receive. The data are thus primarily useful for examining trends and for comparisons across categories of advertising.

Table 3: Components of Video Advertising Expenditure (millions of current \$)

Year	Video Total	Broadcast Total	Cable Total	Broadcast Network	National Spot	Local Spot	National & Local Spots	Syndication	Cable Network	Non-Network
1975	5,263	5,263	0	2,306	1,623	1,334	2,957	0	0	0
1980	11,488	11,416	72	5,130	3,269	2,967	6,236	50	60	12
1985	21,287	20,298	989	8,060	6,004	5,714	11,718	520	793	196
1990	29,347	26,716	2,631	9,963	7,788	7,856	15,644	1,109	2,000	631
1995	37,828	32,720	5,108	11,600	9,119	9,985	19,104	2,016	3,535	1,573
2000	60,257	44,802	15,455	15,888	12,264	13,542	25,806	3,108	11,765	3,690
2001	54,617	38,881	15,736	14,300	9,223	12,256	21,479	3,102	11,777	3,959
2002	58,365	42,068	16,297	15,000	10,920	13,114	24,034	3,034	12,071	4,226
2003	60,746	41,932	18,814	15,030	9,948	13,520	23,468	3,434	13,954	4,860
2004	67,791	46,264	21,527	16,713	11,370	14,507	25,877	3,674	16,424	5,103

Source: Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Television, Trends in Advertising Volume*, available at <http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=advolume>, (visited May 2, 2006). Note: The 1990 total broadcast advertising volume figure obtained by adding up its components in the source, is 100 million dollars higher than the total figure reported in the source. This table reports the higher figure.

B. Broadcast Advertising Revenues, Expenditures, and Profitability

Table 3 shows that broadcast network revenues increased steadily from 1975-2000, dropped noticeably in 2001 and only regained their previous level in 2004. The growth of broadcast network advertising expenditures from 1990-2004 (in constant dollars) was only 1.1 percent per year on average.⁴⁷ Although network advertising rates have risen over the period, the size of the audience that the broadcast networks attract has gone down significantly.⁴⁸ Good data on network program production costs are not available, but anecdotal evidence suggests that the mix of programming has changed in favor of less costly material. There is clearly more “reality” programming in network schedules than in earlier years, and there has also been an expansion of news magazine type

⁴⁷ Statements regarding advertising data in constant dollars refer to data in Table 3, converted to 1982-84 dollars by deflating with the Consumer Price Index. The price index numbers are from U.S. Bureau of Labor Statistics, *Consumer Price Index for all Urban Consumers*, available at <http://data.bls.gov/cgi-bin/surveymost> (visited May 13, 2005).

⁴⁸ See footnote 64 below for some data for the 2004-05 season. FCC Working Paper No. 37, pages 26-28 has comparable earlier data and also notes that, during the 1990s, the networks were able to increase significantly the number of commercial minutes per hour due to earlier regulatory changes and apparent audience willingness to tolerate longer interruptions in programming. It is unlikely that this trend could continue, however, without driving away viewers. For additional data on advertising prices, see Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Media*, at http://www.tvb.org/rcentral/mediatrendstrack/Trends_In_Media.asp (visited May 1, 2006).

programming.⁴⁹ These genres have lower production costs than scripted drama or comedy series.

Television broadcast stations receive all of their revenues, directly or indirectly, from advertising. In addition to the revenues that stations earn from sales of national spot and local advertising, some network-affiliated stations also receive "network compensation," payments from their affiliated networks. In 2004 these payments averaged 3.3 percent of net revenues for affiliates of ABC, CBS, and NBC and were actually negative (-1.3 percent) for Fox affiliates, which, on average, made payments to the network, presumably to help defray the network's program acquisition and other costs.⁵⁰ Table 3 indicates that expenditures on local station advertising (*i.e.*, national and local spot) exhibited a similar pattern to those of broadcast networks, increasing steadily to a peak in 2000, dropping in 2001, and regaining their 2000 level only in 2004. In constant dollars, the pattern is similar, except that the 2000 level has not yet been regained.

Since the number of stations has been increasing over time, it would also be of interest to examine per station revenues. These vary widely by market size, among other factors. Thus, rather than adjust the aggregate expenditure data by number of stations, it is preferable to look at a different source, which disaggregates the data by various categories, including market size.

Table 4 provides 2004 data on average net revenues, expenses, profits, and cash flow of commercial television stations by market size. In every size category, both profits and cash flow are positive. The cash flow and profit margins are particularly robust in the larger markets.⁵¹ FCC Working Paper No. 37 provides similar calculations for 1990 and 2000, like the 2004 data based on a survey sponsored by the National Association of Broadcasters.⁵² The situation in 2004 was unambiguously better than in 1990. Profit margins were higher in every category in 2004, and in several cases the 1990 margins were negative. Cash flow margins were higher in 2004 than in 1990 for all but the smallest market categories (markets ranked 151 and above) and were positive in all cases. The 2000-2004 comparison is more mixed. In 2004, profit margins were higher than in 2000 for eight of the 16 market size categories. Cash flow margins were higher in 2004 than in 2000 for 13 of the 16 categories. All margins were positive for both

⁴⁹ Reality programming is the television genre where situations are created by the shows producers, but the show itself is unscripted. Cameras capture the participants natural reactions and responses to the situations created, which are then edited as a program or series. See <http://www.itvx.com/glossary.asp#R>

⁵⁰ The network compensation figures are from National Association of Broadcasters, TELEVISION FINANCIAL REPORT, 2005 ED., pages 36, 122. The data in tables 4 and 5 also come from various editions of this publication. The TELEVISION FINANCIAL REPORT is based on a survey conducted in cooperation with the Broadcast Financial Management Association. Data are presented in aggregated format, but it is important to note that not all stations respond to the survey and that the sample of stations responding differs from year to year.

⁵¹ Note that the margins are calculated by averaging the numerator values, averaging the denominator values, and then performing the division.

⁵² See FCC Working Paper No. 37, Tables 14 and 15 for the 2000 and 1990 data. Note that the sample of stations answering the survey differs across the years 1990, 2000, and 2004.

2000 and 2004. It is also of interest to note that television station expenses, even in current dollars were lower in 2004 than in 1990 for the two largest market categories. This trend would be even more pronounced if expenditures were converted to constant dollars. Thus, there is some evidence that broadcast stations have been able to limit their expenses.

Table 4: Average Revenues, Expenses, Pre-tax Profits, and Cash Flow of Commercial Television Stations, 2004 (\$ millions)

Market Rank	Average Net Revenue	Average Expenses ⁽¹⁾	Average Pre-Tax Profit	Profit as % of Net Revenue	Average Cash Flow	Cash Flow as % of Net Revenue
1-10	\$ 54.0	\$ 31.9	\$ 22.2	41.0%	\$ 25.9	47.9%
11-20	30.5	20.9	9.6	31.6%	12.6	41.4%
21-30	26.4	18.7	7.7	29.3%	9.8	37.2%
31-40	20.0	14.0	5.9	29.7%	7.9	39.5%
41-50	14.1	11.5	2.6	18.4%	4.5	32.2%
51-60	14.3	10.9	3.5	24.2%	5.4	37.5%
61-70	11.0	8.3	2.7	24.3%	3.9	35.9%
71-80	10.3	8.9	1.3	12.9%	2.9	28.3%
81-90	10.4	8.4	1.9	18.8%	3.7	35.8%
91-100	9.1	7.5	1.6	17.9%	3.3	36.0%
101-110	8.1	6.4	1.6	20.4%	3.0	37.6%
111-120	7.2	6.1	1.1	15.7%	2.3	31.1%
121-130	6.8	6.1	0.6	9.5%	2.0	30.1%
131-150	6.1	5.2	0.9	15.1%	2.0	32.8%
151-175	4.8	3.9	0.9	19.4%	1.5	31.4%
176+	3.1	2.7	0.4	12.7%	0.9	29.7%

Source: National Association of Broadcasters, TELEVISION FINANCIAL REPORT, 2005 ED., pages 4-35.

⁽¹⁾Note: In 1990 the Report included depreciation, amortization, and interest in total expenses, but in 2004 it did not. For consistency, the total expense figures herein have been adjusted to include these categories in total expenses. Hence, pre-tax profit equals net revenue less total expenses, while cash flow equals net revenue less expenses other than depreciation, amortization, and interest.

Compared to the economy at large, television broadcast station ownership has historically been a relatively profitable business. By way of illustration, in 2003, average profits as a percentage of net revenues were 28.0 percent for affiliates of ABC, CBS, and NBC, 13.6 percent for Fox affiliates, 16.0 percent for independent stations, and 3.8 percent on average for all US corporations. The 2004 station results are similar to the 2003 figures, but comparable 2004 data on all corporations are not yet available.

