Competition and Copyright: Retransmission of Free-to-Air Television Signals by Pay TV Services[1]

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ABSTRACT *Free-to-air television stations remain the most popular source of programming, even in pay TV households. Consumers value the bundling of pay TV channels with retransmitted free-to-air channels for a variety of reasons, in particular the improved signal quality provided in areas where off-air reception is less than ideal. Hence, the conditions under which pay TV services can retransmit free-to-air signals are of crucial importance. This paper compares US and Australian signal retransmission regulations and assesses their impact on competition between pay TV and free-to-air television and on actual or potential competition between pay TV media such as cable and satellite television. The analysis also touches on the competitive implications of common ownership of satellite and cable pay TV services. To place the signal retransmission issues in the proper context, the paper examines differences in the structure of free-to-air television distribution systems in Australia and the US. In particular, it contrasts the Australian tendency to distribute most programming and sell most advertising nationally with the more locally oriented network–affiliate system in the US. The paper considers the relative merits of compulsory licensing and full copyright protection for free-to-air television signals and examines mandatory signal carriage ('must-carry') regulations.*

Keywords: competition, copyright, free-to-air TV, pay TV, retransmission.

Introduction

Retransmission of free-to-air television signals is an important component of the bundle of services that pay TV provides to subscribers. A pay TV operator that does not provide this service is likely to be at a competitive disadvantage. While the ability to retransmit free-to-air television signals is in part a function of the technological characteristics of the distribution medium, the regulatory structure—in particular, the copyright regime—also has an important effect.

This paper takes it as given that competition among pay TV distributors improves consumer welfare and is therefore desirable. It examines the range of services that pay TV offers and assesses for each one the degree of competition that it faces, starting with the US experience and moving to the Australian. The paper concludes that the copyright regime for retransmission of free-to-air television signals should be technology-neutral to the extent feasible and suggests that this is an important prerequisite for vigorous competition between cable and satellite pay TV distributors.

The next section of the paper inventories the service attributes of pay TV, based primarily on the US experience. The focus is on cable and satellite television, although there are other distribution media as well. The following section takes a detailed look at

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retransmission of free-to-air television signals, again beginning with the US experience, and including consideration of relevant copyright law and industry structure. Next comes a discussion of related issues, including the implications of the analysis for competition and merger policy and the transition from analog to digital television. The final section contains brief conclusions.

Pay TV: A Bundle of Attributes

Attributes of Pay TV

Pay television consists of a collection of related services offered together. In the US, cable television offers retransmitted local free-to-air television stations as part of its basic tier of channels. This may be thought of as 'antenna service', a substitute for the rooftop antenna that a viewer might otherwise need to obtain satisfactory reception quality. Of course, in some areas, signal quality is sufficiently poor that an antenna will not produce an acceptable picture.

Pay TV also offers packages of advertiser-supported nonbroadcast channels, many of them aimed at niche audiences. Examples of such services include Cable News Network, ESPN (a sports channel), Nickelodeon (a children's channel), USA Network (a general interest channel), CMT (a country music channel), and Black Entertainment Television. Additionally, pay TV offers premium movie and sports services, available on a per-channel basis, and pay-per-view (PPV) events, such as movies, concerts, and sports matches (primarily boxing and wrestling). Pay TV distributors with sufficient channel capacity can offer a variant of PPV known as 'near video on demand', or NVOD. Current popular movies are transmitted with staggered starting times, so viewers (who can order via the remote control of their set-top box) never need wait more than 15–30 minutes until their chosen film begins.

Some pay TV distributors also offer interactive nonvideo or multimedia services, such as Internet access, circuit-switched voice telephony, or data services. In the future, these services will likely become an important part of the bundle of services offered by pay TV distributors.

Cable and Satellite Television

The various distribution media differ in their technical capabilities to offer the services that comprise pay TV. The following comparison addresses cable television and satellite television, which are by far the two most important pay TV distribution technologies in the US.[2] In 1998, there were 66.1 million cable subscribers and 10.6 million satellite television subscribers. These two media account for 97% of the 79.3 million multichannel video households in the US.[3] They are also two of the most important pay TV technologies in Australia, although in Australia, multipoint distribution service (MDS), a terrestrial microwave service, has a larger share of the pay TV market than it does in the US.

Cable television is the preeminent multichannel video programming distribution (MVPD, the term used in the US instead of pay TV) technology in the US. Cable accounts for 83.4% of US MVPD subscribers and direct-to-home (DTH) satellite accounts for 13.4%.[4] In terms of availability of MVPDs, roughly 97% of US television households are passed by cable.[5] DTH is probably as widely available as cable. The 'footprint' for the each of the satellite services covers the entire continental US, but some

homes may not have an unobstructed view of the orbital location of the satellites and hence may be unable to receive the service.

DTH currently enjoys a significant channel capacity advantage over cable in the US. Channel availability varies by provider, but US DBS providers can now offer well over 200 channels from a single orbital slot to subscribers using a fixed-position antenna of less than 1 m in diameter. A single antenna can pick up signals from more than one orbital slot if the slots are sufficiently close to one another. The recent acquisitions by DirecTv and Echostar (see note 2) will enable them to add significantly to the number of channels available to a single fixed-position DBS antenna. By contrast, in 1997, 43% of US cable subscribers had access to 53 or fewer channels.[6] Only a small share of subscribers with 54 or more channels have access to over 100 channels.[7]

Both cable and DTH offer packages of advertiser-supported nonbroadcast channels, premium services on a per-channel basis, and some PPV events. Because of their channel capacity advantage, DTH providers can offer two important programming features not generally available on cable—out-of-market sports packages and enhanced time diversity of premium programming. Out-of-market sports packages permit subscribers to expand their choice of, for example, professional football games beyond what is available locally on broadcast television. These packages are available for other professional sports leagues and some college sports as well. Cable systems currently do not have the capacity to offer this service.

DTH providers can also devote a large number of channels to PPV and thus offer NVOD. In 1996, the average DTH home had access to 28 pay-per-view channels, compared to five for the average cable home, graphically illustrating the DTH advantage in PPV.[8]

DTH offers additional time flexibility by providing multiple feeds of premium movie channels such as HBO and Showtime. These services provide multiple feeds of their service with the same programming but different time scheduling, primarily to serve cable subscribers in different time zones. DTH subscribers get all of the feeds and, thus, some additional time diversity. Videocassette rental and, to an increasing extent, purchase, provide an additional source of competition in the case of movies.

