

**Non-discrimination rules for ISPs and vertical integration:
Lessons from cable television**

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Abstract

The experience of cable television indicates that vertically integrated ISPs have plausible incentives to favor their affiliated content and to restrict entry of nascent rival content services, but these incentives are weakened in some respects, and strengthened in others, by differences in the economic architectures of cable and Internet broadband. Non-discrimination regulations designed to control such behavior are potentially more effective than in cable, but rules governing discrimination both in the upstream access and the downstream retail markets (as the FCC's no-unreasonable-discrimination rule appears to do) are likely to be necessary for effectiveness. Beneficial effects of vertical integration on financing and entry of cable programming networks should also apply to Internet video content development, but emergence since the 1970s of a robust programming supply industry with few vertical ties to cable suggests that such benefits will be less significant in the ISP case. Finally, the history of both the cable and ISP industries makes evident that the fundamental policy concern should not be vertical integration but horizontal market shares of ISPs, both at the local and national levels.

Keywords: network neutrality, non-discrimination, vertical integration, ISP (Internet Service Provider), Internet content, cable television

1. Introduction

A common claim of network neutrality advocates is that if left unregulated, the Internet will come to resemble cable TV, where only channels selected by the cable operator are available in any given local area.¹ Although such visions may seem extreme if taken literally, they reflect the central question behind the Open Internet rules adopted by the Federal Communications Commission (FCC) in December, 2010 (FCC, 2010c): if broadband Internet service providers (ISPs) have bottleneck power at the local level, how might they use it to restrict or control consumers' access to information or other Internet services?

A prominent aspect of this question is how vertical ownership ties between ISPs and content suppliers might affect Internet users' access to information (FCC, 2009b). The potential threat of joint ISP/content ownership on content supply was discussed in the FCC's October, 2009 *NPRM* proposing the Open Internet rules and in the 2010 *Report and Order*; and it clearly motivated extensive FCC and U.S. Dept. of Justice reviews of the Comcast/NBC-Universal merger, which as approved in January, 2011 combines a major ISP and cable TV operator (Comcast) with substantial television programming assets (NBC-Universal) (FCC, 2011; DOJ, 2011). The broad premise of this paper is that the experience of the cable television industry, which has a well-studied history of both vertical and horizontal ownership ties, offers useful parallels to the current network neutrality issues.

As in the cable case, there have been two distinct policy concerns about the effects of ISP integration into content. Getting most attention is that unconstrained ISPs may discriminate against non-vertically affiliated online programming content services, thus reducing competition in programming supply-- especially by restricting entry of "independent" program suppliers

¹ For example, see Mackenzie (2006); Lessig and McChesney (2006); SciTechBlog retrieved from CNN: <http://scitech.blogs.cnn.com/2009/10/28/a-world-without-net-neutrality/>.

(FCC, 1990, p.40). The other concern is that ISPs will limit access by competing ISPs to “must have” programming that they control vertically, thus reducing competition in the ISP market (FCC, 2009b, pp.70-72).

The focus of this paper is on the former: how vertical integration may affect competition in the Internet content market, and thus the amount and diversity of that content. To this end, it also addresses a related policy question: will FCC regulations attempting to prevent ISP content discrimination be effective in the presence of vertical integration? In searching for answers, attention is directed to professionally produced and copyrighted audio-visual content (although the same principles may apply more generally to other types of online information, such as user-generated content, or to other services such as VoIP or retailing.)

At the outset, larger aspects of the network neutrality debate are recognized to be beyond the scope of this paper. These include issues of infrastructure investment, the general effects of access pricing rules on the total supply of content, and the viability of FCC regulation vs. antitrust enforcement. Numerous authors have investigated these and related questions in the academic literature or in submissions to regulatory proceedings.² For a recent survey of the economic literature on network neutrality, see Schuett (2010).

The precursor of the current ISP/content ownership issue was the open access controversy in the late 1990s and early 2000s about whether cable systems or telcos should be required to offer competing ISPs access to their platforms. That debate culminated in conditions imposed in 2000 by the Federal Trade Commission (FTC) and the FCC on the AOL-Time Warner merger. Stemming from concerns that it would use its cable branch to protect AOL

²See especially Lee and Wu (2009), Hermalin and Katz (2007), Hogendorn (2007); Economides and Hermalin (2010), Economides and Tag (2010), Economides (2008). See also Atkinson (2008) and Greenstein (2007) for historically based policy analysis.

(at that time the leading ISP) from competition, the merged firm was required to contract on equal terms with one or more unaffiliated ISPs (FCC, 2001). AOL's then dominant instant messaging service was also required to offer interoperability with certain unaffiliated, competing instant messaging (IM) services (FCC, 2001). Many authors, notably Hogendorn (2005), Farrell and Weiser (2003), Rubinfeld and Singer (2001), Faulhaber (2004), Werbach (2002) and Speta (2000) offered economic analysis and policy commentary on the open access debate. Yoo (2002) reviewed the economic literature on vertical integration in cable and broadcasting and applied those lessons to ISPs to argue against government-mandated open access.

While the economic and legal analysis of the ISP and IM vertical ownership question has parallels to the current content ownership issues, those issues have changed with the disappearance of open access as a meaningful business model for broadband ISPs (Rosston, 2009). Apart from minor discussion in recent analysis of network neutrality, (e.g., Economides, 2008, Yoo, 2009), ISP integration into content has received little academic attention. Also, plentiful policy commentary on the ISP/content ownership issue has not substantively considered the lessons from economic research on vertical integration in cable television.

In summary, this article argues that vertically integrated ISPs have plausible incentives to favor their affiliated content and to restrict entry of nascent rival content services, but that these incentives are weakened in some respects, and strengthened in others, by differences in the economic architectures of cable systems and Internet broadband. It is also contended that non-discrimination rules governing both the upstream access and downstream retail markets are likely to be necessary for the rules to be effective. In this respect, the FCC's explicit focus in the 2010 *Report & Order* on ISP behavior both in the access market (notably the implied prohibition of pay-for-priority between ISPs and content providers) and in the retail market (notably

enhancement of end user control), rather than the 2009 *NPRM*'s focus on the access market alone, is a positive step toward increasing effectiveness of the regulations. Certain dynamic benefits of vertical integration on financing and entry of programming networks that were identified by earlier research on the cable industry are likely to apply to the ISP case, but it is speculated that these benefits may be less important than in cable.

After discussing social objectives and a brief background on the policy debate in Section 2, Empirical studies of the effects of vertical integration in cable are reviewed in Section 3. This analysis is then applied to ISPs, and the likely effects of non-discrimination restraints considered in Section 4. The potential benefits of ISP vertical integration are considered in Section 5, followed by concluding remarks in 6.