Table 5: Average Profits of Commercial TV Stations as a Percentage of Net Revenues, 1975-2003

Year	Affiliates ⁽¹⁾	ABC	CBS	NBC	Fox	UPN	WB	Indep. Stations	All Corporations
1975	26.2%							8.1%	
1980	29.0%							17.1%	3.8%
1985	29.9%							13.3%	2.9%
1990	22.6%							6.4%	3.2%
1995	29.8%	29.1%	24.5%	34.8%	25.9%			21.8%	4.9%
2000	30.2%	38.0%	23.7%	25.2%	5.6%	21.8%	27.5%	42.3%	4.5%

2003	28.0%	25.2%	23.9%	34.2%	13.6%	18.1%	34.5%	16.0%	3.8%
2004	31.2%	27.2%	31.2%	35.4%	18.0%	21.5%	32.6%	15.3%	n/a

Sources: Station data for 1975 and 1980, FCC, *TV Broadcast Financial Data* (Public Notice), August 2, 1976 and August 10, 1981; other years, National Association of Broadcasters, *TELEVISION FINANCIAL REPORT*, 1986, 1991, 1996, 2001, 2004, and 2005 eds. (NAB figures are pre-tax profits as a percentage of total revenues net of commissions paid to advertising agencies). Data for "All corporations" from Internal Revenue Service, *STATISTICS OF INCOME, Table 13: Corporation Income Tax Returns: Balance Sheet, Income Statement, and Tax Items for Specified Income Years, 1990-2003. Expanded Version* (Net income less deficit as a percentage of total receipts). See <http://www.irs.gov/taxstats/article/0,,id=115033,00.html> (visited March 31, 2006). for 1990-2003, and *STATISTICS OF INCOME BULLETIN*, Spring 2001 (Table 13) for 1980 and 1985.

^(*)**Note:** ABC/CBS/NBC affiliates only.

C. MVPD Operator Revenues

1. Cable Operators

Table 6 provides information on cable operator revenues going back to 1990. It is safe to assume that, in earlier years (as in 1990), the overwhelming share of cable operator revenues came from basic and premium subscription fees.

Table 6 Cable Operator Revenues (\$ millions)

	1990	% of Total	1995	% of Total	2000	% of Total	2004	% of Total
Cable Operator Revenue								
Basic/Expanded Basic	10,674	60.4%	16,860	68.0%	24,729	65.1%	30,080	52.3%
Premium Revenue ("Pay")	5,105	29.0%	4,306	17.4%	5,115	13.5%	6,255	10.9%
PPV/VOD	253	1.4%	498	2.0%	751	2.0%	1,279	2.2%
Advanced Analog/Digital	0	0.0%	30	0.1%	1,088	2.9%	3,966	6.9%
Home Shopping Commissions	96	0.5%	129	0.5%	239	0.6%	329	0.6%
Advertising Revenue	476	2.7%	1,075	4.4%	2,430	6.4%	3,527	6.1%
Install & Equipment Revenue	1,068	6.0%	1,888	7.6%	2,451	6.5%	1,285	2.2%
High-speed Internet access, telephony, video games, & DVR	0	0.0%	0	0.0%	1,164	3.1%	10,753	18.7%
Total Revenue^(*)	17,672	-	24,786	-	37,967	-	57,474	-

Sources: (1990-2000): Kagan World Media, *CABLE TV INVESTOR*, May 24, 2002, at 9; (2004): FCC 2005 Video Competition Report, page 19, Table 4.

^(*)**Note:** Total Revenues in this table differ from Total Revenues reported by the source because the totals here include a revenue category called "mini pay," which are reported by the source, but not included in their Total Revenue calculation.

When examining comparative data on cable operator revenues, perhaps the most striking feature is the increase in the proportion of revenues derived from advanced services. Continuing increases in revenues derived from video subscriptions attests to the value subscribers apparently place on the expanded programming choices provided by advanced analog and digital services. PPV and VOD revenues are currently quite modest, but are poised to increase, and the data show modest increases in home shopping and advertising revenues for cable operators. As these shares increase, the shares for the traditional basic and pay subscription categories decrease. Basic subscription revenues are expected to continue growing significantly in absolute terms, if not share terms, but pay revenues will likely grow only at a very low rate. This is true

notwithstanding an increase in the number of pay channels and pay service subscriptions. The likely explanation for this is increased competition from home video (such as DVD and video cassette purchases and rentals). The same phenomenon also possibly explains the low level of PPV revenues.

2. DBS Operators

DBS services get most of their revenues from subscription fees, though as the table below shows, revenues from other segments are on the rise. DBS distributors currently do not offer local advertising but they do sell some national advertising in at least some of the networks that they transmit. DBS distributors do not offer telephony services, and they offer very little high-speed data service. DIRECTV provides a two-way satellite-based high speed Internet access service called HughesNet to a little more than 250,000 subscribers.⁵³ EchoStar does not offer a satellite-based broadband Internet service at this time, but both DIRECTV and EchoStar continue to co-market DSL services with local exchange telephone carriers (LECs). DBS operators cannot presently offer real-time on-demand services, but both firms continue to develop their DVR services, which serves as a substitute to VOD functionality.

Table 7: DBS Revenues (in \$millions)

Revenue Segment	1995	2000	2004	2006(p)
Subscription Video (incl. PPV)	663.4	8440.4	15,877	19,872
National Advertising Spot	0	26.8	351	648
Interactive Programming Guide Ads & Direct Response	0	0.3	0 ⁽¹⁾	9
Interactive TV ("T") Commerce	0	0.4	0 ⁽¹⁾	9
DBS Internet Connectivity	0	14.5	23	35
Gaming	0	0	1	38

(1995 & 2000): Kagan Research, LLC, DBS REPORT 2001, at page 16; (2004 & 2006)(projected): Kagan Research LLC, MEDIA TRENDS 2005, at page 93.

⁽¹⁾Note: Revenue trend down is based in part on DirecTV abandoning a relationship with ITV enabler WinkTV.

3. Comparative Analysis

The data in Table 3 permit a comparative analysis of advertising trends in various categories, broadcast and cable, over the period from 1975-2004.⁵⁴ The data show a continuous increase in the total volume of video advertising expenditures since 1975, with the exception of a dip in 2001. This is due in part to the cyclical nature of some advertising demand; 2000 was not only a presidential and Congressional election year, but also a year of the Summer Olympics. Total video advertising regained its 2000 level by 2003 (2004 if measured in constant dollars. Total broadcast advertising follows a similar pattern, except that, in real terms, it had not yet regained the 2000 level as of 2004.

The cyclical effect is particularly pronounced for broadcast network advertising, since presidential elections and the Olympics both command strong national interest.

⁵³ See FCC 2005 Video Competition Report, 21 FCC Rcd at 2545 (page 43). See also <http://www.HughesNet.com> (visited May 6, 2006).

⁵⁴ See footnote 47 for details on calculation of constant dollar figures.

Broadcast network advertising declined in 2001. In current dollars, it regained the 2000 level only in 2004, but in constant dollars, broadcast network advertising in 2004 was still below its 2000 level. Of the other components of broadcast advertising, national spot had not regained its 2000 level by 2004 in either current or constant dollars. Syndication had recovered its 2000 value by 2003 in both current and constant dollars. Local spot declined in 2001, regaining its 2000 level in current dollars by 2004, but in constant dollars local spot has not yet regained the 2000 level. By contrast, cable network advertising has increased continually in current dollars, with only a modest 2001-2002 drop in real terms and non-network cable has increased continuously, measured in current or constant dollars.

Table 3 data may be used to calculate the percentage distribution among the components of video advertising. The major change in composition over time is the significant increase in the share of cable advertising, particularly over the past 10 years. The cable share of total video advertising went from zero in 1975 to 13.5 percent in 1995 to 31.8 percent in 2004. Cable clearly looms larger in the network rather than the non-network segment. In 2004, cable accounted for 49.6 percent of total network (broadcast plus cable) advertising.

Thus, although total video advertising expenditures and almost all of its components have been rising over time, the increases, particularly since 2000, have been modest on the broadcasting side (3.3 percent from 2000-2004). The cable sector has been increasing more rapidly (39.3 percent from 2000-2004). Indeed, since 1995, cable has accounted for 54.8 percent of the total increase in video advertising expenditures.

IV. The Impact of Competition on the Television Broadcasting Sector

A. Competition for Viewing Audiences

Over the years, cable television and DBS have cut significantly into the viewing hours, audience share, and advertising share of broadcast television. This subsection examines more closely the impact on broadcast television of this competition. The analysis considers hours of viewing time, viewing shares, and audience size.

In 2004, the average household tuned into television for 8 hours, 1 minute a day.⁵⁵ By comparison, the figure was 6 hours and 7 minutes in 1975 and 6 hours and 53 minutes in 1990. It is likely no coincidence that the greater increases occurred during the period in which DBS came into being and cable penetration expanded significantly, giving consumers more viewing choices.

More detailed data reported by the Cabletelevision Advertising Bureau provide a breakdown between households with broadcast television only and those that subscribe

⁵⁵ The viewing hours data in this paragraph come from Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Television, Time Spent Viewing*, (citing Nielsen Media Research), at <http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=timespent> (visited April 27, 2006).

to cable or another multichannel pay television service.⁵⁶ In 1990-91 (when cable television was, for all practical purposes, the multichannel provider), broadcast-only households watched 41.6 hours of television per week, while cable households watched 54.7 hours per week. In 2003-04, the comparable figures were 44.5 and 68.0 hours. Pay television households watched 31.9 hours per week of broadcast programming in 1990-91 and 24.9 hours of broadcast programming in 2003-04. Not surprisingly, pay television households watch far less broadcast programming than broadcast-only households, and the gap has been widening significantly over time.

The pattern of viewing shares is similar. In 2003-04, pay television channels accounted for 56.1 percent of viewing hours for all television households. The pay share has risen steadily over time. In 1984-85, it was 13.5 percent, rising to 33 percent in 1994-95, 46.6 percent in 1999-00, and 54.3 percent in 2002-03.⁵⁷ Clearly, pay television viewing has cut substantially into the broadcast audience. In pay television households, the pattern is even more pronounced, with pay television viewing shares rising from 24.5 percent in 1984-85 to 45 percent in 1995-95 to 54.9 percent in 1999-00 to 60.9 percent in 2002-03.

