

**BENEFITS OF BUNDLING**  
**AND**  
**COSTS OF UNBUNDLING CABLE NETWORKS**

BY  
**MICHAEL G. BAUMANN**  
**AND**  
**KENT W. MIKKELSEN**

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## Executive Summary

The Walt Disney Company requested us to assist in preparing responses to some of the issues raised in the Federal Communications Commission's recent public notice.<sup>1</sup> Our principal conclusions about retail bundling of cable networks can be summarized as follows:

- Retail bundling of cable networks provides numerous benefits to consumers as well as networks.
  - Bundling is a commonplace and efficient method for delivering a wide range of products to consumers.
  - Bundling is an economically efficient way to offer programming since distributing programming to subscribers costs roughly the same regardless of the number of cable networks delivered—as long as those networks can be bundled. It lowers transaction costs and equipment costs that would otherwise be borne by consumers and by cable and satellite operators.
  - Bundling offers an enhanced product that most consumers prefer. It allows for occasional and spontaneous viewing of special news, sports, documentary, and movie programming.
  - By allowing subscribers to sample new programming services, bundling facilitates entry by new cable networks.
  - Bundling reflects the economic reality that programming is a “non-rivalrous” good—i.e., once a television program has been produced there is no additional production cost associated with letting an additional person view it—that

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<sup>1</sup> FCC, “Comment Requested on A la Carte and Themed Tier Programming and Pricing Options for Programming Distribution on Cable Television and Direct Broadcast Satellite Systems,” MB Docket No. 04-207, May 25, 2004.

should be provided and priced in a way that does not deny consumers benefits that cost society nothing to produce.

- A government mandate that results in retail unbundling is an inappropriate response to any concern about cable subscription rates and is likely to harm consumers.
  - Unbundling is likely to raise rates to subscribers so that consumers could end up paying substantially more than they do now for the present collection of basic cable networks.
  - Unbundling may reduce cable network programming expenditures, leading to a reduction in program quality and selection.
  - Unbundling would make advertising less efficient and less valuable, leading to increased subscription rates.

The appeal of unbundling is that it appears to offer benefits to the average subscriber. Unfortunately, this appearance rests on the fallacy of composition. The fallacy is to assume that what is true for a part must be true for the whole. The benefits of unbundling that seem so apparent at the individual level would not be available if unbundling were widespread or universal.

Any individual subscriber could benefit if he could opt out of some networks in the bundle offered by his cable or satellite operator and lower his subscriber fee by the amount of the license fee charged for those networks. However, this assumes that the payment he makes for the networks he keeps remains unchanged. And this may be true if he is the only individual who purchases a la carte.

However, if a substantial number of subscribers purchased a la carte, there would be a sizeable impact on the revenues of all cable networks. Initially, cable networks would lose revenues due to the decline in subscribers and would lose advertising revenues due to the decline in viewers. Additionally, if a la carte is imposed, networks would likely incur additional marketing costs as they seek to attract subscribers. To

maintain their current levels of expenditures on programming, networks would have to offset these revenue losses and increased costs with increased license fees.

In aggregate, if all networks sought to maintain their current level of programming expenditure (and cash flow) then the total amount paid by all subscribers not only must equal what was paid before unbundling but must increase to offset the decline in advertising revenue and the increase in marketing costs. Hence, if programming quality on all networks were to stay the same, subscribers on average would pay more.

Of course, it is possible that instead of raising license fees a cable network may respond by decreasing programming expenditures. However, any decrease in program quality is a cost to consumers. The consumer is getting less. It is also quite possible that some networks may not be able to recover from the decrease in revenues and increase in costs and would simply fail. This would decrease the variety of programming available to consumers.

## I. BACKGROUND ON BUNDLING

Bundling is a commonplace and efficient method for delivering a wide range of products to consumers. Bundling is nothing more than the sale of goods in fixed proportions. With cable and satellite television, in order to watch some networks one must subscribe to all the networks that come in a particular package or tier of service. There are many reasons why it is efficient for potentially distinct products to be bundled. Products may be bundled in order to lower transaction costs, exploit scale and scope economies, or enhance the attractiveness or convenience of the product to consumers. For example, shoes are sold with laces because it is more efficient (*i.e.*, it has lower transaction costs) than selling the shoes and shoelaces separately. For another example, each network is itself a bundle of individual programs, each of which could in principle be sold separately using a pay-per-view system.