2. Social objectives and policy background

The broad social goals for Internet content presumed in this article are uncontroversial. As with products and services more generally, economic efficiency, which broadly translates into levels of prices, product variety and product quality that reflect consumer demand, is desirable. Viewed dynamically, efficiency requires an environment of creativity and innovation in the supply of content. In turn, that environment generally requires conditions of competition and free entry into content supply. Special to the media are content diversity objectives. Consumers should have access to a wide variety of information content, and sources of that content. Generally, this wide access also develops naturally from an environment of competition, innovation and free entry, but the availability of adequate financial resources to content suppliers

may also be involved. A related diversity objective is that content suppliers should have free and open access to potential users or consumers.³

Although the FCC's vision of a free and open Internet generally embodies these goals,⁴ the Commission has interpreted recent business practices of some ISPs to be out of line with that vision. Madison River Communications was found to interfere with the VoIP service of Vonage through blocking ports that were typically used for VoIP calls in 2005 (FCC, 2005a). In a 2007 incident involving video content, the FCC ruled that Comcast had unlawfully blocked or throttled the traffic of BitTorrent, a peer-to-peer file sharing service, in the name of network management (FCC, 2009b; Weiser, 2008). Comcast sued the FCC to overturn the BitTorrent ruling.

The FCC actions in these cases re-ignited a long controversy over FCC attempts to preserve open access communications platforms, beginning with the Computer Inquiries in the 1970s and 1970s (Cannon, 2003), but later frustrated by *Verizon v. Trinko*⁵, a Supreme court decision that weakened the obligations of a dominant bottleneck firm to provide access to upstream suppliers. Following the Madison River and BitTorrent incidents, the Commission took initiative with the *NPRM* in October, 2009 to codify "Open Internet" (p.3) principles as a set of regulations. Central to the proposed regulations was a non-discrimination access rule, which stated that "subject to reasonable network management, a provider of broadband Internet access service must treat lawful content, applications, and services in a non-discriminatory manner" (FCC, 2009b, p.66).

³ Expressions of both diversity and efficiency objectives that parallel those in this paragraph pervade FCC reports (see especially FCC, 1990, 2011) and Congressional legislation affecting television (e.g., Cable Television Consumer Protection and Competition Act of 1992). Also see Owen (1975) for related discussion.

⁴ See the FCC's OpenInternet.gov

⁵ *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*. 540 U. S. 1 (2004).

After receiving over 100,000 public comments, the Commission formally adopted in December, 2010 a set of rules, one of which essentially prohibits any blocking by ISPs of lawful content. A non-discrimination rule also adopted states that an ISP “shall not unreasonably discriminate in transmitting lawful network traffic over a consumer’s broadband Internet access service. Reasonable network management shall not constitute unreasonable discrimination.” (FCC, 2010c, p.40). The latter rule stops short of explicitly requiring that no prices be charged to upstream content suppliers, although that may be the practical implication. The Commission does acknowledge, however, that different retail prices charged to different subscribers for different services, such as charging higher prices for higher video usage to relieve congestion, would be a reasonable network management practice. The overall emphasis of the adopted non-discrimination rule is that ISPs may not in any way disadvantage one content provider (such as a vertically affiliated provider) over another. While the originally proposed *NPRM* rule focused primarily on prohibiting pay-for-priority or similar ISP discrimination in the upstream access market, the adopted rules more explicitly protect end-user control, by prohibiting ISP pricing behavior that favors one comparable information service (e.g., an affiliated video service) over another in the consumer market (FCC, 2010c: p.40).

Meanwhile in April, 2010, an Appeals Court ruled in favor of Comcast in the BitTorrent case, and in November, 2010 Comcast, citing network congestion, announced it would impose access fees on Level 3, a firm involved in transmission of NetFlix video content to ISP subscribers. Then shortly after the FCC’s December, 2010 *Report & Order* came the FCC and DOJ orders on the Comcast-NBCU merger. Some conditions on the merger (see Section III in the Appendix A of FCC (2011)), are explicitly intended to neutralize Comcast-NBCU incentives to disadvantage unaffiliated content suppliers in the Multi-channel Video Distribution (MVPD)

market. Apart from a condition that requires Comcast-NBCU to follow the FCC's Open Internet Rules adopted in 2010, however, the merger conditions do not substantively address competition in the online video programming market.⁶

3. The effects of vertical integration in cable television

Except for the usual restraints of anti-trust law, cable systems in the U.S. are about as discriminatory as a video network can get; they are private, closed local networks, in which one operator essentially makes all programming carriage, bundling, and pricing decisions. This economic architecture is illustrated in Fig. 1. Program suppliers, usually in the form of programming networks, sell ads and usually charge per subscriber fees to cable system operators, who sell the networks to subscribers in various packages. There is extensive price discrimination. Upstream, access charges (generally in the form of per-subscriber fees) vary through network-by-network negotiation, and downstream, the programming is sold by the operator in various packages, or in some cases a la carte (e.g., HBO, or by individual program (VOD)).⁷

Fig.1 about here

Cable systems evolved into their modern form as MVPDs in the 1970s. A history of extensive ties between multiple cable television system operators (MSOs) and cable programming networks since then has provided fodder for research. Several empirical studies

⁶ In addition to a variety of provisions unrelated to vertical ownership concerns (e.g., requiring Comcast-NBCU to provide ISP service to a certain number low of income households), most of the other provisions essentially involve program access—that is, assurances that Comcast-NBCU programming assets will be offered on equal terms and conditions to other MVPDs and to other online video operations. These provisions are intended to promote competition in the ISP market.

⁷ Exceptions to the top down control model that dominates cable operations are leased access requirements. Throughout most of the cable industry's history, operators have been technically required by law to reserve a small amount of channel space that program suppliers can lease for exhibition of their programs. In practice, leased access channels have never attracted programming of economic significance (Lambert, 1992).

have made static comparisons of program menus, pricing and subscribership data on local cable systems having vertical ownership ties to program suppliers, with those that do not. Interest in these outcomes is sharpened by the fact that with few exceptions, cable systems operate as local monopolies of cable service.

These studies of vertical effects in cable have resulted in 5 key findings.

1. *Integrated cable systems are more likely to carry their vertically affiliated networks than are other systems.*

In the late 1980s, for example, a much higher percentage of Viacom-owned cable systems carried the premium network Showtime, which Viacom owned at the time, than did non-integrated systems (Waterman and Weiss, 1996, using 1989 data). Chipty (2001), Goolsbee (2007), and Chen and Waterman (2007) all reported comparable results for premium and/or basic networks for different time periods.