Figures on prime-time viewing shares in all television households tell a similar story.⁵⁸ The pay television share rose from 12.1 percent in 1984-85 to 28.6 percent in 1994-1995 to 43.1 percent in 1999-00 to 52.5 percent in 2003-04 to 54.2 percent in 2004-05.

From a mechanical point of view, an increase in pay television viewing shares could be caused by one or both of two factors. As noted above, pay television households view more television programming than broadcast-only households, so an increase in pay television penetration could drive the increase. Additionally, pay television subscribers may be increasing the share of their viewing time devoted to pay television channels.

Data presented above indicate that the second factor is at least part of the story. The advent of DBS in 1994 (with its large channel capacity) and the increase in cable channel capacity in recent years is certainly consistent with the scenario that increased viewing has been a function of the increase in viewing choices available to pay television subscribers. One could then speculate that, to the extent that pay television channel capacity and programming availability continue to grow, the decline in broadcast shares may continue. With regard to increases in pay television subscriber penetration, one important component over the past 10 years has been the advent of DBS, but now a little more than 85 percent of TVHH subscribe to a pay television service. DBS shares have been increasing, but to some extent at the expense of cable.

⁵⁶ Data in this paragraph are from compilations in Cabletelevision Advertising Bureau, *CABLE TV FACTS*, 1992 ed., page 6; 2002 ed., page 41; 2003 ed., page 41; 2004 ed., page 41, 2005 ed., page 38.

⁵⁷ All data in this paragraph, except for the 2003-04 figures, are from Cabletelevision Advertising Bureau, *CABLE TV FACTS*, 1986, 1991, 1996, and 2004 editions. The figures are compiled from Nielsen data and the shares are "normalized" to sum to 100 (totals originally exceeded 100 due to multi-set use in some households). The figures are for the last quarter of the first year named and the first three quarters of the second year named. The 2003-04 figure is derived directly from Nielsen Media Research, *Share of Audience Report*, September 25, 2005.

⁵⁸ Data in this paragraph are from Nielsen Media Research, *Share of Audience Report*, September 25, 2005.

It is not clear how rapidly total pay television penetration will increase in the years to come, but it is unlikely that pay television subscriber expansion will be a substantial source of increased pay television viewing shares in the future.

B. Viewing Shares and Advertising Expenditures

Table 8 compares broadcast television and cable television shares of video advertising expenditures with broadcast television and cable television all-day viewing shares. The viewing shares are based on advertiser-supported programming, *i.e.*, commercial television broadcasting and advertiser-supported cable channels. Neither public broadcasting (non-commercial educational television) nor premium cable channels are included.⁵⁹ The threshold point about Table 8 is that cable television advertising is not a perfect substitute for broadcast television advertising and, indeed, overall is less valuable than broadcast television advertising. If the two were, in fact, perfect substitutes, one would expect the ratio in the last row of the table to equal one (although the converse is not true). The fact that the ratio of cable advertising expenditure share to cable viewing share has risen from roughly 40 percent to roughly 60 percent over the past 15 years suggests that cable advertising is becoming a closer substitute for broadcast advertising over time and that cable is likely to continue expanding its share of advertising expenditures at the expense of broadcasting.

Table 8: Comparison of Cable Television Share of Total Video Advertising Revenues and Cable Television All-Day Viewing Shares

	1988	1990	1995	2000	2001	2002	2003	2004
Revenues (\$mil.)								
Total Video Advertising Revenues	26,131	29,247	37,828	60,257	54,617	58,365	60,746	67,791
Broadcast	24,490	26,616	32,720	44,802	38,881	42,068	41,932	46,264
Cable	1,641	2,631	5,108	15,455	15,736	16,297	18,814	21,527
Broadcast Share (%)	93.7	91.0	86.5	74.4	71.2	72.1	69.0	68.2
Cable Share (%)	6.3	9.0	13.5	25.6	28.8	27.9	31.0	31.8
Share of All Day Viewing of Ad Supported Programming								
Broadcast share (%)	84.79	78.57	69.37	57.05	53.61	50.06	48.35	46.92
Cable share (%)	15.21	21.43	30.63	42.95	46.39	49.94	51.65	53.08
Cable Advertising Share as a % of Cable Viewing Share	41.3	42.0	44.1	59.7	62.1	55.9	60.0	59.8

Sources: Advertising expenditure data from Television Bureau of Advertising, *Research Central, Media Trends Track, Trends in Television, Television Advertising Volume*, available at <http://www.tvb.org/rcentral/mediatrendstrack/tv/tv.asp?c=advolume> (visited May 12, 2006). Viewing share data from Cabletelevision Advertising Bureau, 2005 CABLE TV FACTS, at page 32. Viewing share data are for a viewing year, not a calendar year (*i.e.*, year 2000 data are for the viewing year beginning in Fall 1999).

⁵⁹ Note that for years prior to 2000, some viewing of home shopping channels or pay-per-view may be included in the figures. To the extent that this is so, cable viewing shares of advertiser-supported programming are biased upward and cable advertising shares as a percentage of cable viewing shares are biased downward.

Broadcast advertising remains, overall, more attractive to advertisers than cable advertising because of the greater size and reach of the broadcast audience. Table 9 provides historical data on prime-time household delivery (*i.e.*, the number of households viewing particular categories of stations) for broadcast and cable outlets. These data show that, from 1984-85 to 1999-00, the number of households viewing commercial broadcast stations dropped significantly. Over the period from 2001-02 to 2004-05, this number has stabilized at a level roughly four-fifths of the 1984-85 level.⁶⁰ On the other hand, total cable household delivery has been increasing substantially over the period, and now exceeds the broadcast total. Indeed, from 1984-85 to 2004-05, basic cable households delivered (the figure most comparable to commercial broadcast households) has increased by a factor of 10.

Table 9: Prime-time Household Delivery (in thousands)

	Network Affiliates	Indep. Stations	Commerc. Broadcast Total	Public Stations	Broadcast Total	Basic Cable	Pay Cable	All Other Cable	Cable Total
84/85	38,035.2	8,235.3	46,270.5	2,207.4	48,477.9	3,056.4	3,396.0		6,452.4
89/90	33,616.5	10,959.9	44,576.4	2,026.2	46,602.6	8,289.0	3,315.6		11,604.6
94/95	36,061.2	6,201.0	42,166.8	2,098.8	44,265.6	15,168.6	2,957.4		18,126.0
99/00	34,977.6	2,116.8	37,094.4	2,016.0	39,110.4	24,192.0	3,528.0	1,915.2	29,635.2
00/01	33,317.2	2,452.8	35,770.0	1,941.8	37,711.8	26,572.0	3,577.0	2,146.2	32,295.2
01/02	31,936.2	2,635.0	34,571.2	1,686.4	36,257.6	29,722.8	3,689.0	2,213.4	35,625.2
02/03	31,966.5	2,637.5	34,604.0	1,688.0	36,292.0	29,751.0	3,692.5	2,215.5	35,659.0
03/04	31,327.6	3,143.6	34,471.2	1,734.4	36,205.6	33,495.6	3,685.6	3,143.6	40,324.8
04/05	30,468.8	4,055.2	34,524.0	1,753.6	36,277.6	35,948.8	3,397.6	3,507.2	42,853.6

Source: Entries in table are ratings figures from Nielsen Galaxy Explorer multiplied by households/rating point. Households/rating point is Nielsen total television households reported in "Trends in Television," Television Bureau of Advertising, Inc., available at http://www.tvb.org/nav/build_frameset.asp?url=/rcentral/index.asp (visited Nov. 22, 2005) Note: Up to 1998-99 affiliates are big 4; afterwards includes WB, UPN, Pax. Up to 1998-99, pay-per-view is in basic; afterwards, pay-per-view and pay audio are in "all other cable." Network affiliates figure for 1998-99, the last year in which only the big four networks were included, is 31,509.8.

The increase in cable households delivered has been accompanied by a substantial increase in the total number of cable networks, so the average audience size for a single cable network is much smaller than for the broadcast networks. Moreover, although the reach of cable networks has been expanding, they still do not match the virtually 100 percent national audience coverage that the broadcast networks offer. Specifically, as of year-end 2004, the largest non-broadcast network, Discovery, reached 82 percent of television households, and 13 other non-broadcast networks reached at least 80 percent of television households. In 1990, the largest non-broadcast network was ESPN, and it reached only 62 percent of television households.⁶¹ National advertisers in particular see a significant advantage in a platform

⁶⁰ The data incorporate a 1999-00 season change in the definition of network affiliate, adding UPN, WB, and Paxson to the "big four" of ABC, CBS, Fox, and NBC. For this reason, it is preferable to focus on the commercial broadcast total. Note also that the WB and UPN networks announced in early 2006 that they plan to merge.

⁶¹ See Kagan Research LLC, *ECONOMICS OF BASIC CABLE NETWORKS 2006*, December 2005, at page 32, for household reach of basic cable networks in 2004. The figure for 1990 is from Kagan Research LLC,

that reaches a truly national audience. It is also true that the transactions cost of assembling even a close-to-national audience via purchases on multiple cable networks is higher than the transactions cost of a single broadcast network advertising purchase. In sum, the value that many advertisers place on a truly national audience (and the value of being associated with the very popular programming that the broadcast network's reach makes it possible for them to invest in) accounts for the continuing strength of broadcast advertising revenues in the face of declining broadcast viewing shares.