Newspapers are a familiar example of an efficient bundle. In order to read the sports section of the *Washington Post*, one must buy the whole paper. Not everyone who purchases a daily newspaper reads each section, and each section could be sold separately. But it is efficient to sell the sections in a bundle for at least three reasons. First, there are economies in having all of the sections delivered at once, rather than having separate deliveries for each section. Second, subscribers receive some value by having the *option* to look at all of the sections, even if they usually do not read all of the sections. For example, subscribers who typically do not read the sports section may read it during special events, such as the Olympics. Subscribers can avoid the cost and inconvenience of having to order this section when they want it. Also, by scanning the entire paper subscribers may find an article of interest, which they would not see if the sections were sold separately. This option has value to subscribers. Third, by expanding the potential readership of the entire paper and by eliminating the need for duplicative advertisements, bundling also makes advertising more valuable and more efficient. Hence, for advertisers there is a synergistic effect from bundling. An increase in advertisers' willingness to pay for circulation, other things equal, tends to reduce the price the newspaper charges for subscriptions.

Exploitation of market power is not a common reason for bundling. Almost every good and service available in the marketplace is a bundle of components, most of which could, in principle at least, be sold as separate products. Bundling is common because it lowers costs and prices and gives firms competitive advantages by improving their ability to satisfy consumers. As a general matter, a regulation requiring a firm with market power to unbundle would not diminish the firm's market power. Forced to unbundle, the firm would still sell the components of the bundle at monopoly prices. Consumers themselves would have to supply the search, acquisition, and assembly services; the effective price of the components sold separately would be higher than the monopoly price of the bundle.<sup>2</sup>

## **II. REASONS FOR BUNDLING CABLE NETWORKS**

Bundling is an economically efficient way to offer cable network programming. It lowers transaction, marketing, and equipment costs that would otherwise be borne by consumers, programmers, and cable and direct broadcast satellite systems. (Cable and direct broadcast satellite operators will be referred to together as multichannel video programming distributors or "MVPDs.") Bundling allows for occasional and spontaneous viewing of special news, sports, documentary, and movie programming. Bundling offers the option to view networks during special programming events. In addition, bundling facilitates entry by new and niche networks by allowing subscribers to sample new programming services.

### **Bundling Saves Transaction and Equipment Costs**

Transaction costs underlie the efficiency of bundling of networks. If bundling were not permitted, all subscribers would face increased transaction costs and many subscribers would face additional equipment costs. Transaction costs include the time it

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<sup>2</sup> A firm may have market power over some but not all of the components of the bundle. Given that condition and several additional conditions not applicable to the cable network industry, such a firm can in theory have an incentive to bundle so as to "leverage" its market power in ways that are harmful to consumers, and which may offset some or all of the efficiencies of bundling.

takes to collect information about the programming available on the various networks. Because subscribers could not easily sample networks to which they do not subscribe, search costs would be higher. Some consumers would fail to subscribe to networks they would in fact have chosen had they been adequately informed about them. The cable networks' costs and the MVPDs' costs will also increase as they attempt to provide this information to subscribers. While a cable network and an MVPD have an incentive to make this information available, providing this information to all subscribers is costly and would likely be reflected in the rates charged for the individual cable networks.

The subscriber would also incur costs if he had to contact the MVPD to add or delete a cable network. These costs would be incurred when there is a new network that the subscriber wants or when the subscriber no longer wants a network currently being purchased. Since the operator is likely to have to add additional customer support and technical staff to deal with the increased number of transactions, there would likely be a charge for each modification to a subscriber's portfolio of networks.

In addition to these transaction costs, many cable subscribers will have to purchase or rent additional equipment. If cable networks are offered a la carte then cable operators will need to scramble the networks' signals, which would require subscribers to use addressable converters or descrambler boxes. While some subscribers already have such converter boxes to receive premium, pay-per-view, or digital programming or to receive direct broadcast satellite service, only about one-half of MVPD households currently have them.<sup>3</sup> Subscribers without a converter box would have to buy or rent one for each television that they use to watch cable network programming. The Commission reports that the average rental rate of a digital converter box was \$4.87 per month in July 2002.<sup>4</sup> Hence, the additional cost to a household that needs converter boxes for two

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<sup>3</sup> The National Cable and Telecommunications Association estimates that there are about 23 million digital cable households and about 22 million DBS households. Combined, these households represent slightly less than one-half of the estimated over 90 million total MVPD households. See, <http://www.ncta.com/Docs/PageContent.cfm?pageID=86>.