2. *Integrated cable systems tend to exclude or unfavorably market rival networks in at least some cases; more recently, rivals may be carried but placed on less accessible digital tiers.*

Only some studies have involved carriage of rivals, but these results attract more policy interest because they suggest vertical foreclosure.⁸ Using 1991 data,

⁸ The motives and competitive effects underlying these statistical findings are less clear. Chipty (2001) found that the vertical foreclosure reported in her study enhanced efficiency. As discussed further below, however, both efficiency and strategic motives (though the latter are not necessarily anticompetitive in antitrust terms) could explain instances of bias in programming menus that vertical integration leads to.

for example, Chipty (2001) found that TCI and Comcast, owners of the basic shopping network, QVC, were less likely to carry the HSN, an independent competitor at the time; similarly for premium networks. In an analysis of premium movie network subscribership patterns, Waterman and Weiss (1996) showed that if carried, unaffiliated networks were either priced or otherwise marketed less favorably.

Using 2004 data, after digital tiers had been adopted by virtually all major cable systems, Chen and Waterman (2007) showed that on Time Warner systems, for example, carriage of both its vertically affiliated Cartoon Network and rival Toon Disney, was almost ubiquitous. In the great majority of the Time Warner cases, however, Cartoon appeared on the basic analog tier, while Toon Disney was put on a digital tier for extra charges.

3. *Vertical effects diminish in larger capacity systems, but do not disappear.*

Waterman and Weiss (1997) showed diminishing but persistent vertical effects in larger capacity cable systems. The Goolsbee (2007) and Chen and Waterman (2007) studies were conducted after extensive channel capacity expansion by cable systems.

4. *Vertical effects diminish with competition.*

Goolsbee (2007) reported that in local markets having higher Direct Broadcast Satellites (DBS) penetration, statistical differences in carriage of

affiliated networks by integrated vs. non-integrated cable systems were diminished.

5. *Vertical effects are confined to nascent or less well-established networks.*

Descriptive data confirm that most successful major cable networks eventually become almost ubiquitous. Even by 1989, for example, virtually all cable systems carried Time Warner's HBO, the first premium network to enter. To illustrate changes over time, Chipty (2001) found that American Movie Classics (AMC) was foreclosed by major unaffiliated cable operators in 1991, but by the time of Chen and Waterman's study, nearly 100% of major cable systems carried AMC on the basic analog tier.

4. Applications to broadband ISPs

Do these vertical effects in cable foreshadow the same future for broadband ISPs that are integrated into program supply (in the absence of regulatory control)?

4.1 Similarities

Two key features in common to the economic architectures of ISPs and cable systems suggest parallel incentives and effects of vertical ownership.

1. *Both local cable systems and ISPs are potential retail bottlenecks*

Although telcos have recently made inroads to account for over 5% of subscribers, cable operators had a dominant 62% of the MVPD market, while the

two DBS operators (DirecTV and EchoStar) divided a 32% share, as of 2009.⁹ In broadband, local duopolies are the typical case, with local cable operators (cable modem service) reportedly accounting for 54% and telcos (DSL service) 38% of local subscribers nationwide as of June 30, 2010 (FCC, 2010a).¹⁰ Wireless access is nascent, but to date is not a significant factor in broadband ISP competition.

Of course, whether actual ISP competition at the local retail level is intense or not—or is likely to be in the future—is hotly debated. This article proceeds on the premise that there is at least a plausible argument for downstream market power in both industries.

2. National market shares of the larger ISP providers are significant.

The largest cable MSO, Comcast, had 22.4% of the national MVPD market in 2006 (FCC, 2009a), including highly clustered shares within certain major markets such as Philadelphia. The second largest, Time Warner Cable, had an 11.5% share (FCC, 2009a).¹¹ In broadband, national shares are somewhat lower; AT&T reportedly had 15.4% of the market, and Comcast 15.3% as of the third quarter of 2008.¹²

⁹ Cable Programming Newsletter, Kagan Research, July 28, 2010.

¹⁰ Authors' calculations based on Table 7 from the FCC's statistical reports of the Internet access services released in March 2011. Retrieved from <http://transition.fcc.gov/wcb/iatd/comp.html>

¹¹ Although these are the latest official FCC data, a lack of major merger activity among the largest MVPDs suggests there has been relatively little change since then.

¹² Retrieved from <http://www.isp-planet.com/research/rankings/usa.html>. ISP Planet, which ceased providing these data after this date, was cited in the comments of AT&T Inc. in the matter of preserving the open Internet broadband industry practices before the FCC in 2010. A more recent Internet source

Why does this matter? While one can also debate empirical significance of these national shares, they are potentially important to competition in national program supply markets, as discussed in a number of FCC reports (e.g., 1994, 1998, 2000, 2001, 2002, 2009a). Basically, cable programming networks are subject to large economies of scale with respect to the number of users (here subscribers) reached. These cost conditions imply that exclusion of an unaffiliated rival network by a large MSO could raise the rival's average programming costs per subscriber, thus limiting its ability to invest in program quality. For an ad-supported network, such effects could be magnified because cost-per-thousand ad rates are an increasing function of a network's national reach.¹³ Analogous logic applies to the effects of regional MSO clustering on regional programming markets, especially for news and sports.

If cable program networking is seen as a dynamic industry in which competing firms wage wars of attrition having winner-take-all outcomes within movie, music, sports, news or other program categories, then cost-raising strategies by larger, vertically integrated MSOs are plausible explanations for some of the carriage differences that have been observed in cable studies.¹⁴ In other cases, different explanations seem likely. For example, Time Warner's confinement of Toon Disney to digital tiers presumably increases the substitute Cartoon Network's (its vertical affiliate) ability to compete in the national advertising market, but may

identified the two leading national broadband ISP providers for the 2010 calendar year to be Comcast (17.3%) and SBC (12.3%) including business subscribers. Retrieved from http://www.statowl.com/network_isp_market_share.php?1=1&&interval=month&chart_id=4&fltr_br=&fltr_os=&fltr_se=&fltr_cn=&timeframe=ytd&timeframe=custom|2010-01|2010-12, retrieved June 1, 2011.

¹³ For detailed discussion of this model, see also Waterman and Weiss (1997), chapter 5.

¹⁴ See Hart and Tirole (1990) for the general case.

have little effect on Toon Disney's viability. As discussed further in Section 5, a variety of pro-competitive motives for vertical integration, including more efficient contracting and availability of finance, can also explain carriage differentials observed in cable.

Whatever the motive for the observed vertical effects, however, economies of scale in program supply imply that the larger the national share of a cable system or ISP, the greater will be its influence on the program supply market, and thus diversity outcomes.