DTH also competes on the basis of a claimed higher signal quality than cable television. As cable transitions to digital, this advantage, like the capacity advantage, will dissipate.

DTH cannot currently offer antenna service, but cable can. The technical obstacles to retransmitting large numbers of local television signals (there are roughly 1600 in the US) have been reduced by developments in digital signal compression and spot beam technology, and some satellite carriers are interested in providing this service. In the US, current copyright law effectively rules this out, but Congress is considering a change in the law. The third section of this paper provides a more detailed look at retransmission of local television signals.

Cable also can feed different channels to different television sets within a household at low cost compared to DTH. Each television set can have simultaneous access to the full range of programming to which the household subscribes with, at most, rental of a converter box for each receiver. In the DTH case, it is inexpensive to feed a single channel to all television sets in the household, but in order to watch different satellite channels on different television sets at the same time, it is necessary to purchase an additional satellite receiver for each additional television set. The additional satellite receivers currently cost almost as much as the initial satellite receiver. Moreover, program providers charge a fee for authorizing multiple receivers in a household.

A detailed discussion of multimedia services is beyond the scope of this paper. However, it is worth noting that both cable and DTH can provide Internet access. Cable plant, if properly configured, can provide upstream as well as downstream capability. DTH can provide downstream capability, but users need to rely on another medium, usually the telephone line, for a return path. If the user is not sending large quantities of information upstream, then the telephone return path may be perfectly adequate, although in contrast to the cable solution, the telephone line is tied up while the user is surfing the Internet.[9]

This discussion of cable and DTH distribution suggests that they compete in the provision of packages of nonbroadcast channels, premium services on a per channel basis, and PPV programming with the DTH channel capacity and picture quality advantage giving that service an edge.[10] Cable has the advantage with respect to antenna service and feeding different programs simultaneously to different receivers in a household. To assemble a full complement of the video services cable provides, it is necessary to combine DTH and good off-air reception of local signals, possibly by installing a terrestrial television antenna. It is too early to make a firm conclusion regarding competitiveness in multimedia services. Moreover, cassette rental and sales provide competition in the delivery of movies.

Retransmission of Free-to-Air Television Signals

Retransmission of free-to-air television signals is important not only because free-to-air services are extremely popular but because governments (including those of Australia and the US) impose regulations on free-to-air television in order to achieve specific public policy objectives. In the US, even cable television households spend the majority (51% in 1996–1997) of their viewing time on free-to-air television broadcast signals, almost all of which are local.[11] Australian pay TV households spend 54% of their viewing time on free-to-air television.[12] US law requires free-to-air broadcasters to program in the public interest, to provide children's educational programming, and to provide advertising time to candidates for Federal office (and under some circumstances to candidates for state or local office as well). US noncommercial educational stations have a more comprehensive mission to provide educational, instructional, and cultural programming. Australian television broadcasters, both commercial and national, are also subject to government regulations designed to promote national objectives, including cultural objectives.

The US Experience with Retransmission[13]

Cable Television Retransmission. In the US, cable television began as strictly a medium for retransmitting free-to-air television signals—first local signals and then distant ones—imported via terrestrial microwave link. In the late 1940s and early 1950s, the medium was known as CATV, Community Antenna Television. In 1968 and 1974 decisions, the United States Supreme Court found that under the Copyright Act of 1909, cable retransmission of local and distant television signals did not incur any copyright liability. In 1976, Congress revised US copyright law and granted cable television operators a compulsory license to retransmit television broadcast signals, subject to certain conditions. Cable operators were required to pay royalties according to a statutory formula, and broadcast signal retransmissions had to conform to Federal Communications Commission (FCC) regulations.

The FCC imposes a series of signal carriage rules that have the effect of returning to the copyright holders of television broadcast programming and to the television stations that license it some of the exclusivity protection that full copyright liability

provides to owners of other intellectual property, protection that is also available for nonbroadcast exhibition of video programming. These rules—the network nonduplication, syndicated exclusivity, and sports blackout rules—permit local television broadcasters to require cable operators to black out programming on a distant broadcast signal retransmitted by the cable operator if the local broadcaster has acquired exclusive local rights to that programming.[14]

Cable operators are also subject to 'must-carry' rules that require them to retransmit most local television signals.[15] The requirement does not extend to substantially duplicative signals, and operators are not required to devote more than one-third of their channel capacity to meeting the must-carry requirements. The FCC first imposed must-carry regulations in the mid-1960s. The rules were declared unconstitutional in 1985, and a revised set of rules met the same fate in 1987. The current must-carry rules were adopted pursuant to the 1992 Cable Act[16] and were upheld in 1997 by the Supreme Court.[17]

The 1992 Cable Act also added retransmission consent requirements to US communications law.[18] Cable systems may retransmit without consent the signals of stations that have elected must-carry status. Otherwise, no cable television system or other multichannel video programming distributor may retransmit the signal of any television broadcasting station without the express consent of the originating station. There are limited exceptions to this requirement.

Each television broadcast station is required to elect, with respect to each cable system in its local market, either must-carry or retransmission consent status. Stations carried pursuant to a must-carry election have certain channel positioning rights but may neither accept nor provide compensation in exchange for carriage. Stations carried pursuant to a retransmission consent agreement have no express channel positioning rights but may either pay or receive compensation in exchange for carriage. In addition to the exemption for cable carriage of local television stations electing must-carry status, there are other statutory exceptions to the retransmission consent requirements. They do not apply to noncommercial television broadcast stations; to home satellite dish reception of network stations, provided that the reception is by an unserved household; and to certain 'superstation' retransmissions.[19]

Thus, if a cable operator wishes to retransmit a local television broadcast station, the operator must pay royalties pursuant to the compulsory license (to obtain copyright clearance for the programming carried by the station), and if the station has elected retransmission consent status, the operator must also get the station's agreement for retransmitting its signal (which may involve a second payment). Clearly, when a station is retransmitted pursuant to must-carry requirements, it would be inequitable not to have a compulsory license to set royalty payments.