<sup>4</sup> FCC, *Report on Cable Industry Prices*, MM Docket No. 92-226, July 8, 2003, Table 10.

televisions would be \$116.88 per year, and the additional cost to a household that needs converter boxes for three televisions would be \$175.32 per year.<sup>5</sup> Even households that currently have a converter box may face additional costs if they do not have one for each television set that they use to view cable network programming.

### **Bundling Provides Subscribers an Option to View**

MVPD subscribers sign up for service on the basis of some expectation about the nature of the service, but most new subscribers (perhaps most subscribers) are not familiar with the programming on each of the networks offered. Indeed, some may subscribe partly or chiefly for the option to view certain networks only during special programming events. In any case, both new and established subscribers are buying certain services that they know, as well as an option to sample all the remaining services. The option is valuable in itself, and there is some willingness to pay for it even though the consumer may be unfamiliar with many of the networks. Of course, the option exists and conveys value only to the extent that the subscriber can (a) freely sample all the services in the bundle and (b) freely choose to consume any of the services, without incurring further search and transaction costs.

Subscribers clearly value the option to view a wide array of cable networks, because ratings information demonstrates they consistently exercise that option. For example, networks that typically receive low levels of viewing can get ratings spikes when a special program is carried. These special programs could be major news stories, major sporting events, special movies, controversial programs, or documentaries. Such spikes in viewership represent subscribers exercising their option to occasionally view a particular network. Examples include the following:

- The Weather Channel receives higher ratings during periods of bad weather. On September 18, 2003, during Hurricane Isabel, its daily rating was 1.3 compared to its average daily rating of 0.3. The Weather Channel averaged a 0.7 rating for the

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<sup>5</sup> Kagan Research reports that the average television household has about 2.6 television sets. See Kagan Research, *Digital Television*, April 29, 2004, p. 5.



last three weeks of December 2000 due to the winter storms from December 11 to December 31. In comparison, the Weather Channel averaged a 0.3 rating for the month of January 2001.

- CNN viewership is much higher during certain news events. High-profile event coverage averages between a 1.0 and a 2.0 rating, compared to a normal average rating of 0.4. News stories that temporarily increased viewership include the Clinton impeachment hearings, the disputed 2000 presidential election, the September 11<sup>th</sup> attacks, the war in Afghanistan, and the war in Iraq. For example, CNN's adult 18-49 ratings went from 0.1 in 2Q01 to 0.4 in 3Q01 as the network provided round-the-clock coverage during and following September 11<sup>th</sup>, and its average ratings went from 0.6 to 2.25 as the war in Iraq was being covered in March and April 2003.

- Fox News Channel also experienced increased viewing during these major news events. For instance, Fox News Channel experienced ratings spikes for its 2003 special reports on Iraq military action, which received ratings over 7.0 versus the network's average daily rating of about 1.0. The network's average daily rating during the war coverage in March and April 2003 was about 3.0. For the 15 months prior to the 2000 presidential election Fox News Channel's average rating was 0.3. For the eight months following the election's resolution, Fox News Channel's average rating was 0.5. Because subscribers had access to this additional news choice and sampled it during these major events, it appears that more viewers have decided to watch Fox News Channel on a regular basis.

- MSNBC also showed rating spikes with news stories. During its coverage of the Iraq War in March and April 2003, the network's average daily rating increased to 1.3 from 0.3. In addition, MSNBC saw a spike in viewership during its coverage of the 2000 Summer Olympic Games.

- MTV receives about a 0.6 rating on an average day. In 2002 and 2003, on the day that MTV aired the Video Music Awards the average daily rating jumped to over 2.0. In 2003, the rating for the MTV Video Music Awards program itself was 8.1.

- Court TV carried the O.J. Simpson trial in 1995. The network achieved a rating of 1.0 over the nine months of live coverage. During the nine months that followed the trial, the network achieved only a 0.08 rating.
- The Learning Channel receives about a 0.6 rating on an average day, but its special program, Trading Spaces \$100,000 Challenge, had a rating of 7.0.
- The Arts & Entertainment Network experiences an increase in its average daily rating from 0.6 to between 1.2 and 1.6 when it runs a *Law & Order* marathon.