Information on households delivered on a per network basis is consistent with this explanation. The following discussion draws on data for individual broadcast and cable networks collected on a different basis than the Table 9 data. The broadcast network data also come from Nielsen but are compiled on a "season" (roughly September to May) rather than a "full-year" basis. Household delivery has historically been lower in the summer months when there is a greater amount of repeated programming. Thus, households delivered by broadcast networks are noticeably higher during the season than for the full year, but the higher numbers probably give a better indication of the value of broadcast networks as an advertising vehicle.

The "big four" commercial networks (ABC, CBS, Fox, NBC) delivered 42,013,000 prime-time households during the 1993-94 season and 29,977,000 prime-time households during the 2003-04 season, for an average of 10.5 million per network in the earlier year and 7.5 million in the later year.⁶² In 2003-04, UPN delivered an average of 2,481,000 prime-time households and the WB delivered 2,651,000 prime-time households on average. The most comparable figures for the four cable networks with the largest audiences are as follows.⁶³ In 1994, the cable networks with the largest prime-time audiences were USA, TBS, ESPN, and TNT. The average number of households delivered per network was 1,216,000. For the full sample of 24 networks reported, the average audience size was 466,000. In 2004, the four biggest cable networks were TNT, Nickelodeon, USA, and Disney, with an average prime-time audience size of 1,724,000. For the full sample of 60 networks reported, the average audience size was 562,000.

These figures indicate that in 1994, the average major broadcast network had a prime-time audience 8.6 times as large as that of the largest cable networks and 22.5 times as

ECONOMICS OF BASIC CABLE NETWORKS 2002, at page 418. Total television households for 2004 are 109.6 million. See Table 2.

⁶² The broadcast network figures in this paragraph are from Nielsen, reported in Victor Miller, Christopher Ensley, Tracy Young, Monica DiCenso, Raymond Katz, *Broadcast Television Fact Book*, Bear Stearns Equity Research, December 2005, at page 160. To get a sense of the difference between "full year" and "season" households delivered, the comparable figure for the 1993-94 year from the same source as Table 9 is 38,151,000, nine tenths of the "season" figure.

⁶³ The cable figures are from Kagan Research, *ECONOMICS OF BASIC CABLE NETWORKS*, 2006 EDITION, at 50-51 and 2002 EDITION, at 61. They are for the calendar year rather than the season, but since cable networks do not have the same seasonal pattern of introducing new series as broadcast networks have had, the variation between full year and September-May numbers for households delivered is likely to be small.

large as the average cable network. In 2004, the average major broadcast network had a prime-time audience 4.4 times as large as that of the largest cable networks and 13.3 times as large as the average cable network. Although the newer broadcast networks, UPN and WB, delivered audiences substantially larger than those of the largest cable networks, the gap was much smaller in these cases (the broadcast network audiences were less than 1.5 times as large as the cable network audiences).

These calculations are based on prime-time household delivery, but they illustrate the conditions that keep broadcast advertising revenues disproportionately large relative to overall broadcast viewing shares.⁶⁴ The narrowing of the gap over time mirrors the rising ratio of cable advertising expenditure shares to cable viewing shares depicted in Table 8. The relatively small gap between cable network audience size and that of the smaller broadcast networks, and the presumed smaller advertising advantage those broadcast networks enjoyed over cable, is at least consistent with the recent decision of UPN and WB to merge.

C. Conclusion

Considering the enormous value that consumers continue to place on subscription video service viewing options, it is no wonder that viewership shares of non-broadcast networks have continued to grow over the past decade, while viewership shares of broadcast television stations have steadily declined. Both subscribership and viewing patterns in households depend on the menu of programming offered and the availability of service. DBS systems are particularly significant in areas where cable television is not available, and broadcast service may be quite limited. Coverage area and growth in programming options (both in terms of an increased number of networks offered and increased quality of programming) have and will continue to increase the popularity of subscription television relative to broadcast television.

It is important to note that, while non-broadcast networks' collective share of the viewing audience has been increasing over the years, ratings for individual networks (and programs) remain quite low. Although non-broadcast programmers do provide some general interest channels in the mold of traditional broadcast services, in many cases, they program to a particular audience niche (e.g., children, young adults, sports fans, news). The relatively slow growth of individual non-broadcast network audience sizes suggests that even the mass appeal networks will not soon approach the audience size of broadcast networks. Nevertheless, it is likely that the gap between non-broadcast

⁶⁴ The preceding analysis employed comparisons of total households delivered by cable and broadcast channels. Advertisers are frequently concerned with reaching specific demographic groups and make their purchases accordingly. A detailed analysis of advertising markets is beyond the scope of this paper. Suffice it to say that advertising prices (so-called "cost per thousand" or "CPM") figures do vary with the demographic characteristics of the audience. For example, Media Dynamics, Inc. estimates that during the 2004-05 season, the CPM for a 30-second advertisement during prime-time was \$13.38 for adults 18 and over, but \$40.08 for adults 18-34 years old. Overall, cable rates are lower, with the CPM for "Prime Upscale" adults 18 and over at \$9.24. Interestingly, the cable CPM for "Prime Upscale" adults 18-34 years old was \$60.61, higher than the broadcast estimate for adults 18-34 years old. This could reflect the value of the relatively homogeneously upscale demographics that some cable networks can deliver.

network and broadcast network audience sizes, which has been narrowing, will continue to do so. Furthermore, the economics of VOD and PPV also could have significant potential to impact the broadcast market because the ability to charge for single highly-valued events could come closer than conventional cable services to measuring consumer's tastes for programming.

Although the direction of these trends appears relatively clear, it is difficult to predict the timing and magnitude of their impact on broadcast television. The data in this chapter generally reflect the situation as of year-end 2004. More recent but incomplete figures for 2005 suggest some downturn in expenditures for advertising on local television stations (an 8.8 percent drop from 2004 levels). The syndication and network categories each increased in magnitude, but, for television broadcasting overall, 2005 expenditures were down by 2.4 percent from 2004 levels.⁶⁵ It is impossible to extrapolate reliably from this one data point. Moreover, there is some evidence that selling prices of television stations (which reflect expectations of future profitability) have turned upward. Indeed, one analyst characterized these developments as evidence that "Television broadcasters are weathering the storm."⁶⁶

The Internet is increasingly an alternative to traditional video delivery platforms, not only for programming content but also for advertising. The Internet first emerged in 1997 as a category in the advertising expenditure compilations on which Table 3 is based. In 2004, it accounted for 2.6 percent of aggregate advertising expenditures in the US; at \$6.9 billion, its magnitude was roughly one tenth that of traditional video (broadcast plus cable) advertising expenditures.⁶⁷

Advertisers have begun to utilize product placements to respond to viewers' increased ability and inclination to skip over advertisements. One study estimates that, in 2004, product placement expenditures for television were \$1.9 billion. Industry executives apparently believe that the DVR has yet to make a substantial impact on advertising effectiveness.⁶⁸

V. Technological Change

A. Introduction

Section I pointed out that the move from analog to digital transmission of video programming has been perhaps the single most significant technological change affecting television. This section begins by reviewing that transition, with emphasis on

⁶⁵ See Television Bureau of Advertising, 2005 TV AD REVENUE FIGURES, at http://www.tvb.org/nav/build_frameset.asp?url=/rcentral/index.asp (visited April 4, 2006).

⁶⁶ See Warren Publishing, COMMUNICATIONS DAILY, Feb. 8, 2006, pages 5-6.

⁶⁷ See Television Bureau of Advertising, TRENDS IN ADVERTISING VOLUME, at http://www.tvb.org/nav/build_frameset.asp?url=/rcentral/index.asp (visited April 4, 2006).

⁶⁸ See Friedman, Wayne *New Report: Product Placement Hits \$3.5 Billion, \$1.9 Billion on TV*, MEDIAPOST PUBLICATIONS, at <http://publications.mediapost.com/index.cfm?fuseaction=Articles.san&s=34282&Nid=15599&p=289069> (visited April 4, 2006) and Warren Publishing, COMMUNICATIONS DAILY, March 20, 2006, page 9.

the broadcast television sector, the one that is subject to the highest degree of government regulation. It then examines the development of the digital video recorder and of emerging distribution platforms, some based on Internet delivery and some utilizing mobile telephone infrastructure. The section concludes with a brief discussion of interactive television.

B. Digital Television (DTV)⁶⁹

This subsection reviews the transition from analog to digital television currently in process. The emphasis is on terrestrial free-to-air television broadcasting, although there is a brief discussion of the transition on the cable and DBS platforms and of the intellectual property issues (sometimes referred to as “digital rights management” or “DRM”) that the transition raises.

Digital television can provide more and better services for consumers, regardless of the platform. Digital transmission technology increases the capacity for transmitting standard-definition TV (SDTV) programming and also supports high-definition TV (HDTV). With respect to terrestrial television, the digital transition will have an important additional benefit. The increased efficiency of digital transmission will permit recovery of a significant block of spectrum for other valuable uses. The US digital transition will clear 108 MHz of spectrum, 24 MHz for public safety uses (pursuant to the 1997 Balanced Budget Act), and 84 MHz for commercial uses. The spectrum for commercial uses either has been or will be assigned by auction. This spectrum is generally subject to very flexible service rules. Although its precise usage cannot be predicted yet, possibilities include fixed or mobile broadband service which, in principle, could support provision of video programming.