Satellite Carrier Retransmission. The subscription DTH business in the United States dates to 1986. Satellite carriers began to scramble the programming that they delivered via satellite, primarily to cable television headends but also to an increasing number of homes with satellite reception equipment. About that time, a few companies began uplinking the signals of a small number of local television broadcast stations, one affiliated with each of the three major commercial networks, and selling those signals to DTH households. The satellite carriers asserted that the cable compulsory license applied to them too, but this claim was rejected in a court case and administrative proceedings. In 1988, Congress passed the Satellite Home Viewer Act, *op. cit.*, which granted satellite carriers a compulsory license to retransmit television broadcast signals to DTH households for private home viewing.

The satellite carrier compulsory license is national in scope for 'superstations', but for network stations it is limited to unserved households. Superstations are stations retransmitted by a satellite carrier but not affiliated with a broadcast network. Network stations are those affiliated with one of the major commercial networks or the Public Broadcasting Service. Four commercial networks (ABC, CBS, NBC, and Fox) currently meet the statutory definition of commercial network. The Act defines a household as unserved with respect to a particular network if the household is without off-air access to an affiliate of the network in question and that has not subscribed within the past 90 days to a cable system retransmitting an affiliate of the network in question. Off-air access is defined in the Act in terms of availability of a certain signal strength at a home using a conventional outdoor rooftop receiving antenna.

The satellite carrier compulsory license, unlike the cable license, is not open-ended. The initial license was to expire in 1994 but was extended and is now scheduled to expire at the end of 1999.[20] The royalty scheme is also different, assessing carriers a fixed rate per channel per subscriber per month. The current rate is $0.27 per channel per subscriber per month, having been raised effective 1 January 1998 by an arbitration panel appointed pursuant to statute. The previous rates were $0.06 for a network signal and either $0.14 or $0.175 for a superstation signal, depending on the degree of program exhibition exclusivity purchased by the station. Legislation pending in the US Congress would partially roll back the increase.[21]

While royalty rates have been a matter of some controversy, the major issue in implementing the satellite carrier license has been how to determine whether a household is truly unserved. When Congress first established the satellite carrier license, it indicated that the limitation to unserved households was designed to protect the network–affiliate relationship in television broadcasting. In the US, networks grant affiliates exclusive rights to broadcast network programming in the affiliate's service area. Moreover, affiliates are permitted to sell a limited amount of advertising time in network programming. The two minutes or so of affiliate-sold advertising adjacent to the network prime time schedule generates considerable revenue for the station. In addition, most of the networks make cash payments, called 'network compensation', to their affiliates, although the magnitude varies from network to network and across markets for affiliates of a single network. In return, the local affiliate delivers the network programming to viewers in its service area and, via promotions and public service activities, creates a positive identity for the network in the community. The affiliate's local programming, particularly local news, also serves this goal and has the added benefit of providing a 'lead-in' audience to the network's prime time programming.

Notwithstanding the local content of network stations and the fact that affiliates of a single network all carry almost the same schedule of network programming, the networks and their affiliates claim that large numbers of DTH households receiving distant network stations are not entitled to do so. Broadcasters won a copyright infringement case against the largest supplier of satellite-retransmitted network stations, and a judge has ordered service terminated to over one million subscribers.[22]

Why would a viewer prefer a distant network station to a local one? Part of the answer has to do with the definition of unserved household. There are some cases in which a household that signal propagation models predict will have off-air service does not, in fact, have adequate off-air service.[23] Some viewers may value the superior current signal quality of the satellite-delivered network station. Others may value the chance to time shift. Satellite-delivered network stations often come from a different time zone. Moreover, while the network schedule is similar across affiliates, it is not identical. In

particular, coverage of certain professional and college sports is regionalized, so a distant network station might provide a highly desired alternative sporting event.

Both the television networks and their affiliates make their money almost exclusively from advertising revenues, so the size of their audiences is crucial to their profitability. Other things equal, networks and stations would prefer larger audiences to smaller, so extending coverage to truly unserved households is desirable. However, if viewers switch from the local affiliate to a distant network affiliate delivered by satellite, viewing of the local affiliate's advertisements in and adjacent to the network schedule, particularly in prime time, drops, and the affiliates lose money. (As explained above, this problem does not arise with cable carriage of distant network stations, due to the network nonduplication rules.) It is also possible that if viewers become accustomed to watching distant network stations for network programming, their attachment to the affiliate's local programming will also weaken.

Parallel to the continuing debate over how to identify unserved households, legislation pending in the US Congress would extend the satellite carrier compulsory license to authorize 'local-into-local' retransmission of network television broadcast signals via satellite.[24] Under this extension, satellite carriers would be permitted to uplink television signals from a local market and beam them back to households within the market, even if the households received a strong enough terrestrial signal that they were not considered 'unserved'. As noted above, antenna service is a very valuable component of pay TV service. Market research by one of the satellite carriers shows that inability to receive local signals via satellite is the factor cited most by consumers who have shopped for satellite systems and chosen not to buy one.[25]

Historically, technology has been the major obstacle to local-into-local retransmission. With analog technology, it would have been prohibitively expensive in terms of satellite capacity to retransmit a large number of terrestrial television signals. Several developments in the 1990s have made local-into-local more feasible. First, digital signal compression has made it possible to transmit several analog-quality program streams on a single satellite transponder. This technology is constantly evolving, but currently 'compression ratios' of 6–8:1 are readily attainable, and higher ratios have been used. Second, 'spot beam' technology has also developed further, enabling the same spectrum to be used more than once from a single satellite orbital slot. Spot beams are aimed at discrete geographic areas, sufficiently far apart to avoid cochannel interference. Third, new spectrum allocations and assignments have increased the available satellite transmission capacity.

Both major US DBS providers, Echostar and DirecTv, have expressed serious interest in local-into-local retransmission of television broadcast signals. Neither plans to serve every one of the 211 US television markets with local signals, but in each case, recent acquisition of additional DBS channel capacity (see note 2) has increased the number of markets that could be served.