B. Differences

There are several differences between cable and internet broadband economic architectures that may increase or decrease ease of entry of independent content suppliers in the presence of vertical integration.

For reference, Fig. 2 illustrates ISP economic architecture conceptually, while Table 1 lists some of the more prominent audio-visual (AV) entertainment program services that have developed in the U.S. The Internet programming market is developing rapidly but is nowhere near the maturity of cable TV. As of 2010, total revenues from Internet AV entertainment, news or other information services remain a tiny fraction of money coming from cable and broadcast TV or from movie outlets such as theaters and DVD.¹⁵

Fig. 2 about here

Table 1 about here

¹⁵ In 2009, U.S. movie distributors reportedly received \$503 mil. from digital (Internet) VOD, compared to \$16.1 bil. from DVDs and theaters (Kagan Media Research, "'Motion Picture Distributor Revenue Streams, 2000-2009,' Dec. 30, 2010). Total 2010 advertising revenues from hulu.com, apparently the largest Internet distributor of television programming, were projected to be \$263 mil. compared to broadcast and cable TV advertising of over \$70 bil. (Shields, 2010).

Four features of ISP architecture and programming stand out in contrast to cable television systems.

1. *Although much of the available AV entertainment programming is actually the same, programming aggregators are prevalent Internet suppliers.*

While many program services are available on the Internet as standalone operations—for example, HBO.com or ESPN 360—it is clear from comScore traffic rankings and industry reports that the majority of revenues accrue to Internet sites that aggregate entertainment content from different owners, such as hulu.com, iTunes.com, or netflix.com.

These aggregators arise from a fundamental economic feature of Internet architecture: essentially zero marginal capacity costs. That is, an Internet program aggregator can offer access to a virtually unlimited variety of content without incurring any physical carriage costs, in the sense that a newspaper must add more paper for each article or a cable system must build a bigger pipe for additional programming channels. That technological feature combines with the marketing advantage of offering consumers a one-stop gateway to a maximum range of choices.

The prevalence of Internet aggregators appears to reduce barriers to unaffiliated program suppliers by expanding their options for entry and survival. Of course, HBO, A&E and other television networks that are accessible via both MVPDs and ISPs are themselves aggregators of programming. Similarly, collections of Internet-original content (such as hulu.com's 'IndieFlix Shorts' and

Blockbuster's 'Circle of Eight') offer alternative routes for individual program suppliers. Competition among Internet aggregators, however, opens an additional layer of entry routes to nascent program suppliers, either at the network or program level.

Potentially mitigating these entry advantages is that ISPs may vertically integrate with aggregators themselves (e.g., Comcast with its video service, Xfinity). If network effects or economies of scale lead to concentration or market power among aggregators in the longer term, then ISPs could still disadvantage unaffiliated rival program suppliers by excluding them from their vertically affiliated aggregators. As the recent market entries of Apple TV and Google TV suggest, the direction that content aggregation on the Internet will take is itself very uncertain.¹⁶ In general, however, the additional layer of competition added by Internet aggregators appears work in favor of entry by new program services in the presence of vertical integration.

2. *Internet program services control retail pricing and packaging of their own programming.*

While cable operators control all pricing and packaging from the top down, *iTunes.com*, for example, controls all song and TV program prices and packaging for download. Marketing control also appears to advantage unaffiliated suppliers

¹⁶ Apple TV launched in 2006 as a digital device that interfaces a digital TV set with the Internet, but serves as an aggregator in the sense that access to content suppliers, including in this case Apples' vertical affiliate content aggregator, iTunes, is part of the service. A similar service, Google TV, launched in 2010, but at this writing, neither seems to have achieved much success.

by increasing the flexibility of their response to any discriminatory behavior by vertically affiliated ISPs.

3. *A vast array of other information and services, including shopping, government, medical information, etc., are available via ISPs.*

Farrell and Weiser's (2003) analysis of open access in the presence of vertical integration implies that while there are significant exceptions, platform owners such as ISPs generally have an incentive to maximize diversity of available content in order to attract subscribers. The relative importance of retailing and other non-video services on the Internet, however, may dilute the negative effect of discrimination in the video market on consumer demand for ISP service, in comparison to cable.¹⁷ Balancing this diluting effect may be a perception of U.S. consumers that having all Internet information available to them on the same terms has high value in itself.

4. *Differences in quality of service, for example, download speed, are issues for ISP content.*

Unaffiliated video services can be disadvantaged by ISP assignment of lower delivery priority, and thus lower transmission cost or wait time to subscribers. QOS has not been a significant discrimination tool of cable TV operators, probably because unlike Internet broadband, cable TV distribution technology so easily overcomes QOS differences.

¹⁷ See Economides (2008) for a model with a 2-sided market effect in which discrimination reduces ISP demand

A. Potential ways for integrated ISPs to disadvantage unaffiliated programming services in the absence of regulation

In the absence of any government controls, vertically integrated ISPs could exercise bottleneck market power to exclude, or analogous to cable tier positioning, pricing or other practices, disadvantage rival suppliers in a variety of ways. Following are some general examples.

1. Actions in the upstream market for programming supply

- a. Block or degrade QOS of the rival service.
- b. Charge access (input) prices, to the rival. Or, the same positive access price could be charged to both the rival and the affiliate, but these costs absorbed by the vertically controlled programming supplier as an accounting transfer to the ISP.
- c. Charge the rival service for higher QOS, for example, priority delivery. Or, charges for higher QOS could be levied against all services in the same category (e.g., video services), but these costs either absorbed by the integrated entity as an accounting transfer, or the integrated program service exempted from the charge.

2. Actions in the downstream, consumer market.

- a. Charge ISP subscribers to receive the rival service but not the affiliate service, driving business toward the latter. Equivalently, subscribers could be charged to receive both the affiliate and rival service (such as a surcharge for all video)

but the affiliate service exempted from the charge, such as through a special promotion to subscribers.

- b. Establish a usage quota for all subscribers, but exempt the affiliate service from the quota.
- c. Offer the affiliate programming service as a package with the ISP monthly subscription, at a discounted price.

Empirical experience of some other countries with ISP markets demonstrates two features of these theories. First, discrimination of these sorts in video markets does occur, at least in the absence of government restraint. Second, although vertical integration presumably facilitates or helps motivate such actions, they may occur in the absence of ownership ties.