1. The Rules of the Game

The US adopted the “ATSC” DTV transmission standard in 1996, setting a target date of 2006 for completing the transition, with provision for reviewing the decision every two years. The 1996 Telecommunications Act provided that, if the Commission issued “additional licenses for advanced television services,” they should go to existing licensees or permittees. The Commission therefore assigned a second channel to each analog television station licensee. At the end of the transition, each licensee will return one of the channels that it had been “loaned.”⁷⁰ The Balanced Budget Act of 1997 set a target deadline of December 31, 2006 for switching off analog television, but that legislation permits television stations to retain their analog authorization beyond that date in markets where household penetration of DTV reception equipment is less than 85 percent.⁷¹

⁶⁹ This subsection draws heavily on Evan Kwerel and Jonathan Levy, “The DTV Transition in the US,” in Martin Cave and Kiyoshi Nakamura (eds.) Digital Broadcasting: policy and practice in the Americas, Europe and Japan (Cheltenham, UK and Northampton MA: Edward Elgar Publishing Ltd.) 2006.

⁷⁰ See Communications Act of 1934, as amended; 47 USC Section 336.

⁷¹ Id., at 309(j)(14). Stations may also retain their analog licenses if at least one station in the market that is affiliated with one of the top four commercial broadcast networks is not transmitting a DTV signal (and the Commission finds that the station or stations in question qualify for an extension of applicable

Congress recently passed budget legislation with provisions addressing the DTV transition.⁷² The legislation sets a “hard date” of February 17, 2009 for turning off analog service. That is, analog stations would have to cease transmissions in all markets regardless of the penetration of DTV equipment in the markets. The legislation provides funding not to exceed \$990 million for digital-to-analog converter box subsidies, with a provision to increase that amount up to \$1.5 billion if the agency administering the program submits a request to Congress justifying the increase. The legislation sets a January 28, 2008 deadline for commencing the auction of spectrum to be recovered for commercial use.

In addition to adopting a transmission standard and loaning analog licensees a second channel, the Commission also prescribed phased build-out requirements for licensees, established service rules for DTV broadcasters, adopted certain regulations regarding inclusion of DTV tuners in new television receivers, and addressed other regulatory issues, including signal carriage (“must-carry”) rules.

Commission rules required affiliates of the four major commercial networks in the ten largest markets to commence digital transmissions by May 1, 1999, followed by affiliates of the four major commercial networks in markets 11-30 by November 1, 1999. The deadline for all other commercial television stations was May 1, 2002. The deadline for all noncommercial stations was May 1, 2003. Not all stations met their deadlines and, indeed, not all stations are now transmitting in digital. However, as of March 21, 2006, FCC figures indicate that 1566 stations, 91 percent of the total, had begun digital transmissions.

The FCC service rules for DTV are quite flexible. They require licensees to provide at a minimum one free-to-air digital program stream of picture quality at least equal to the analog transmission. Stations may transmit in HDTV but are not required to do so. Stations may choose to transmit multiple streams of SDTV video, and may also provide data services. Moreover, they may provide different services mixes at different times of day. Stations may use their DTV bandwidth for subscription services, but if they do so, they must pay five percent of their gross revenues to the US government.

The Federal Communications Commission is required by statute to issue signal carriage (or “must-carry”) rules for DTV signals. The Commission has resolved many of these issues.⁷³ Stations transmitting in both analog and digital formats are not entitled to “dual must-carry.” Currently their “must-carry” rights apply only to their analog signals. Digital-only stations (of which there are not many), however, have “must-carry” rights

Commission construction deadlines) or if digital-to-analog converter technology is not generally available in the market.

⁷² The Senate passed S. 1932 (Budget Reconciliation Bill Conference Report) on December 21, 2005 and the House passed H. Res. 653 (a resolution that agreed to the Senate amendments to the Conference Report on S. 1932) on February 1, 2006. S. 1932 was signed by the President February 8, 2006.

⁷³ See Second Report and Order and First Order on Reconsideration in CS Docket No. 98-120, 20 FCC Rcd 4516 (2005) and First Report and Order and Further Notice of Proposed Rulemaking in CS Docket No. 98-120, 16 FCC Rcd 2598 (2001).

now. Digital “must-carry” rights apply to one video program stream, so stations that “multicast” can only have one of their program streams transmitted pursuant to the “must-carry” rules. Moreover, program streams provided on a subscription basis are not eligible for “must-carry” status.

Cable operators are required to retransmit programming subject to the “must-carry” rules “without material degradation.” The Commission gave effect to this provision by requiring that in the context of mandatory carriage of digital broadcast signals, a cable operator may not provide a digital broadcast signal in a lesser format or lower resolution than that afforded to any digital programmer (*e.g.*, non-broadcast cable programming, other broadcast digital program, etc.) carried on the cable system, provided, however, that a broadcast signal delivered in HDTV must be carried in HDTV.⁷⁴

Under current regulations, during the transition, “a television station may choose “must-carry” or retransmission consent for its analog signal and retransmission consent for its digital signal.”⁷⁵ Thus, currently, for stations transmitting both in analog and digital modes, if the digital signal is retransmitted over cable, the carriage is pursuant to voluntary agreements between the stations and the cable operators. (Those stations transmitting only in digital mode have the right to elect “must-carry” or retransmission consent status for their digital signals.) A variety of stations transmitting in both modes have secured carriage of their digital signals under voluntary agreements.⁷⁶ The fact that a significant number of stations opt for “must-carry” status for their analog signals suggests that not all local television stations will secure carriage for their digital signals via retransmission consent during the transition.

DTV signal carriage rules have not yet been finalized for DBS. Moreover, unlike in the cable case, the DBS signal carriage rules do not require retransmission of all local analog television signals. DBS carriers are subject to the requirement to carry all local analog signals in a market if they choose to carry one signal pursuant to a compulsory copyright license. Additionally, unlike cable, there is no requirement that DBS customers receive the local signals. The subscriber may choose to receive them, generally at an additional charge.

2. DTV Content

⁷⁴ First Report and Order and Further Notice of Proposed Rulemaking in CS Docket No. 98-120, 16 FCC Rcd 2598 (2001). The Commission noted that a cable operator would not materially degrade a DTV signal if the cable operator carried less than the full 19.4 Mbps transmitted by a broadcaster (*see* pages 32-33), referring to Section 614(b)(4)(A) of the Communications Act of 1934, as amended by the 1996 Act, which requires that cable operators shall provide the same “quality of signal processing and carriage” for broadcasters’ signals as they provide for any other type of signal. *See* 47 U.S.C. 534.

⁷⁵ First Report and Order and Further Notice of Proposed Rulemaking in CS Docket No. 98-120, 16 FCC Rcd 2598 (2001), paragraph. 27. The Commission’s digital must-carry proceeding remains open and it could adopt additional regulations regarding digital signal carriage during the transition.

⁷⁶ *See* the discussion *supra* of the agreement between the Association of Public Television Stations and the NCTA.

The consumer decision to acquire DTV equipment depends on the availability of digital content. Consumers presumably consider the full range of content options available—terrestrial DTV, cable, DBS, and other multichannel video program distribution platforms, and pre-recorded media. Currently, all of the major US commercial broadcast television networks are producing significant amounts of HDTV content, particularly in prime-time. There is a limited amount of locally-produced HDTV programming. Some broadcast digital television capacity is being used for “multicasting.” Multicasting refers to transmission of several program streams (generally all are SDTV but multicast can include one HDTV and one or more SDTV channels) in a single 6 MHz DTV channel. As described below, there are also a number of non-broadcast HDTV services.

3. DTV Equipment

According to the Consumer Electronics Association (CEA), cumulative sales of all DTV equipment in the United States were 17.9 million units, as of the end of 2004. The total is for factory sales to dealers and so is only an approximation of the quantity of equipment in consumers’ hands. The total includes three types of equipment—integrated DTV receivers (*i.e.*, with an ATSC tuner and high-resolution monitor); stand-alone “DTV-ready” high resolution monitors; and stand-alone DTV tuners, or set-top boxes. The stand-alone monitors are not able to receive terrestrial DTV signals and are apparently purchased for viewing DVDs, for gaming and, in some cases, for use with digital cable or satellite services. As of the end of 2004, roughly 3.6 million DTV tuner-equipped units of DTV equipment had been sold, so approximately 3.3 percent of US television households had the capability to receive terrestrial DTV signals off-air.

Until 2004, most DTV units sold have been the stand-alone high-resolution monitors, but this is changing, with the CEA predicting that almost two-thirds of the 16.5 million units expected to be sold in 2005 will have a DTV tuner. This is due to a variety of factors. First, consumer demand for DTV reception appears to be increasing. Second, FCC regulations that require ATSC tuners in new television receivers are phasing in. Specifically, as of July 1, 2005 all new receivers with screen sizes 36 inches and above, and 50 percent of new receivers with screen sizes 25 to 35 inches had to have ATSC tuners included. The phase-in continues with the requirement that 100 percent of new receivers with screen sizes of 25 to 35 inches have ATSC tuners as of March 1, 2006. Effective March 1, 2007, all television receivers and other video devices (*e.g.*, videocassette recorders and digital video recorders) must include an ATSC tuner.⁷⁷

The third factor leading to an increase in ATSC tuner-equipped DTV equipment is the Commission’s regulations regarding compatibility of digital cable systems and DTV home equipment. Any receiver labeled as “digital cable ready” is required to include an

⁷⁷ See Second Report and Order in ET Docket No. 05-24 (released November 8, 2005).