Capitol Broadcasting has a different approach. They plan to partner with one or more firms to which the Federal Communications Commission has issued permits in the Ka band. There are Ka band orbital slots sufficiently close to the primary US Ku band DBS slots that a single home antenna could receive signals from both. Moreover, Ka band permits provide 1000 MHz of bandwidth per orbital slot, compared to the 500 MHz available at each DBS orbital slot. This capacity, along with utilization of spot beam technology, would permit Capitol Broadcasting to retransmit 800 of the 1600 US local commercial and noncommercial television signals, covering 68 local television markets. These markets include 75% of US television households.[26] Capitol Broadcasting plans to wholesale its service to any interested DBS provider. The DBS provider would

then package and market it. DBS providers would sell specialized home reception systems, which would have antennas capable of receiving transmissions from multiple orbital slots and satellite receivers capable of tuning and decoding both the retransmitted local signals and a standard DBS service.

In order to implement local-into-local on any significant scale, revision of the satellite carrier compulsory license is required.[27] As noted above, bills to do this are pending in Congress. Both the Senate and the House bills create a new satellite carrier compulsory license permitting local retransmission. The local market is defined as the Designated Market Area, or DMA, a classification system developed by Nielsen, a firm that measures viewing audiences. The DMA system, which is based on counties, assigns every area of the United States to one and only one DMA, based on viewing patterns.[28] A virtue of a county-based classification scheme is that a market can be specified by listing postal codes. The receivers used for satellite services are addressable, and access to programming, including retransmitted broadcast signals, can be determined by the postal code of the premises where the receiver is deployed.

Local retransmission of television signals would also, under current law, require consent of the stations, pursuant to the retransmission consent provisions of the 1992 Cable Act. Both bills pending in Congress impose must-carry requirements on satellite carriers retransmitting local signals. As proposed, the must-carry requirement would apply on a market-by-market basis, so satellite carriers would not be forced to serve every US local television market.[29] The number of markets that a satellite carrier would choose to serve would be determined by the cost and availability of transponder capacity on the one hand and the demand for local retransmission within each market on the other. Since the costs of serving a particular market (i.e. transponder and uplink capacity) are fixed relative to the number of subscribers, clearly larger markets will be more profitable and hence more likely to obtain service.

Retransmission in the Australian Context

The history of free-to-air signal carriage by pay TV operators in Australia mirrors that of the US. When cable operators expressed an interest in retransmitting free-to-air signals, at least some broadcasters claimed copyright infringement. A legal challenge ensued, and the court found that local retransmission, at least via cable, did not infringe copyright. Australia currently has only very limited satellite transmission of free-to-air television programming (in some Outback areas) and, until July 1997, the satellite pay TV service was limited by government regulation to a total of 10 digital channels. As of August 1999, two pieces of legislation that would create a new retransmission regime are pending. They are the *Broadcasting Services Amendment Bill (No. 1)* 1999 ('BSAB') and the *Copyright Amendment (Digital Agenda) Bill* 1999.[30]

Australian law recognizes both copyright in a television broadcast and copyright in the program content. With respect to copyright in the broadcast, the BSAB, in effect, would require retranmsmitters, such as pay TV operators, to obtain retransmission consent from free-to-air television broadcasters, but self-help providers and persons retransmitting the signal in a declared remote area would not need to do so.[31] Retransmissions by self-help providers would not incur copyright liability. Other retransmissions, including to remote areas, would incur copyright liability. With respect to program content, the proposed legislation exempts self-help providers from copyright liability, but any other person retransmitting a television signal would need to have an agreement with copyright holders, to have agreed to let the Copyright Tribunal determine equitable compensation, or to have a Copyright Tribunal order already in

force with respect to the retransmission.[32] In other words, although retransmitters may reach commercial agreements with copyright holders, the default mechanism is a compulsory copyright license on terms set by the Copyright Tribunal.

A detailed discussion of the pros and cons of compulsory copyright licensing regimes is beyond the scope of this paper. Earlier work by Levy suggests that in the absence of must-carry regulations (which the proposed Australian retransmission regime does *not* include), the case for compulsory copyright licensing is weak.[33] A full copyright liability environment would provide broadcasters and program packagers with the proper incentives to invest in and acquire programming. In that environment, pay TV operators could obtain copyright clearance to retransmit television programming in various ways. One method that appears particularly efficient would be for the free-to-air broadcasters to become retransmission rights packagers, acquiring from copyright owners not only free-to-air broadcast rights but retransmission rights as well, which they could then on-sell to interested pay TV operators. This mechanism might work even better in Australia than it would in the US, given the national nature of Australian television programming (discussed below).

In order to explore comprehensively the mechanics and feasibility of satellite retransmission of free-to-air television signals, it is necessary first to examine the structure of the Australian television programming market. The key components are program origination and distribution, ownership structure, and advertising sales.

Program Origination. In Australia, all of the television stations are affiliated with one (or more than one in some cases) of the three commercial or two national free-to-air networks. Moreover, the commercial networks own affiliated stations that serve a substantial portion of the total population. This contrasts with the US situation, where some stations are not affiliated with a network and even those stations that are affiliates provide a significant portion of their programming locally. In this context, local programming consists of locally produced programming, such as local news, public affairs, or sports, and locally selected programming. Locally selected programming may be a nationally or regionally distributed series, movie, or special, but it is individually chosen, acquired, and scheduled (consistent with affiliates' obligations to exhibit most network programming) by the local station. Particularly in the larger markets, network affiliates produce significant amounts of local programming, particularly news—in many cases, 3 or more hours per day. In the US, no one can own television stations reaching more than 35% of television households, while in Australia the limit is 75%.[34]

Various Australian commentators have pointed out the limited amount of local programming on Australian television.[35] The following description of Australian television programming is based on an analysis of a typical week's schedule in the five capital cities. Most programming is provided by the networks, particularly in the case of the two national broadcasters, and the same program is generally exhibited at the same time, at least in the five capital cities. Where the schedules diverge, it is mostly because the same program is exhibited at a slightly different time in one or more of the cities, because a different movie is exhibited in different cities, or because a different sporting event is exhibited in different cities. Most of the sports programming is on weekends, so most of the divergences due to different sporting events are also on the weekend.