The case of downstream discrimination can be found in Australia where network neutrality regulations in the same form as those discussed in the U.S. do not exist. Large Australian ISPs such as Telstra and iiNet have favored so-called “content partners” by only counting downloads from non-partner sites in usage quotas imposed on subscribers (Anderson, 2010). Available information indicates that these partnerships are by contract and do not involve ownership ties. Perhaps since 60 to 70 percent of traffic connects to the Web sites outside the country over trans-pacific cables (Winterford & Hill, 2008), thereby incurring high transit costs, discriminatory pricing to content consumers and de-prioritization of certain services like P2P network traffic have also taken place in Australia (OECD, 2006). This Australian case is an example showing how ISPs might respond to the future increase in cost and congestion of the network without net neutrality regulations.

The Madison River example of alleged upstream discrimination in the U.S., although affecting VoIP and not video services, did involve vertical integration. At least one other more minor case of alleged upstream discrimination in the U.S. involving mobile phone services, however, was unrelated to vertical integration.¹⁸ Similarly, the 2010 Level 3 incident did not appear to involve vertical integration.

As a whole, these examples thus demonstrate the familiar conclusion that vertical integration does not itself motivate anticompetitive behavior. Rather, vertical contracting can produce the same outcome. In either case, the competitive significance of the vertical control depends critically on horizontal concentration at the local and national levels.

B. The effects of non-discrimination regulation in cable

The closed architecture of cable networks makes it very difficult to control operator conduct that may disadvantage rival programming services, and attempts at regulatory constraint have been limited. The 1992 Cable Television Act mandated a cap on the number of vertically affiliated networks that smaller channel capacity cable systems could carry. The FCC then promulgated some specific limits (FCC, 1992) but these awkward rules are practically forgotten. The 1992 Program Access Rules also contain a general prohibition against discrimination by a

¹⁸ Another example of discrimination in the upstream market, though unrelated to video, occurred in the U.S. In July 2009, it was discovered that Apple had banned Google Voice from the iPhone applications store. Google Voice is an Internet application that forwards calls and aggregates phone numbers for users. It also provides free domestic calls and texting services. Since Apple had an exclusive deal with AT&T, AT&T was regarded as the firm that might have exerted power on Apple's decision against Google Voice based on some presumptive reasons: Google Voice established a unified voice system, "something a real phone company should have offered years ago," and AT&T's local and long distance calls revenues decreased (Kessler, 2009). Though Apple denied its rejection against Google Voice and AT&T negated its involvement in Apple's decision, this case shows how the exclusive contract between a network operator and a content provider, without vertical integration, can practically affect a rival content provider in upstream market.

vertically integrated MVPD against unaffiliated program services (47 USC par 536).¹⁹ In a few merger cases involving vertically integrated cable operators, approval conditions have attempted to limit discrimination within specific programming categories. The FTC, for example, conditioned the 1996 merger of Time-Warner and Turner Broadcasting on a requirement that Time-Warner systems carry a second news channel in addition to Turner's CNN (FTC, 1996). Most recently, the FCC conditioned approval of the Comcast-NBCU merger on a requirement that Comcast cable systems "not discriminate" against unaffiliated programming and they are specifically required to carry unaffiliated news channels (including business news), and to place them in the same channel "neighborhood(s)" (FCC, 2011: p.4, pp.50-51)).

C. The effects of non-discrimination regulation of ISPs

In the current Internet environment, while it is difficult to tell whether ISPs can evade them in practice, the FCC non-discrimination rules as adopted in Dec. 2010, seem to have the potential to effectively control discrimination by vertically integrated ISPs against unaffiliated online content. An important component of the adopted rules in this respect is the controls against ISP discrimination in favor of one content provider over another in the downstream retail market. This aspect was essentially absent from the rules proposed in the 2009 *NPRM*, but was prominent in the 2010 *Report & Order*. This change in the FCC rules is significant because it is likely that rules inhibiting discrimination at the access level will simply enhance ISPs incentives to practice that discrimination at the retail level--with essentially the same end result. The general principle underlying this assertion is that if a group of firms desires to achieve a certain objective, and has more than one route by which it can be achieved, then closing one

¹⁹ Saylor (2009) discusses a few complaints to the FCC that have been filed under this provision, including an arbitration ruling in favor of the Mid-Atlantic Sports Network against Time Warner Cable.

route through regulation is likely to increase firms' use of the other routes as a second-best practice.

To illustrate more specifically, consider a local ISP that has pricing power both in the downstream consumer market and in the upstream content input market, and is vertically integrated with a video content service that sells a la carte monthly subscriptions to ISP consumers. Analogous to the cable TV model discussed above, it is plausible that without regulation, this ISP will maximize profits by charging an input price to a substitute, rival content service that is so high that the rival is effectively excluded from the market. This foreclosure equilibrium might occur for the variety of reasons discussed above; for example, if the ISP desires to facilitate market entrenchment of its similar but nascent affiliated service over the long term; or because presence of the rival service will cause undesirable retail price competition with its affiliated service.

If the regulator responds by enforcing a non-discrimination rule requiring that all input prices to content providers be zero—but no control is set over final prices charged to consumers by the content services—then the ISP could accomplish the same vertical foreclosure outcome by reducing the consumer price of its content service (such as by means of a so-called content partnership) until the rival content service leaves the market. Alternatively, the ISP could effectively raise the consumer price of the rival service by imposing from a bandwidth usage surcharge, or a usage quota, but exempting its own service from it.

Although this downstream, retail level strategy results in the same basic outcome as the upstream foreclosure strategy, the downstream foreclosure may be less profitable because maintaining the price differential is more difficult to administer, leading to higher costs, has unpredictable or less desirable effects on final prices, or is not as easily explicable to subscribers,

etc. The end result for consumers, however, is likely to be that the ISP will revert to such a second-best retail level foreclosure strategy in the presence of a non-discrimination rule that controls only upstream level behavior.

V. Potential benefits of vertical integration to innovation and entry in IP content supply

MSOs were actively involved in early launches of cable TV networks, suggesting the significance of vertical integration to industry development. Fig. 3 is a compilation of the 65 largest national programming networks in business as of 1994. It shows that 30 of these networks (46%) had a majority or minority ownership relationship with a cable operator, and among these 30, 12 networks (18% of the 65) had been jointly owned by two or more MSOs at launch. Not shown on the table, a few more of these 65 networks, such as ESPN, had launched independently from cable operators, but at some time since launch became affiliated with one or more MSOs.

Fig. 3 about here

Previous economic research, both general and specific to the cable industry, suggests several benefits that vertical integration may have on content supplier innovation and entry.²⁰

One often-cited static benefit is that integration can improve the efficiency of vertical contracting.²¹ Probably more significant are two dynamic advantages of integration: the provision of financial support, and the market signaling value of MSO integration.