ATSC tuner in it⁷⁸, and the CEA estimates that three million such receivers will be sold in 2005. Finally, the price of ATSC tuners has been falling.⁷⁹

4. Digital Distribution via Cable and DBS

The cable industry estimates that 98.7 percent of the 109.6 million US television households are “passed” by cable (*i.e.*, it is available to them if they are willing to pay the subscription fee).⁸⁰ Ninety million US television households are passed by HDTV service, and some additional households are passed by digital cable that does not offer HDTV service, but precise figures are unavailable. Table 2 indicates that, as of year-end 2004, there were approximately 25.4 million digital video subscribers, and it is estimated that by 2010, there will be more than 40 million households that subscribe to a tier of digital cable programming.⁸¹

Digital cable programming consists of some retransmitted terrestrial broadcast signals and some non-broadcast networks. Most of the non-broadcast networks are SDTV, but there are roughly 17 non-broadcast HDTV services distributed by cable and satellite (although not every cable or satellite service necessarily carries every HDTV program service). Among the genres represented are sports (ESPN), movies (HBO, Showtime), nature and science (Discovery), and general entertainment (TNT).

With regard to local broadcast signals, cable industry sources state that, as of January 1, 2005, 504 of the 1481 DTV stations then in operation were being carried by local cable systems.⁸² Currently, virtually all carriage of commercial DTV signals is pursuant to

⁷⁸ Second Report and Order and Second Further Notice of Proposed Rulemaking in CS Docket No.97-80 and PP Docket No. 00-67, 18 FCC Rcd 20885 (2003).

⁷⁹ RCA has announced that a 27 inch standard definition DTV receiver will be available in 2005 at a suggested retail price of under \$300. <http://tv.rca.com/en-US/01052005.html> (visited July 7, 2005). See also *Communications Daily*, May 2, 2005, page 7 (reporting a claim from Zoran Corporation, at <http://www.zoran.com/> (visited May 2, 2006)) that they can manufacture a set top converter box in quantity today for \$50 with the capability to convert over-the-air DTV signals of local television stations to “DVD-quality” pictures on an analog television set.) Zoran demonstrated their set top converter box at the FCC on April 28, 2005.

⁸⁰ Trade publication statistics, which some consider to be an overestimate, indicate that 108.2 of the 109.6 US television households are passed by cable. These figures, from Kagan Research LLC and A.C. Nielsen Media Research, respectively, are cited on the NCTA website. See <http://www.ncta.com/Docs/PageContent.cfm?pageID=86> (visited 2 May 2005). For a discussion of alternative (lower) estimates of homes passed, see the Commission’s review of a proposed merger of EchoStar and DIRECTV. *Hearing Designation Order* in CS Docket No. 01-348. 17 FCC Rcd 20559, 20611-12 (2002)

⁸¹ Kagan Research, LLC, *BROADBAND CABLE FINANCIAL DATABOOK 2005*, August 2005 (“Kagan Cable Databook 2005”), at page 11. In general, cable operators use digital technology to compress video signals, allowing more than one program service to be carried in the bandwidth space normally required for one analog program service. Typically, the signal is sent to the home and decompressed in the set-top box for display on the television. National Cable & Telecommunications Association Website, at <http://www.ncta.com/Docs/PageContent.cfm?pageID=91> (visited April 5, 2006).

⁸² Testimony of Kyle McSarrow, President and CEO, National Cable & Telecommunications Association, on *The Digital Television Transition Act of 2005 [Staff Draft]*. National Cable and Telecommunications Association Press Release May 26, 2005, at

voluntary "retransmission consent" agreements between the stations and the cable operators. In early 2005, the Association of Public Television Stations and the National Cable and Telecommunications Association announced an agreement that covers or will cover the signals of all "local must-carry" public television stations in the United States.⁸³ Moreover, this agreement provides, subject to some limitations, for cable operator retransmission of up to four separate program streams of free non-commercial digital programming from one station per market during the transition and for multiple stations post-transition.

The transition is furthest along in DBS, which is a completely digital service. Each of the two providers-DirecTV and Echostar-offer roughly 300 channels to subscribers. With respect to terrestrial broadcast signals, the DBS carriers retransmit them in all of the largest local markets by converting the analog signals to standard definition digital. Eventually the DBS carriers hope to retransmit virtually all local television stations. At the moment, they only retransmit a limited number of local stations' HDTV programming.

5. Digital Rights Management (DRM)

Consumer demand for DTV equipment depends heavily on the range of content accessible. In turn, content providers' willingness to make digital content available depends on their ability to maintain control of distribution and, in particular, to prevent or limit unauthorized copying and redistribution. Unlike analog material, video transmissions in digital format may be copied repeatedly with little or no quality degradation and may be widely and inexpensively redistributed via the Internet.

Deciding how much protection to provide content owners requires a tradeoff. Policymakers have to balance incentives to produce new content with the benefits of making existing content widely available. The benefits to consumers of copying and sharing content can be substantial. In the analog world, viewers value the opportunity to copy video programming and have developed certain expectations regarding their ability to copy for various purposes, including time-shifting and portability. The VCR and now personal digital video recording devices are very important to consumers. If consumers could never make a copy, much of the benefit of the digital revolution could be lost. But if copying is too easy, then the content providers are going to provide less content. The analysis is analogous to determining optimal patent protection. Increasing the length of patents provides greater incentives to innovate while raising prices and suppressing use of inventions. There is no simple formula for balancing these conflicting objectives, but it is clear that DRM policy has an impact on the rate of DTV diffusion.

<http://www.ncta.com/press/press.cfm?PRid=604&showArticles=ok> (visited August 16, 2005). In the overwhelming number of cases, the cable system is delivering the DTV signal converted to analog format.
⁸³ National Cable and Telecommunications Association, *Public Television and Cable Announce Major Digital Carriage Agreement* (press release), January 31, 2005, at <http://www.ncta.com/press/press.cfm?PRid=573&showArticles=ok> (visited August 1, 2005).

The FCC has addressed these issues in two major proceedings. The “Plug and Play” Order, adopted in September 2003, addresses subscription MVPD programming.⁸⁴ The “Broadcast Flag” Order, adopted two months later, sought to impose more limited DRM protection for broadcast programming. However, the U.S. Court of Appeals for the D.C. Circuit recently overturned the Broadcast Flag rules as outside of the Commission’s statutory authority.⁸⁵

The DRM rules that the FCC adopted in the “Plug and Play” proceeding are based on a proposal submitted by the cable and consumer electronics industries. They provide a mechanism to maintain the “chain of custody” for encrypted programming and specify the types of DRM instructions that MVPDs can pass along to limit copying. In the cable context, the security module that subscribers obtain from their cable company performs the conditional access⁸⁶ and decryption functions and outputs a program stream that includes the DRM instructions. The “plug and play” rules require the consumer equipment into which the security module is inserted, including television receivers and set-top boxes, to implement the DRM instructions.

The instructions range from “copy never” for pay per view or video on demand programming to “copy freely” for broadcast channels carried by the service. In essence, the FCC rules place limits on content providers’ ability to restrict copying of programming distributed by MVPDs by restricting the nature of the DRM instructions that MVPDs may transmit.

C. Digital Video Recorders

Digital video recorders have the potential to change radically the economics of video distribution. Since the 1970s, devices and services such as the VCR, the DVD, and PPV television have increased personalization of television viewing. Instead of passively receiving whatever broadcasters choose to show the public, control over content and when it is viewed is shifting from the broadcaster to the viewer. Increased penetration of digital video services and new home video technologies such as the DVR mean the trend towards personal television will be even more pervasive in the future. This will affect all video programming distributors, directly and/or indirectly.

⁸⁴ Second Report and Order and Second Further Notice of Proposed Rulemaking in CS Docket No. 97-80 and PP Docket No. 00-67, 18 FCC Rcd 20885 (2003).

⁸⁵ *American Library Association, et al. v. FCC*, No. 04-1037 (D.C. Circuit) decided May 6, 2005. The Broadcast Flag rules were designed to limit Internet retransmission of digital broadcast programming by requiring new DTV receivers to recognize a marker broadcasters can put on their digital content. See *Report and Order and Further Notice of Proposed Rulemaking* in MB Docket No. 02-230, 18 FCC Rcd 23550 (2003). The rules did not prevent consumers from freely making copies of digital content for their own use (as they can now do with analog content) on digital recorders. However, they were adopted based in part on the premise that widespread redistribution of broadcast programming without quality degradation would cut into broadcasters’ advertising revenues, and the viability of digital over-the-air broadcasting might be threatened. Content producers might be reluctant to provide high-value programming to broadcasters because of fear of unlimited retransmission.

⁸⁶ That is, the module verifies that the receiving household is, in fact, eligible to view the programming in question.

Introduced in 1999, the DVR is a device connected to a television set, either embedded in a set-top box or as a stand-alone device, which uses a hard disk drive, software, and other technology to record digitally and access programming. Generally paired with an EPG, DVRs allow subscribers to select shows easily to be recorded based on a particular program topic, actor, programming category, programming time, or prior viewing habit. DVRs are also capable of pausing, recording, and rewinding live television.

While DVRs cannot play prerecorded videocassettes or DVDs, they make it relatively simple to record pay-per-view signals or other video content, and provide the user with the same level of control over the playback of programming as home video provides. DVRs also enable the user to skip past commercials in recorded material with relative ease. High-definition DVRs are available to further facilitate delivery of HD and other digital video content. Most subscription video providers are offering dual tuner DVRs that allow a subscriber to record one or more programs while watching another program. Several services are also emerging that allow users to download movies from the web and store them to computer hard drives, portable devices, and set-top DVRs.