The programming analysis is based on the week of 16 August 1997. A complete set of 10 zoned editions of *TV Week* was obtained from the publisher.[36] The schedules for the five networks for five capital cities—Sydney, Melbourne, Brisbane, Adelaide, and Perth—were examined for the hours 6:00 AM–midnight. For each network and each half-hour time slot, the program exhibited in each city was tabulated. The tabulations

were then analyzed to determine the degree of common program scheduling across cities and the extent of local program origination. Below are the summary results, on a network-by-network basis.

- *ABC.* For ABC, programming was identical in 94.3% of the time slots for the test week.[37] An additional 2.5% of programming, on the Saturday, was sports programming, which varied by city. The remaining 3.3% of the time slots originate at the state level (one half-hour per day 7 days per week of the *ABC News* and the one half-hour Saturday afternoon program *Stateline*).
- *SBS.* For SBS, the program schedule was identical for all capital cities but Adelaide for every time slot in the week. The Adelaide schedule was identical to the others but shifted earlier by one half-an-hour.[38] There was no locally originated programming.
- *Network 10.* For Network 10, the program schedule was identical in 94.4% of the time slots for the test week. Local news (originated at the state level) accounted for 4% of the schedule (1 hour per day Monday–Friday), and there were other differences in 1.8% of the schedule (two time slots on Saturday with varying sports programming and two on Sunday in which the same programs are exhibited in different order on different stations). It is interesting to note that Network 10 carries little sports programming, but what it does carry is subject to scheduling differences across cities.
- *Seven Network.* The pattern for the Seven Network is more complex than for the previous three, but the amount of local (state-originated) programming other than sport is small, accounting for 8.7% of the total (22 time slots, 12 accounted for by *Seven Nightly News* and *Today Tonight*, shown in all five cities, and 10 accounted for by *Adelaide with J. Beasley and S. Whitham*, shown Monday–Friday in Adelaide only). The Monday–Friday schedule is relatively uniform, particularly in the 6:00 AM–6:00 PM period. In that interval, Sydney and Melbourne are identical, Brisbane diverges only on Monday at 10:30 AM, and Perth is identical except for the 9:00 AM Monday–Friday slot. Adelaide's local program from 10:00 to 11:00 AM differs from other cities, and it shows *A Country Practice* at a slightly different time. Otherwise, its morning schedule is identical to Sydney and Melbourne. The 6:00 PM–midnight schedules are also similar, with identical programming on at least three of the stations in all but two time slots. The Saturday and Sunday schedules diverge significantly, with virtually all of the difference due to regionalized sports coverage.
- *Nine Network.* The Nine Network also has a complex scheduling pattern. Local programming other than sport accounts for 9.5% of program hours (24 time slots, 7 for *National Nine News*, 10 for *Adelaide Today*, and 5 for *Extra-Gold Coast News* in Brisbane. The Monday–Friday schedule is relatively uniform, with many of the divergences due to programs that are transmitted slightly out of phase on different stations. For example, from 1:30 to 3:30 PM, all five stations transmit *Days of Our Lives* and *The Young and the Restless*; all but Perth exhibit them in this order, while Perth shows *The Young and the Restless* first. Like the Seven Network, the Nine Network exhibits sports programming on weekends. Much of the weekend schedule divergence is due to sports programming. In contrast to the Seven Network, more of the Nine Network divergence appears to be due to programming transmitted out of phase (such as *Wide World of Sports* and *Sports Sunday*) rather than regionalized coverage.

Station Ownership. The three commercial free-to-air networks each own several affiliates.[39] The Seven Network owns stations in all five capital cities and one regional licensee as well, reaching 71.4% of the population. The Ten Group owns stations in the five capital cities, reaching 64.6% of the population. Ten Group also has a 14.9% share of Southern Cross Broadcasting, which owns four regional affiliates of the Ten Network

reaching an additional 15.4% of the population.[40] The Nine Network owns stations in Sydney, Melbourne, and Brisbane plus one regional station, reaching a total of 51.2% of the population.

Advertising Sales. Television advertising in Australia is sold both nationally and locally, although all commercials are inserted locally. There is no technical impediment to inserting commercials at the network and transmitting them along with the program feed. This is the practice in the US for network advertising. The relative cost advantage of network commercial insertion is greater in the US, where each network has roughly 200 affiliates, compared to Australia, where the number is roughly 10 affiliates per network. There are also several 'solus' stations, which may acquire programming from more than one network; one Tasmanian station acquires programming from two networks.

Data on national versus local advertising expenditures in Australia are limited. In 1994, 84.9% of Australian television advertising expenditures derived from national sources. For metropolitan (i.e. in the five capital cities) stations, the figure was 91.1%; for non-metropolitan stations, it was 63.3%.[41] These figures are of limited value, however, because 'national' is defined as advertising that occurs in two or more metropolitan cities.

The Nuts and Bolts of Local Retransmission via Satellite. The simplest way to retransmit local free-to-air television signals via satellite would be to retransmit all local signals, after the proposal in the US by Capitol Broadcasting. To assess the practicality of this, consider first the commercial stations. There are currently 47 free-to-air commercial television stations in Australia, roughly 7 stations per million households.[42] By contrast, the US has 12.4 commercial broadcast stations (and roughly 3.7 noncommercial stations) per million households. In terms of satellite capacity, given currently attainable compression ratios, 47 analog signals could be retransmitted using six or seven satellite channels. This assumes that all of the signals would be transmitted to the entire country, with subscriber access limited to local market signals by the addressability feature of the satellite receiver. The number of satellite channels needed to retransmit 47 analog signals would be lower than this if a properly configured spot beam satellite were employed.

Assuming that the networks and satellite carrier or carriers could agree on a definition of the local market and enforce it effectively, satellite retransmission would not harm the competitive position of local free-to-air broadcasters. By providing an additional alternative to the rooftop antenna or cable antenna service, it would likely increase their total audience slightly. To the extent that being able to offer antenna service strengthens satellite television as an actual or potential competitor to cable pay TV, consumers would benefit from overall lower prices and/or higher quality service in pay TV.