²⁰ Joskow (2010) and Riordan (1998) offer excellent surveys of the economic literature on vertical integration. Farrell and Weiser (2003) consider specifically the economics of vertical integration in communications with a focus on the ISP open access issue. See Yoo (2002), Owen and Wildman (1992), and various FCC reports, especially FCC (1990) for discussion of static and dynamic efficiency advantages of vertical integration in cable and other media industries.

²¹ Elimination of double marginalization and reduced contractual risk are commonly discussed. Static efficiency factors of this kind seem unlikely to make much difference, however, since even a large MSO with a 20% share of the national market of subscribers owning a network that reaches all subscribers in the nation would only make 20% of all its transactions with vertically affiliated firms.

Most of the larger industry players in the late 1970s and early 1980s, a formative period in which many basic and premium networks entered the market, were cable operators. As Fig. 4 shows, MSOs grew quickly after the 1970s, with the largest among them, TCI (later AT&T), controlling about a quarter of all cable TV subscribers by the early 1990s. Several of these MSOs, especially including TCI and Warner Cable (later Time Warner), launched or acquired numerous different networks in earlier years.

Fig. 4 about here

Parallel to its financial resources, a new network having a financial commitment from an MSO at launch, along with display of its carriage on a high percentage of the MSO's systems, conveyed the information to other MSOs considering carriage that the network would have continued financial support and was likely to succeed. As Fig. 4 suggests, a lack of carriage commitments from most or all of the largest few MSOs worked strongly against successful entry of a new network because of the economies of scale in network distribution. A concern that influenced FCC policy toward cable during the 1980s and 90s was thus that large MSOs might exert a disproportionate amount of market power in the program supply market.²² On the positive side, however, the same large MSOs could for the same reasons potentially exert a powerful facilitating influence on network entry—though, of course, not “independent” entry as defined by the FCC.

This early history of vertical integration in cable television thus suggests that integration between ISPs and individual program suppliers, or perhaps also between ISPs and programming aggregators, would likely have the same sorts of pro-competitive benefits for development of Internet video programming.

²² For details, see p.7540 in FCC (1994) and pp.36-43 in FCC (1990).

For two main reasons, however, it is speculated that these financing and market signaling benefits of integration in the ISP market may be less significant than they have been in cable.

First, there is the new role of program aggregators. These aggregators can also vertically integrate into content supply, and in prominent cases, have been integrated from the outset. Consider, for example, *hulu.com*, a consortium of four major television content creators, which also offers Internet-original video programming. The market presence of well-capitalized aggregators thus should widen the flow of potential capital from integrated suppliers.

The second reason for diluted dynamic efficiency benefits of ISP integration into content involves long term shifts in market structure of the programming market: a fall in vertical integration between cable systems and program suppliers, along with a rise of large, vertically unaffiliated program content suppliers that have the bargaining power and financial resources to launch either cable or IP content services.

Regarding vertical integration, MSO and DBS operators have on the one hand remained active in launching new cable networks. Of the 86 national cable networks (not including foreign language networks) that the FCC identified as launching during the 2002-06 period (the most recent five-year period for which data were available), 31, or 36.5%, were vertically affiliated with MVPDs. As Fig. 5 shows, however, vertical integration in cable television has substantially declined since the early or mid-1990s. National cable networks that the FCC identified to be vertically affiliated with cable operators fell from 53% in 1994 to only 15% in 2006.²³ Reflecting this change, 12 of the top 15 highest rated basic cable networks were integrated in 1994, but only 4 in 2005 (FCC, 1994; 2006). As Goolsbee (2007) commented in his

²³According to the FCC's latest Annual Report (FCC, 2009a), 23 national non-broadcast networks, were affiliated with a DBS provider in 2006. If these 23 networks were added, the 2006 percentage would increase from 15 to 19.

study for the FCC, whatever value that vertical integration in cable had in the past, it must have diminished by the 1990s—at least relative other corporate objectives. Not shown by the Fig. 5 data, vertical integration was further reduced when Time Warner Inc., the owner of the second largest cable MSO in the U.S., spun off Time Warner Cable Inc. in March, 2009.²⁴ At least a modest reversal in this trend, however, was the Comcast-NBCU merger in early 2011, which combined the 13th and 14th largest holders of cable networks (ranked by number of networks as of 2006, as shown in Table 2), to create what would have been the 4th largest holder in 2006.²⁵

Fig. 5 about here

Parallel to the long term decline of vertical integration in cable has been a growth of large, non-vertically integrated cable TV program suppliers. As Table 2 suggests, several such suppliers, including Viacom, Disney, News Corp,²⁶ and Liberty Media, were by 2006 among the top cable program suppliers, but these companies had either never had the benefit of integration with cable operators, or have at this writing divested of those interests. NBC-Universal was also not integrated with any cable operators until the 2011 Comcast-NBCU merger.

Table 2 about here

It is important to note that ISP video programming is itself a developing industry, with unique aspects such as interactivity, and that larger ISPs may prove to have a prominent role in

²⁴For detailed information, see <http://ir.timewarner.com/phoenix.zhtml?c=70972&p=irol-twcseparation>.

²⁵ These data do not consider broadcast TV networks, of which NBC, also acquired by Comcast, is among the largest. The three other major broadcast networks, ABC, NBC, and Fox, are currently unaffiliated with MVPDs.

²⁶ News Corp, long time owner of numerous program services through its subsidiary, Fox Networks, had a 34 percent share of DirecTV from Dec. 2003 to Feb. 2008. (News Corp.'s 10-K SEC annual report of 2005 (<http://investor.newscorp.com/secfiling.cfm?filingID=1193125-05-179099>), and the report of 2009 (<http://investor.newscorp.com/secfiling.cfm?filingID=1193125-09-172310>), and FCC MO&O for the transaction between News Corp./ DirecTV and Liberty Media (http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-66A1.pdf).

launching new and original video program services. To the extent that they may do so, however, they appear to be in the company of many more well-capitalized industry players than were present when vertical integration assumed a prominent role in the cable industry during the late 1970s.

VI. Conclusion

This article has addressed policy concerns about the effects that vertical integration between broadband ISPs and video content suppliers may have on the diversity of video programming available to ISP subscribers. For this purpose, parallels were drawn from a history of empirical research about the effects of vertical integration in cable television. Although there are significant differences in the economic architectures of the cable and Internet broadband industries, integrated ISPs have in some realistic circumstances similar economic incentives to favor vertically integrated content services and to restrict entry of relatively nascent rival content services.

Compared to the cable experience, government regulations to prevent discrimination by vertically integrated ISPs can potentially be more effective. It has been argued that a non-discrimination access rule alone may simply have the effect of shifting similar ISP behavior downstream to the consumer retail level unless discrimination in that market is also regulated. It is difficult to predict whether integrated ISPs will be able to evade the FCC's no-unreasonable-discrimination rule that was adopted in December, 2010. The rules do, however, attempt to control discrimination both at the access and the retail level, an approach that appears to be a necessary condition for effectiveness.