A DVR combined with a near-video-on demand (NVOD) subscription service may prove to be a better model for video programming distribution instead of pure VOD, which requires a considerable amount of bandwidth. Moreover, DVD recorders are now available. A combined DVR and DVD player/recorder is likely to become an attractive consumer product because of its ability to make permanent and portable copies of programs on a DVD from the DVR.

DVRs may be offered as part of a stand-alone service, where the consumer obtains equipment and a subscription directly from a DVR service operator, or they may be part of a package, with a subscription video service provider also furnishing DVR capability. Most cable and satellite operators have incorporated DVR functionality into their newest set-top boxes. Since the DBS platform is not conducive to real-time VOD programming, DBS providers are using DVR set-top boxes to stream a limited number of programs to the DVR ahead of official broadcast date to allow playback on demand. As of mid-2004, there were approximately 8.3 million subscribers to DVR service.⁸⁷ TiVo, the largest independent DVR maker, had more than 3.5 million subscribers to its service, of which 2.3 million were DIRECTV subscribers.⁸⁸

These statistics show that penetration of DVRs is currently relatively low, under 10 percent of households. Consumer studies suggest that many consumers are unlikely to purchase a stand-alone DVR in the near future. For some, the VCR satisfies their current recording needs. Price of the hardware and lack of product knowledge are also factors limiting sales of stand-alone DVRs. In addition, subscription costs to the service provider may also limit demand. Nevertheless, the integration of DVR functionality with television sets and set-top boxes should rapidly increase deployment and consumer adoption.

⁸⁷ FCC 2005 Competition Report at page 28 n. 156.

⁸⁸ TiVo, Inc. *SEC Filing 10-K for the Quarter ended October 31, 2005*.

Because of DVRs, the concept of prime-time may become much less important, as programs are viewed at the convenience of the viewer rather than at the time they are broadcast. This could render scheduling strategies less important and reduce the value of advertisements to advertisers, either because viewing at a time other than when broadcast renders the advertising exposure less valuable or because the viewer skips over the advertisement entirely. This could, in turn, reduce the significance of ratings during specific time periods and change the rules for airtime pricing. At least one study supports the idea that large numbers of viewers might, if given the opportunity, skip through entire commercial and promotional pods during a network break. This study suggests that people who watch recorded television shows on DVRs skip past commercials approximately 70 percent of the time and notes that the skip rate for DVR users was more than four times that of viewers watching shows recorded on a VCR, and more than 65 percent higher than with people who actively ignored commercials on live television.⁸⁹

If DVR technology threatens the viability of commercial advertisements on television, and the networks lose advertisers, consumers may be asked to pay for programming translating into a future cost to American consumers through cable subscriber fee increases or conversion of advertiser-supported basic cable networks to “pay for” services.

D. New Distribution Platforms: Internet and Mobile Telephone Video

1. Internet Video

a. Introduction

A growing number of companies are making use of Internet protocol (IP) technologies for video programming distribution. For the past seven or eight years, both traditional and independent content producers have been experimenting with use of the “world wide web” (web) to provide video content. The content is accessible from the individual web site of the content provider and can be viewed on the consumer’s personal computer or, if proper equipment is in place, direct to the customer’s television using the public Internet. These “web” services, however, have thus far been met with limited success. More recently, though, some companies (most notably several of the largest local telephone companies in the US), have been experimenting with use of IP transmission technology coupled with the use of dedicated transmission facilities. These efforts are largely still in their early stages, but are promising entrants in the market for the delivery of video programming.

b. Real-Time Video

⁸⁹ The research characterizes “ignoring” live TV as getting a snack, starting a conversation or taking a bathroom break. See FCC Working Paper No. 37, at page 98.

IP video transmissions can be effected in real time or via download. Real time transmissions of broadcast quality video require a broadband connection of some sort. Dial-up service (56 kbps bandwidth) is not adequate for this purpose. For this reason, it is worth reviewing the extent of broadband penetration in the US. According to FCC data, as of year-end 2004, 35 million US households had high-speed Internet access, up from 5.2 million in 2000.⁹⁰ Another data source indicates that, at the end of 2004, 52.9 percent of the 67.6 million US households with Internet access relied solely on dial-up.⁹¹ The number of households with high-speed access continues to increase, and it is safe to assume that a significant portion of the increase is driven by households switching away from dial-up.

With less than one third of US television households currently utilizing a broadband connection, video distribution using the public Internet is not yet a direct competitor to traditional real-time video distribution services. Moreover, despite the growing availability of, and increasing speeds being provided by high-speed access services, some industry watchers believe that streaming video will only become a fully competitive consumer application if connection speeds significantly increase over those achieved currently over cable and DSL broadband.⁹² Nevertheless, US viewers are increasingly accessing streamed video material over the web. As of January 2005, an average of 14 percent of all Americans had watched some form of streaming video in the past month compared with seven percent in January 2000, and as of year end 2004, approximately 25 percent of Americans had accessed streaming video content at least once before.⁹³

Currently, a significant amount of streamed video is of less than broadcast quality,⁹⁴ but, as the availability of broadband connections increases, so will the amount of broadcast quality streamed video. As noted above, streamed video can travel over the "public"

⁹⁰ FCC, *High-Speed Services for Internet Access: Status as of December 31, 2004*, July 2005, at Table 3. This report and previous releases of the *High-Speed Services for Internet Access* report are available at <http://www.fcc.gov/wcb/iatd/comp.html> (visited March 31, 2006). The FCC has used the term "high-speed" to describe services and facilities with over 200 kbps capability in at least one direction. See § 706(b) of the Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996) (1996 Act), reproduced in the notes under 47 U.S.C. § 157. The term "dial-up" refers to the use of an analog telephone and a modem to gain access to the Internet. To gain access, the customer must manually "dial" the telephone number to the server with access to the Internet. The maximum speed of an analog telephone dial-up modem is about 56.6 kbps.

⁹¹ Richard Bilotti, Megan Lynch, Benjamin Swinburne, David Gober, BROADBAND UPDATE, Morgan Stanley, April 15, 2005 at 12.

⁹² Some industry observers insist that Internet video will need speeds of 100 Mbps or more to the home before it will impact consumers. FCC 2005 Competition Report at 65. John Borland and Jim Hu, *A Life Saving Technology*, CNET NEWS.com, July 26, 2004. One possible explanation might be that, for Internet video to challenge traditional distribution platforms such as cable and DBS, it would need to be able to provide more than one video stream to a household simultaneously.

⁹³ FCC 2005 Video Competition Report, 21 FCC Rcd at 2566 (page 65). FCC 2004 Video Competition Report, 20 FCC Rcd at 2818 (page 64). See also Arbitron, Inc., INTERNET AND MULTIMEDIA 12: THE VALUE OF INTERNET BROADCASTING ADVERTISING, September 3, 2003, at 5.

⁹⁴ Video viewed on a personal computer, while larger in size and better in quality than a few years ago, is still confined to a relatively small portion of the screen, and still offers a very low quality picture as compared with traditional broadcasting.

Internet, with a viewer accessing a web site and initiating a streamed program, but it is also possible for video programming to be delivered in real time, using Internet Protocol over dedicated or proprietary facilities. An increasing number of companies are beginning to develop these dedicated facilities. Specifically, several local telephone companies, known as "local exchange carriers," or "LECs" are currently experimenting with IP technologies and are deploying dedicated facilities in order to provide video services. Verizon and ATT (formerly SBC) are the leading contenders to become significant competitors to cable and DBS.

LECs have many times over the past ten or more years made attempts to provide pay TV services. The United States Congress has several times provided means for LECs to enter the MVPD market. And on several occasions, LECs have become significant competitors in specific local markets. Ameritech, later acquired by SBC (now AT&T), for example, was a significant overbuilder in 1998. At that time, it held 111 cable franchises with the potential to pass more than 1.7 million homes, and had nearly 250,000 subscribers. But Ameritech eventually sold all of its interests in video program distribution systems to SBC, and no longer remains involved in the video business. BellSouth, RCN, and Bell Atlantic (now Verizon), have also provided competition in certain locales over the years.

Despite these forays into the video programming service provision industry, however, significant LEC entry into the video marketplace has yet to materialize. Today, there are new signs of LEC interest in providing video services using IP over dedicated facilities, but LECs are still only providing competition in certain locales.⁹⁵ Nevertheless, the larger LECs continue to accelerate their plans to roll out video services.

c. Downloadable Video

Because most Internet connections do not yet reliably support data speeds needed to view broadcast-quality video as it is streamed, technologists expect that most near term use of the web to provide video will be for downloadable video. Several services have emerged that allows users to download movies to computer hard drives for a fee, and store it for a defined period of time. In addition, portable devices have become available that download content stored on the personal computer and in some cases record programs directly from a television or VCR.

Peer to peer video file sharing services have already begun to appear on the web. Bit Torrent is free downloadable software that enables users to search for files in the ".torrent" format and download them. It has been downloaded by more than 51 million

⁹⁵ Congress is considering the establishment of a national franchise for telephone companies. The current version of the proposed new telecom bill being considered by the House of Representatives would grant a 10-year national video franchise. Applicants would have to apply to the FCC for authorization to enter a market. Alan Breznick, *House Mulls National Video Franchises for Phone Companies*, CABLE DIGITAL NEWS, APRIL 4, 2006. Additionally, various states have passed or are considering franchising legislation. See Warren Publishing, COMMUNICATIONS DAILY, March 27, 2006, pages 1-2.

users. For no charge, users can search and download prime-time programming, sometimes from the previous night.⁹⁶

In an effort to capture a piece of the mobile video market, the broadcast networks are beginning to make their programming available for download for a fee. ABC, CBS, and NBC offer some of their most popular prime-time shows for download viewing on demand or download, starting just hours after the show's regular on-air time slots.⁹⁷

d. Conclusion.