Appendix A lists additional examples of spikes in viewership.

### **Bundling Facilitates Entry of New Programming Services**

In many respects, bundling facilitates the launch of new and previously unsampled programming services, contributing to the diversity of programming available to the public.<sup>6</sup> New and niche programming services benefit greatly from their association with well-established networks within the bundle. Through that association, these services have the greatest opportunity to be sampled and hence to find an audience.

### **Bundling Increases Advertising Revenue**

As discussed above in the context of newspapers, expanding viewership makes advertising more valuable to the advertiser. Even though some subscribers may sample and view a network service infrequently, those subscribers contribute to the audience of the network and hence increase the value of the network to advertisers. As a consequence, the network is more valuable to the programmer and the MVPD in terms of its ability to generate advertising revenue.

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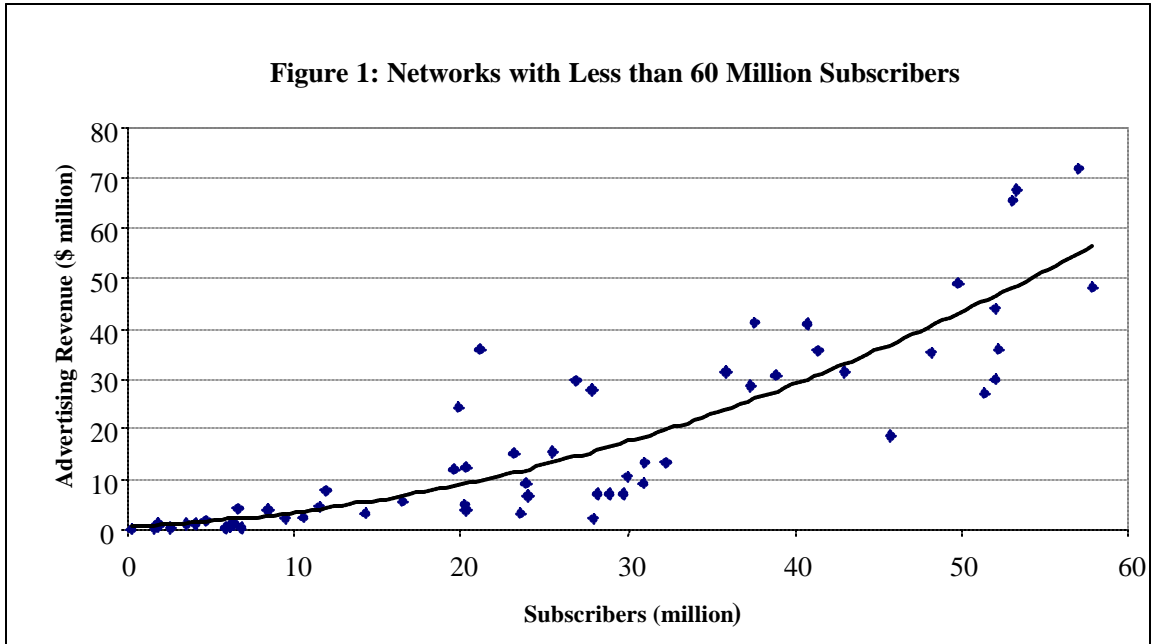
<sup>6</sup> FCC Chairman Michael Powell stated: "...one thing I've often heard is that a lot of channels that survive on cable also survive because they are anchored to marquee products that allow the support of other networks that really wouldn't be ready to stand alone. If you did an a la carte thing purely, what you would do probably is kill a significant amount of diversity, because there would be a whole lot of channels that were not able to viably stand alone on a per-purchase basis." *Electronic Media*, June 11, 2001, at 30.

Network advertising revenues are determined primarily by two factors: the number of viewing opportunities, known as impressions, supplied by the network and the price charged for those impressions, usually expressed as the cost per thousand impressions (CPM). The advertising revenue earned by a network can be thought of in basic terms as CPM times impressions. Two determinants of the number of impressions are a network's circulation (i.e., the number of MVPD subscribers or its subscriber base) and its viewership (as reflected in ratings).