It has been further argued that certain beneficial effects of vertical integration on financing and entry of programming networks that were identified by earlier research on the

cable industry are likely to apply to the ISP case. It is speculated, however, that these benefits may be less important for ISPs than in cable, due primarily to the development since the 1980s and 90s of a large and robust programming supply industry that is now mostly disintegrated with cable operators, other MVPDs, or ISPs. In qualification, however, it is difficult to anticipate at this early stage whether original Internet content (and thus by implication its development by established market players) will follow the cable model.

Turning to a broader perspective, there is a good chance that architectural differences between broadband and cable—especially the presence of an additional upstream level of content aggregators, and also the control of pricing and marketing that Internet content suppliers have—will mean that vertically integrated ISPs have less power to discriminate, even in the absence of effective regulation, than do cable operators. In any case, both the long history of the cable industry and the short history of the broadband Internet industry are reminders that the fundamental policy concerns from an economic perspective are not vertical integration, but the presence of horizontal market power at the MSO or ISP levels. Both local and national market shares of ISPs, as well as the potential for ISP collusion across geographic markets, influence this market power, and thus their potential to significantly affect the diversity of Internet content.

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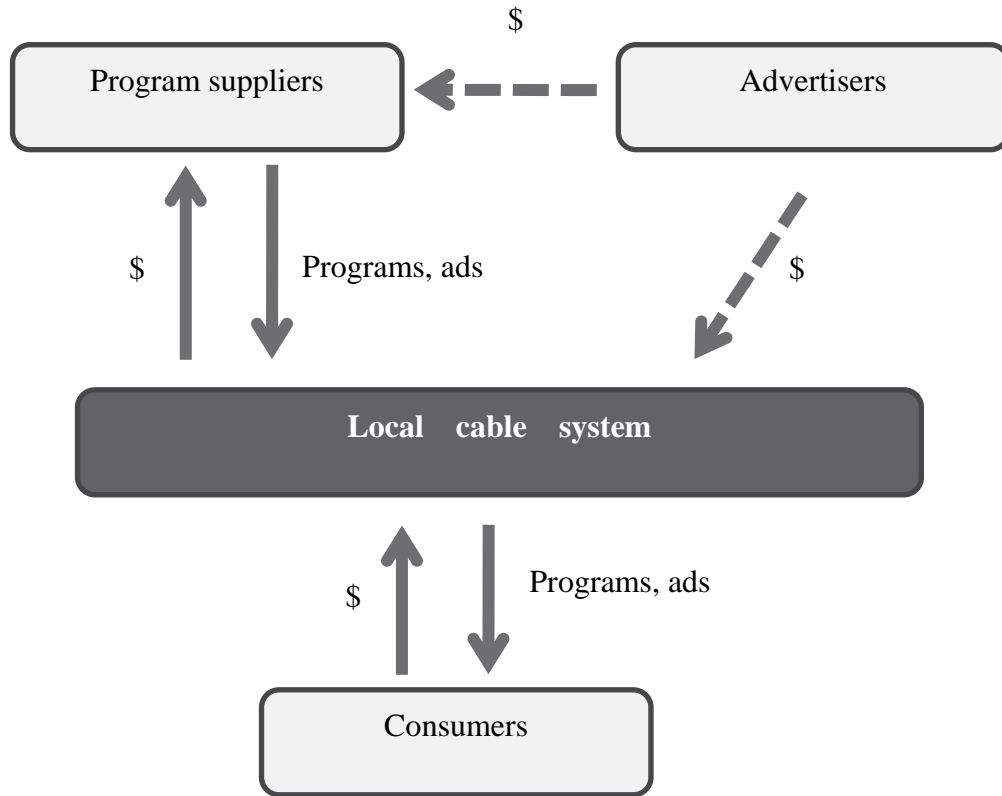
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Figures