The amount of video programming content available via the web continues to grow. Some traditional broadcast and cable television programmers continue to offer Internet video versions of their programming or supplemental programming and partnerships and marketing agreements between web sites and entertainment companies continue to exist. According to a recent study, U.S. consumers spent \$1.8 billion to access web content in 2004. This represents a more than 400 percent increase from the same period in 2000 when U.S. consumers spent \$352 million to access web content.⁹⁸

As broadband deployment and adoption increases and as broadband transfer speeds accelerate, more consumers may opt for the convenience and control of streaming and downloadable video. One notable feature in this context, which several firms are planning to introduce, is the capability for subscribers to send recorded television shows over the Internet to multiple playback devices that share the same customer account.⁹⁹ While it is not possible to determine at present whether the demand for web and IP-based video services will result in a profitable business model for a stand-alone service, the number of video programming sources that consumers can choose from is growing. The cumulative effect of these Internet alternatives may become considerable.

2. Video Over Mobile Telephones

In addition to downloadable video available over the public Internet, several mobile telephone providers offer video services which allow users to watch short, prerecorded video segments. These services are basically a one-to-one transmission of video from the wireless provider's network to the individual wireless telephone customer, and require more capacity than even traditional web-surfing capabilities offered by wireless telephone providers, since the service essentially sends out individual streams of video to the subscriber's mobile telephone. Recently, several mobile telephone

⁹⁶ Brooks Barnes and Peter Grant, *Networks Go Boldly – And Fearfully – Into TV's Future*, WALL STREET JOURNAL ONLINE, November 9, 2005.

⁹⁷ See Apple Computer Inc., at <http://www.apple.com/itunes/videos/www.google.com> (visited March 28, 2006) and Google Video, at <http://video.google.com/cbs.html> (visited March 28, 2006). See also Peter Grant and Dione Searcey, *How to Watch TV*, WALL STREET JOURNAL, November 9, 2005, at D1.

⁹⁸ Online Publishers Association, ONLINE PAID CONTENT, U.S. MARKET SPENDING REPORT, March 2005, at http://www.online-publishers.org/pdf/paid_content_report_030905.pdf.

⁹⁹ Jube Shiver Jr., FCC Approves TiVo Technology, LOS ANGELES TIMES, August 5, 2004; Jube Shiver Jr., FCC Lets TiVo Send Shows Via Internet, CHICAGO TRIBUNE, August 5, 2004; Paul Davidson, FCC Lets TiVo Users Send Shows 'Anywhere They Go', USA TODAY, at B3.

manufacturers have recently introduced a chip for mobile phones that will support high quality live digital broadcast TV for the wireless industry. These chips use either the Digital Video Broadcasting – Handheld (DVB-H) standard from Europe or the Integrated Services Digital Broadcasting – Terrestrial (ISDB-T) standard from Japan, or both. The DVB-H standard is expected to be extended to North America via Crown Castle Mobile Media which plans to build a mobile television network to retransmit local broadcast signals and make them available to those mobile telephones with a DVB-H receiver chip.¹⁰⁰

3. Interactive Television (ITV)

ITV services are services that support subscriber-initiated choices or actions that are related to one or more video programming streams (e.g., t-commerce, data enhancements, interactive gaming, VOD, DVRs, and EPGs/IPGs). Cable operators, DBS operators, application developers, and technology manufacturers continue to explore a variety of ITV services in order to increase revenue and subscribership, and to reduce MVPD churn. An August 2004 interoperability event/demonstration sponsored by CableLabs provided some illustrations of the potential of ITV. The applications demonstrated there included an airline travel reservation system, a medical advisor application, t-commerce applications, and an advanced real-time and local weather application.

It appears that the growth of the ITV industry continues to proceed at a cautious pace. Ancillary and interactive services are slowly gaining consumer acceptance and are slowly becoming available through cable operators and satellite carriers as well as broadcast television stations. The rollout of ITV services will accelerate as (1) content owners and video programming distributors form strategic alliances; (2) the cost of providing ITV services continues to decline; (3) the deployment of two-way capable STBs increases; and (4) the transition to a digital environment progresses.

VI. Conclusion

The broadcast television sector has faced a variety of competitive challenges over the past 30 years, but, overall, it remains profitable and viable. Alternative distribution platforms have expanded total video delivery capacity, increasing consumer choice, but cutting into the broadcasters' audience, both on a share and an absolute level. Moreover, the alternative platforms generally have access to dual revenue streams—advertising and subscription revenues. New technologies have further increased the consumer's control over the content accessed, including permitting time and location

¹⁰⁰ Junko Yoshida, *Cell Phone Video Gets Real*, EE TIMES, Sept. 20, 2004; Texas Instruments, *Texas Instruments Brings Live Digital TV to Your Cell Phone* (press release), Oct. 21, 2004. Verizon Wireless *Seen Offering TV via Crown Castle*, EWEEK.COM, Oct. 4, 2005, at <http://www.eweek.com> (visited Oct. 20, 2005). See also Crown Castle, *Crown Castle Mobile Media Becomes Modeo: Showcases Live Mobile TV at International Consumer Electronics Show* (press release), Jan. 4, 2006. Doug Lung, *Broadcasting to Cell Phones*, TV TECHNOLOGY, Sept. 7, 2005, at <http://www.tvtechnology.com> (visited Sept. 7, 2005). QUALCOMM, *QUALCOMM Conducts First Live Demonstration of FLO Technology on a Wireless Handset* (press release), Sept. 27, 2005.

shifting and skipping of advertisements. The business model of broadcast television has thus been challenged both by audience fragmentation (which reduces overall viewing of advertiser-supported programming and hence constrains or reduces the advertising revenues that broadcasters can realize) and by technologies that allow even those who view broadcast programming to avoid advertisements.

And yet, overall, broadcast television remains a profitable business. A variety of factors influences individual station profitability — *e.g.*, market size, network affiliation, number of competing stations in the market, and it is certainly true that some stations are in poor financial shape. Nevertheless, the aggregate survey data show a fairly healthy profit situation across all market sizes.

Notwithstanding the recent combination of the UPN and WB networks, it appears that television networking remains a valuable and viable method for packaging and distributing programming and selling advertising. It appears clear that television networking can and does evolve to meet changing market conditions. This is evidenced by the fact that Fox is stepping in to create a new (albeit limited in time) network to serve some of the stations left without a network affiliation by the UPN-WB combination. And it is evidenced by the fact that the profitable station sector can and does, in some cases, provide revenue support to the network function. As noted above, “network compensation” by Fox affiliates is on average negative, *i.e.*, the affiliates pay the network. Press reports indicate that the new CW network will have a similar arrangement. This suggests that, as long as the television station sector remains healthy, the television network sector will also remain healthy.

It appears that one important determinant of the continuing success of television broadcasting, particularly in prime-time, is the fact that, on a per-network basis, broadcast audiences remain substantially larger than non-broadcast network audiences. This is due at least in part to the fact that broadcast networks generally reach close to 100 percent of TVHH, while even the most widely available cable networks reach a bit more than 80 percent.

The gaps between broadcast and non-broadcast network coverage and audiences, and the gap between the value of broadcast and cable advertising exposures has been closing, which suggests continuing competitive pressure on broadcast television. Although household penetration of the major MVPDs—cable and DBS—appears to be leveling off, new distribution platforms, including those based on the Internet and IP technology, are likely to increase this pressure. The importance of the new, broadband-based platforms is, of course, a function of the take-up of broadband in the US and the actual bandwidth that broadband connections will provide. Other changes, in particular the DVR, will challenge the broadcast television business model by making it possible to skip advertisements.

The broadcast television sector is not, however, without measures it can take to respond to these developments. As audiences fragment, it can control and even cut back on its costs, and there is some evidence that broadcasters have done so. In order

to counter the tendency to skip commercials, broadcasters can resort to product placements, make standard advertisements more entertaining, and, as technology and equipment permits, make advertisements interactive and target them to viewers specifically interested in the product or service being advertised, thus raising the value to the advertiser of an advertising exposure because it is viewed by someone relatively likely to make a purchase.

Broadcasters and broadcast programming producers are also seeking additional distribution windows for their content, whether it by via download to an IPOD or mobile phone device or VOD via a traditional MVPD. A variety of business models is possible here, including advertiser support and collecting a fee from the viewer.

The transition to digital broadcasting also provides additional revenue opportunities for broadcasters. Multicasting permits them to increase the number of video program streams that they provide. This likely entails incurring some additional costs for content (which could be small depending on the nature of the content) and gaining additional advertising revenue opportunities. The potential is certainly there to add to net revenues. There are also various possible fee-based uses of broadcasters' digital channel. They include offering video on a subscription basis, leasing spectrum to a provider of multi-channel pay television (in this scenario an aggregator would lease some spectrum from multiple local television stations in a market to provide service). And broadcasters could also provide some data services using their spectrum.

The direction of the effect of these technical and market developments on broadcasting is relatively clear. But the magnitude, the timing, and the precise nature of the response of the television broadcasting sector are not clear. The future profitability of the broadcast industry will depend on its ability to provide valuable, cost-effective programming and to harness new technologies such as DTV and interactive services to its benefit.