It may be, however, that the additional revenues that antenna service would bring to a satellite pay TV company would not be enough to cover the costs of providing the service. Aside from restricting carriage to the larger markets, where demand might be sufficient to support local retransmission, it is possible that a national network feed would be feasible, thus economizing on scarce transponder space.

Commercial networks could offer a national satellite programming feed, with nationally inserted commercials, in addition to the local terrestrial transmission.[43] To the extent that the programming differed between the local and the national feed, viewers would likely perceive it as a potentially valuable additional choice. To the extent that the difference between the two feeds is one of timing of the same programming, the added time diversity might actually increase the audience for some programs. The program

content analysis described above suggests that with limited exceptions, primarily due to sports and local news programming, affiliates of the commercial networks in different cities already offer very similar programming. The key question is really the disposition of advertising revenues. To the extent that a new national network feed would divert audiences from the local channel and its local advertising to the network program feed with its national advertising, there would be a transfer of advertising revenues from the local station company to the network station company. It would probably be possible to arrange a payment from the network to the station, based on the measured local audience for the national feed. However, in the Australian case, the local station and the network are the same company for a substantial portion of the country—all five capital cities for the Network 10 and the Seven Network and three of the five for the Nine Network, plus regional licensees owned by Seven and Nine. In this environment, the transaction costs of a system with national and local feeds do not appear prohibitive.

It should be noted that the content study did not examine the regional and solus markets, covering 35% of the population, in which the three network companies have limited ownership interests. In these markets, it would be necessary to arrange compensation from network to station. This compensation could come from the fees that subscribers to the satellite-delivered network feed would pay to the satellite provider, e.g. a satellite pay TV company or, possibly, the network itself could manage the transmission.[44]A national network satellite program feed need not preclude provision of local or regionalized programming such as news and sports. Digital transmission is an extremely flexible technology and it is possible to change dynamically the number of program streams transmitted. Thus a satellite carrier could transmit a group of programs at the same time to different areas, such as the 6:00 News, for example. The addressability feature of the satellite receiver makes it possible to send a message individually to each receiver tuned to, for example, the Seven Network national feed, at 6:00, directing that receiver to tune to the parallel news feed for, say, Perth. Such an arrangement requires that satellite capacity be available on a part-time basis for these transmissions. This capacity could be used for other purposes, perhaps PPV movies, during other times of the day or week.

The situation is even clearer for the national broadcasters. ABC receives no advertising revenue, and SBS receives very little. It is not clear how much of SBS's advertising revenue comes from local as opposed to national advertising. Moreover, both ABC and SBS have particular public service missions, so providing some additional program variety and/or time diversity would be likely to be seen as an additional benefit. As with the commercial networks, state-originated programming such as the ABC News could still be transmitted on a state-by-state basis via satellite.

Other Issues

The foregoing analysis has implications for merger and competition policy. Projections for mid-1999 indicate that there are roughly 6.7 million Australian television households.[45] The two major cable pay TV distribution systems, Telstra and C&W Optus, pass 2.5 million and 2.3 million households, respectively, and other operators account for 0.1 million homes passed. The estimated number of duplication households is 2.1 million. In other words, 2.1 million households have two cable operators from which to choose, 0.7 million have one cable operator available, and 3.9 million households are not passed by cable. In principle, all of the households could subscribe to a satellite service. The forecast is that in 2002, 2.7 million households will have access to two cable operators, 0.9 million will have access to one cable operator, and 3.7 million households will have

no access to cable. There are also MDS licensees in Australia, but data are not available on the number of households with access to MDS service.

These statistics suggest two conclusions. First, in order for Australians across the country to have access to pay TV, a delivery system in addition to cable is needed. Second, if there is to be competition in the provision of pay TV across the country, a delivery system in addition to cable is needed. In 1999, 10.4% of households were served by a single cable pay TV system, and the fraction is projected to rise to 12.3% in 2002. Even in areas with two cable operators, it is likely that competition from a third pay TV provider would enhance market performance.

This leads to the question of whether a standalone Australian DTH pay TV distributor is feasible in the long term. The subscriber level at which a DTH system breaks-even depends on a variety of assumptions about the number of channels that it offers, the revenue it realizes per subscriber, the availability of programming, and the cost of the satellite facilities needed. Published break-even estimates for digital DTH services around the world range from 0.7 million to 4 million subscribers.[46] The US service DirecTv is at the high end, but their system includes three in-orbit satellites and over 200 channels of programming, with significant increases in capacity (and costs) associated with the recent acquisition of the Tempo DBS permit (see note 2). Given the current channel complements of the Australian cable companies, it is likely that a DTH service toward the middle or lower end of the range could break-even. With 3.9 million of Australia's 6.7 million households currently not passed by cable, it appears that there is room for a DTH service.[47]

One factor that would certainly enhance the prospects for DTH–cable competition is equal treatment under copyright law for retransmission of free-to-air television signals. The proposed Australian retransmission regime, to its credit, does treat all pay TV operators equally.[48] Ideally, the retransmission framework and the proposed statutory copyright license scheme would permit retransmission of all local signals or transmission of a national network feed via satellite (see note 43). This would give the networks and stations maximum flexibility to design a program distribution strategy that makes programming widely available and provides incentives for investment in program production.

The foregoing also has implications for merger policy as well. If, in fact, DTH service can be a viable competitor to cable, then it is worth considering whether a single company should be able to acquire by merger or to own both a national cable distribution system and a national satellite distribution system. This paper does not purport to answer this question for the Australian market[49] or any other national market for that matter. The answer turns on a number of market-specific factors, including but not limited to, the number of independent cable, satellite, and other multichannel video program distributors in the market. Hence, one component of the analysis of such a merger would be an examination of the prospect that multiple DTH services will be present in the market. In considering this prospect, it is important to keep in mind the strengths of DTH outlined in the second section above, including at least a temporary channel capacity advantage. The fact that Australian satellite pay TV did not flourish while constrained by regulation to 10 channels should not obscure the competitive potential of DTH in an environment where larger channel capacities are possible.