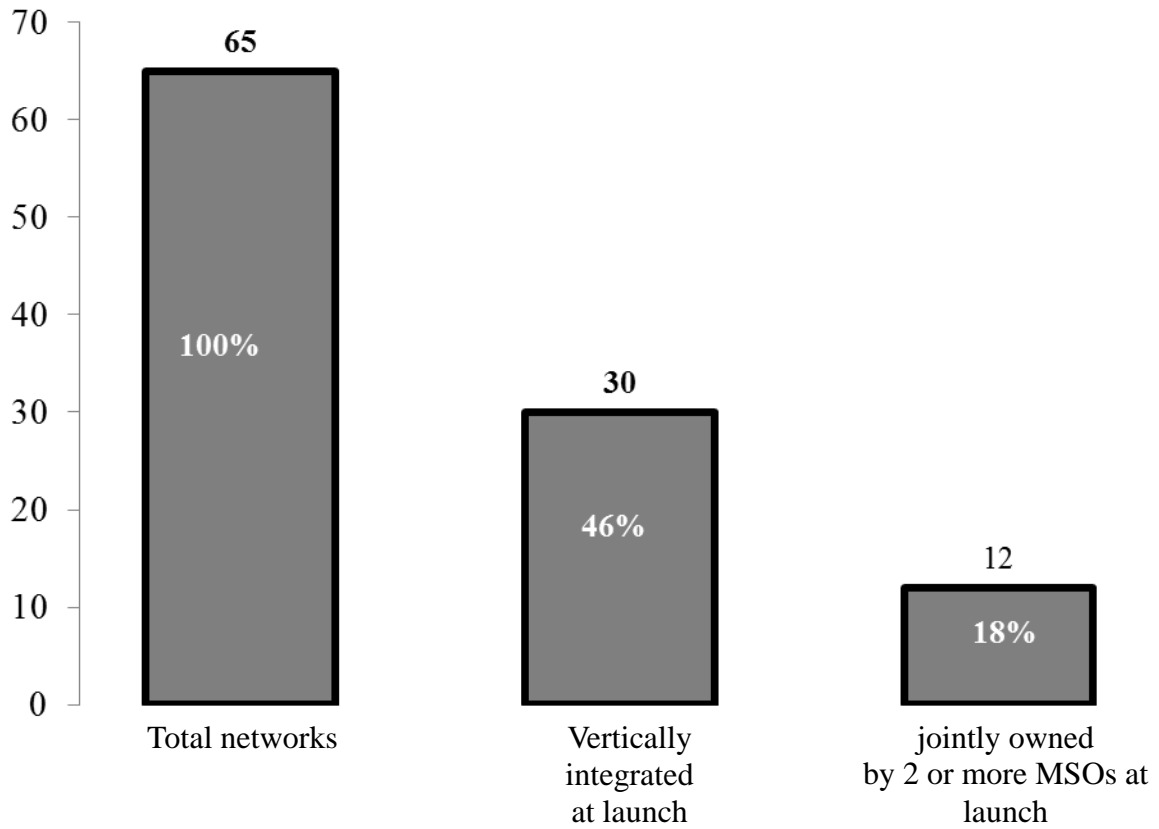
Fig. 1 Cable TV economic architecture



Technology: Water pipe, mostly program networks

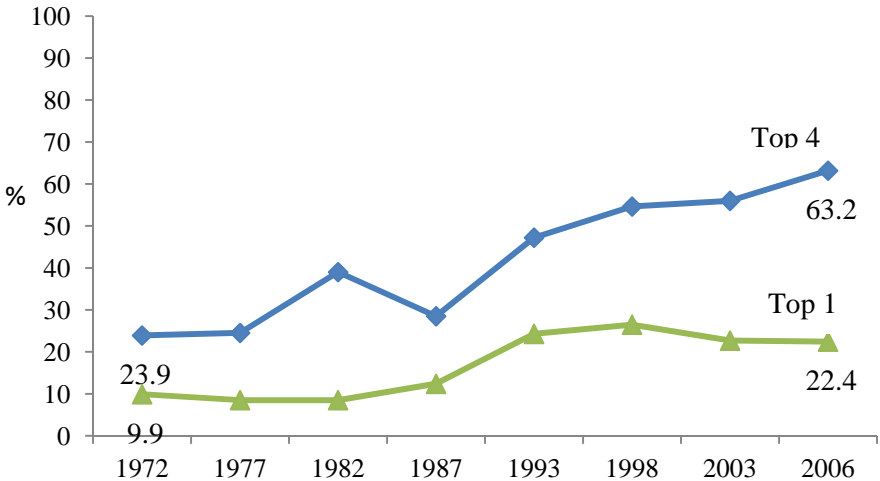
→ : always
- - → : sometimes

Fig. 3 Ownership status of the 65 largest national cable programming networks, 1994



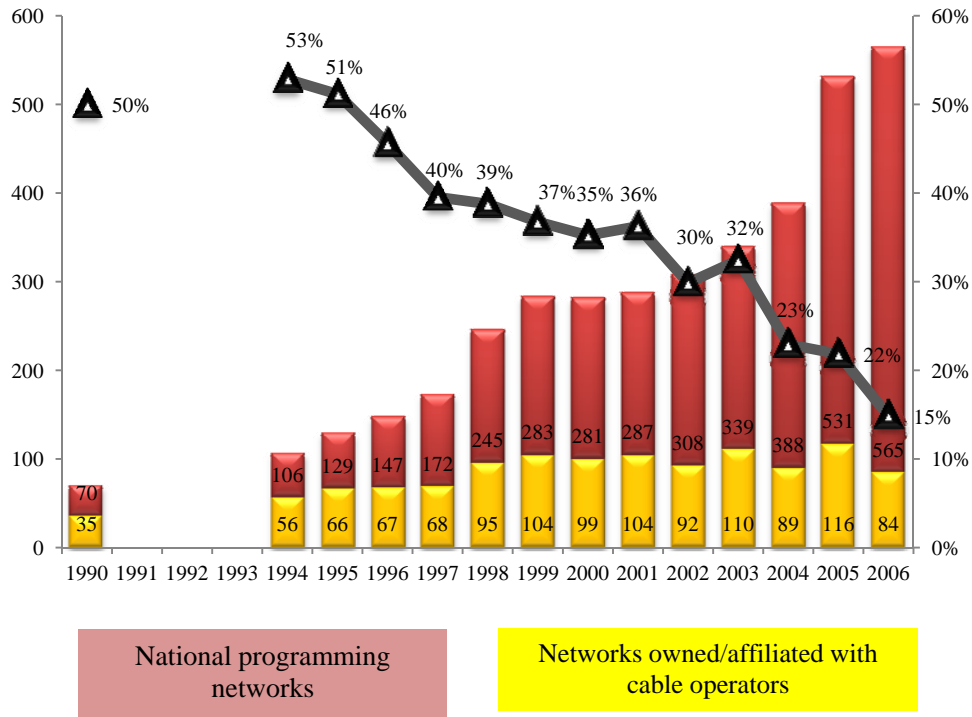
Source: Compiled from Waterman & Weiss (1997) (original data from Paul Kagan Associates and TV Factbook.) These data include all basic and PPV networks reaching at least 10%, and all premium networks reaching at least 1%, of MVPD households as of the end of 1994.

Fig. 4 Market share of the top 1 and top 4 MSOs in terms of subscribership



Source: Waterman (1991) for 1977 – 1989. FCC (1993, 1994, 2000, 2003, 2007) for 1972, 1990-2006

Fig. 5 History of vertical integration between cable operators and national programming networks



Note: According to the FCC, networks owned or affiliated with cable operators are the networks which are affiliated with at least one cable operator. National programming networks include networks affiliated with cable operators and other media entities such as DBS operators and national broadcast networks and networks which are not affiliated with any media entities.

Source: Federal Communications Commission (1994-2009a).

Tables

Table 1 Illustrative services offering online professionally produced
AV entertainment content

Online Sites	Primary Content	Main Business Model
Hulu	Fox, ABC, NBC broadcast TV programs; cable programs	Ads/subscription
TV	CBS broadcast programs	Ads
iTunes	Broadcast programs, movies	PPV/purchase/subscription
Blockbuster	Movies, broadcast programs	PPV/purchase/subscription
Netflix	Movies, broadcast programs	Subscription
ESPN 360	Live streaming of games	Ads; ISP fees
Fancast	27+ broadcast/cable networks	Ads; free to offline cable subscription/PPV
PBS	PBS broadcast programs	Free

Table 2 Top 15 Cable TV network owners/equity holders
(Ranked by # of networks, 2006)

	Owner	# Networks owned/affiliated		Owner	# Networks owned/affiliated
1	Time Warner	32	9	Advance Newhouse	17
2	Viacom	28	10	Discovery Holding	17
3	Disney	28	11	CBS Corporation	16
4	Liberty Media*	24	12	EchoStar	16
5	News Corp.	21	13	NBC Universal	14
6	Hearst	20	14	Comcast	11
7	Cablevision	19	15	Univision	8
8	Cox	19		All networks	565

* Liberty Media held 16% of News Corp. stock

Note: The number of networks owned or affiliated is double counted if they are jointly owned.