Conclusions

Free-to-air television stations remain the most popular source of video programming, even in US pay TV households. Consumers value the bundling of pay TV channels with

retransmitted free-to-air channels for a variety of reasons, in particular the improved signal quality provided in areas with poor off-air reception. Because retransmission of local television signals, or 'antenna service', is an important component of the cable television service, government regulators seeking to promote competition in multichannel video programming distribution should ensure that to the extent possible, the copyright regime for pay TV retransmission of free-to-air stations is technology-neutral.

Most Australian television programming is national rather than local, and the Australian network companies own stations reaching a large share of the country's households. These factors lead to the conclusion that efficient provision of free-to-air television programming via satellite to Australian viewers might involve national feeds of network programming with some local supplement,as opposed to full-scale retransmission of all signals. The combination of national network feeds and local terrestrial transmissions is likely to be managed more efficiently with full copyright liability for pay TV retransmission rather than with a compulsory copyright license.

With the ability to retransmit popular free-to-air programming and given the limited projected rollout of cable television plant, DTH satellite pay TV can still play an important role in making the pay TV market more competitive and thereby increasing consumer welfare.

Notes and References

1. The opinions expressed herein are those of the author and should not be construed to represent those of the Federal Communications Commission or any other member of its staff. The author wishes to thank Stephanie Riegg for assistance with research, data collection and analysis, Caterina Alvarez for assistance in revising the paper, and Matthew Dummett for helpful comments on Australian legislative proposals. All errors are the responsibility of the author. An earlier version was presented at the Cultural Crossroads Conference, Sydney, Australia, 26 November 1997.
2. US direct-to-home (DTH) satellite services include Direct Broadcast Satellite, a high-power Ku band service (internationally designated BSS, or Broadcast Satellite Service), a medium power Ku band service (internationally designated FSS or Fixed Satellite Service), and C-band, another FSS service, using lower frequencies. The first two services are digital, while the last one is analog. At the end of 1998 there were 6.4 million DBS subscribers, 2.3 million Ku band FSS subscribers, and 1.9 million C band subscribers. There has recently been a consolidation of US satellite television providers. DirecTv has acquired USSB, a complementary service that shares its orbital slot at 101 degrees west longitude. In addition, DirecTv has acquired Primestar, the medium power Ku band service provider, and the DBS permit at 119 degrees west longitude of Tempo. DirecTv plans to convert Primestar subscribers to DirecTv, but some have switched to Echostar and some others will undoubtedly do so as well. Echostar has recently gained substantial additional DBS capacity by acquiring the MCI DBS permit. See Federal Communications Commission, 'International bureau approves transfer of control to DirecTv of Tempo's DBS authorization', www.fcc.gov/Bureaus/International/News_Releases/1999/nrin9020.txt; and Federal Communications Commission, 'Commission acts to increase competition to cable TV by approving additional DBS capacity for Echostar', www.fcc.gov/Bureaus/International/News_Releases/1999/nrin/9019.html, both visited 15 August 1999. DBS requires an 18-inch dish antenna, and Ku band FSS requires a 3-foot antenna, while C-band requires a 6–7-foot antenna.
3. These year-end 1998 figures are from Paul Kagan Associates, 'Basic cable network economics 1983–2009', *Cable Program Investor*, 14 July 1999, p. 3; and 'US DTH subscribers', www.skyreport.com/skyreport/dth_us.htm, visited 17 August 1999.
4. Paul Kagan Associates, *op. cit.* and www.skyreport.com, *op. cit.*
5. National Cable Television Association, 'The cable industry at a glance: current estimates', www.ncta.com/glance.html, visited 17 August 1999.
6. *Television and Cable Factbook, Services Volume*, Warren Publishing, Inc., Washington, DC, 1998, p. I-97.

7. This is in marked contrast to the Australian situation. Government regulation constrained DTH to 10 digital channels until 1 July 1997, *Broadcasting Services Act*, 1992, section 93. Although the number of satellite channels offered has increased, currently there is not a wide disparity in the number of channels offered by cable and satellite pay TV services.
8. See 'Cablevision—request resource wire', bound into *Cablevision*, 9 December 1996.
9. Users can, of course, purchase a second telephone line to avoid this problem.
10. Because of differences in the bundle of services provided and because DTH services require the subscriber to amortize an upfront investment in reception equipment, exact price comparisons across services are difficult. Basic cable service including any necessary equipment such as remote controls or set-top boxes averages $25–30 per month, with an initial installation cost of $30–40 on average. The basic satellite services range in cost from $15 to 30, with higher prices for larger packages incorporating premium services. The home reception equipment for DTH can be purchased for as little as $200 (less when a promotion is in effect). Customers can install their own equipment or pay about $150 for this service.
11. Cabletelevision Advertising Bureau, *Cable TV Facts*, New York, 1998, p. 15.
12. A. C. Nielsen data reported in D. Farrant, 'Pay TV off to a running start: survey', *The Age*, 3 August 1999, p. 3.
13. For a more detailed description of signal carriage regulation in the US., see J. Levy, 'An evaluation of signal carriage regulation in the US', presented at the *Communications Research Forum*, Communications Law Centre and Bureau of Transport and Communications Economics, Sydney, Australia, October 1995.
14. These rules are part of the United States Code of Federal Regulations. See 47 CFR §76.67 and §§76.92 *et seq.*
15. 47 CFR §§76.51 *et seq.*
16. *Cable Television Consumer Protection and Competition Act of 1992*, Pub. L. No. 102–385, 106 Stat. 1460.
17. *Turner Broadcasting System v. Federal Communications Commission*, 117 S.Ct. 1174, 1997.
18. See *Communications Act of 1934*, as amended, 47 U.S.C. §325(b). ('U.S.C.' is the United States Code.)
19. The term 'superstation' refers to a non-network station retransmitted via satellite. The statutory definition is in 17 U.S.C. §119(d), a provision added by the *Satellite Home Viewer Act of 1988*, Pub. L. No. 100–667 102 Stat. 3949 (1988).
20. *Satellite Home Viewer Act of 1994*, Pub. L. No. 103–369 108 Stat. 3477.
21. D. Connell, 'Senate, house satellite TV bills head to conference', *Satellite Business News*, 2 June 1999, pp. 1, 21.
22. D. Connell, 'White-areas get mixed reception in Washington', *Satellite Business News*, 26 August 1998, pp. 1, 21, 22. The parties agreed on an extension of the original 28 February 1999 service termination date for some subscribers. D. Connell, 'DirecTv and broadcasters end court fight; political spat continues', *Satellite Business News*, 24 March 1999, pp. 1, 21, 22.
23. The Federal Communications Commission recently revised its prediction model for signal propagation and specified a new methodology for measuring signal strength at individual household sites. See Federal Communications Commission, 'Report and order in CS docket no. 98–201', 14 *FCC Rcd* 2654, 1999.
24. See D. Connell, 'Senate, house satellite TV bills head to conference', *op. cit.* A committee of members of the US Senate and House of Representatives will reconcile differences in the two bills, and the compromise will be referred back to the two houses for a vote. Both bills impose 'must-carry' obligations on satellite carriers, effective on a market-by-market basis in 2002.
25. US Satellite Broadcasting, *Research Summary DSS Buyers and Non-Buyers*, June 1997.
26. For more detail, see Local TV on Satellite, 'LTVS solves DBS local-to-local problem with increased transponder capacity', www.localtv-satellite.com/newsreleases/041999.html, visited 13 July 1999.
27. In a limited number of markets, Echostar retransmits local television stations to households that, due to terrain or other factors, do not receive strong enough terrestrial signals to be considered served under the Satellite Home Viewer Act.
28. The FCC uses this type of market definition in its national television station ownership rules and

in determining the cable must-carry rights of television broadcast stations. The agency is transitioning from the ADI classification system, developed by Arbitron (which no longer measures television audiences) to the DMA classification system. The cable television compulsory license also uses this classification scheme to distinguish between local and distant signals for copyright royalty purposes.

29. Currently, cable television is the only MVPD to which must-carry rules apply. Other local distribution platforms, such as multichannel multipoint distribution service (MMDS) and satellite master antenna television service, are not subject to must-carry rules. The cable must-carry rules were imposed by Congress and upheld by the Supreme Court on the rationale that making the free-to-air television service widely available serves the public interest, and that due to cable's overwhelming share of the MVPD market, without cable must-carry, free-to-air television service is likely to suffer significant harm. See *Turner Broadcasting System v. Federal Communications Commission, op. cit.* and *Cable Television Consumer Protection and Competition Act of 1992, op. cit.*, Section 2. Opponents of satellite must-carry rules might be tempted to claim that this rationale does not apply in the satellite context.
30. For a brief description of the proposed regime, see Department of Communications, Information Technology and the Arts (DCITA), 'Review of the retransmission of digital television broadcasting services', www.dcita.gov.au/cgi-bin/trap.pl?path = 4080, visited 11 August 1999, p. 2. Both the *Broadcasting Services Amendment Bill (No. 1) 1999* and the *Copyright Amendment (Digital Agenda) Bill 1999* have been introduced into the House of Representatives.
31. Retransmissions outside of the station's license area by any party, including but not limited to self-help providers and those retransmitting the signal in remote areas, would also require the permission of the Australian Broadcasting Authority. The BSAB is available at www.aph.gov.au/parlinfo/billsnet/bills.htm. The retransmission provisions are in the new Part 14B.
32. The *Copyright Amendment (Digital Agenda) Bill 1999* is available at www.aph.gov.au/parlinfo/billsnet/bills.htm. See new Part VC and sections 153M and 153N.
33. J. Levy, *op. cit.*
34. See 47 CFR §73.3555 and *Broadcasting Services Act* 1992, section 53.
35. A. Brown and M. Cave, 'The economics of television regulation: a survey with application to Australia', *Economic Record*, 68, 202, 1992, pp. 377–94. E. Jacka, 'Remapping the Australian television system', *CIRCIT Working Paper* 1993/2, Melbourne, Australia, June 1993.
36. *TV Week*, zoned issues, Pacific Publications, Melbourne, Australia, 16 August 1997.
37. The ABC calculation is based on 244 rather than 252 time slots because ABC had no programming listed for a few early hours on Saturday and Sunday of the test week.
38. This shift has recently been eliminated. See E. Simper, 'SBS goes back to the future', *The Australian*, Media Section, 20–26 May 1999, p. 4.
39. Communications Law Centre, 'Media ownership update', *Communications Update*, February 1997.
40. Bureau of Transport and Communications Economics, *Report 93: Australian Commercial Television 1986–1995*, Canberra, Australia, 1996, pp. 26–7.
41. *Ibid.*, p. 89.
42. For the number of commercial television licensees, see Australian Broadcasting Authority, 'TV profits up 6.9 per cent; radio up 26.8 per cent in 1997–98', 17 March 1999, www.aba.gov.au/about/public_relations/newrel_99/23nr99.htm. For the source of the number of television households figure, see note 45.
43. Under the BSAB, new Part 8A *op. cit.*, Australian Broadcasting Authority approval might well be needed for transmission of a national network feed, at least in regional areas. See BSAB, new part 8A and new section 205P, *op. cit.*
44. As with any other subscription service, it is necessary for some entity to assume responsibility for subscriber management, including the conditional access function.
45. All projections cited here are from I. Martin and P. Dobrijevic, *Rationalisation in Cable Networks and Subscription Television*, BZW Australia, Sydney, Australia, 1997, p. 31. (BZW Australia is now ABN AMRO.)

46. See J. Levy, 'Competitive prospects for DTH satellite television service around the world', Presented at the 25th *Annual Telecommunications Policy Research Conference*, Alexandria, Virginia, September 1997; and P. Colman, 'No laurel-resting for Hartenstein', *Broadcasting and Cable*, 3 November 1997, pp. 52–3.
47. Austar and Foxtel currently provide DTH Service in parts of Australia. The question of regulating the 'set-top box' used to implement the conditional access system of a pay TV provider, either by standard setting or access requirements, is beyond the scope of this paper. See Martin and Dobrijevic, *op. cit.*, p. 52 for a brief discussion of Australian government policy.
48. However, DCITA, 'Review of the retransmission of digital television broadcasting services', *op. cit.*, pp. 2–3, explicitly limits its discussion to cable pay TV systems.
49. In particular, analysis of the ownership of the B3 satellite platform (50% C&W Optus and 50% Austar) is beyond the scope of this paper.