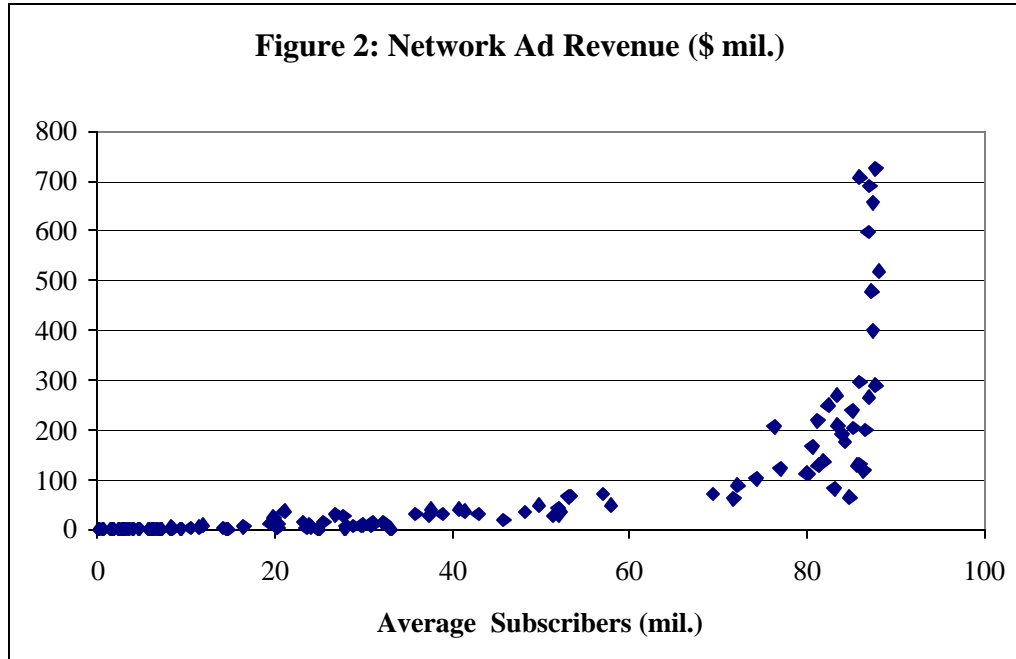
It is sometimes simply assumed that the advertising revenue earned by a cable network is directly proportional to its subscriber base. The reasoning behind this belief is that as a network's subscriber base grows, the number of potential viewers grows proportionately. If the quality of programming and, therefore, ratings are constant, then the number of impressions should increase linearly with increases in subscribers. A network's subscriber base can grow as additional MVPDs carry the network and as more consumers subscribe to MVPDs. There is some support for this simple relationship for networks that do not yet reach all MVPD subscribers (e.g., new networks that are still being added to additional MVPDs). Figure 1 shows net advertising revenue in 2003 plotted against the number of subscribers for cable networks with fewer than 60 million subscribers.<sup>7</sup> Figure 1 shows that for these networks there is clearly an effect of the number of subscribers on advertising revenue, although it is not strictly proportional.

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<sup>7</sup> Data are from Kagan Research, LLC, *Economics of Basic Cable Networks 2005: Key Spreadsheets*, June 2004. This excludes those networks that do not sell advertising.



However, as a network obtains carriage on most MVPDs and reaches around 70 to 80 million subscribers this relationship breaks down. Figure 2 depicts net advertising revenue in 2003 for 105 cable networks plotted against their subscriber bases. As Figure 2 makes clear, though the size of the subscriber base is important, advertising revenue is not solely a function of subscribers for networks beyond a certain subscriber level. Several factors affect the CPM that impressions can command in the advertising market. The demographic characteristics of the viewers are obviously important to advertisers. Two factors that are not as obvious are the accuracy with which impressions are measured and the reach of the network.



half of all TV households. National advertisers see value in reaching a broad cross section of viewers at one time. Therefore, advertisers are willing to pay more per viewer for large sets of viewers. For example, an advertiser might purchase two ads that each deliver 500,000 viewers. But because there is likely some overlap in the audiences of these two ads, and the total viewers reached is likely less than one million, that same advertiser typically will pay more for an ad that delivers one million unduplicated viewers. Advertisers value unduplicated reach, and pay a premium for a larger audience. For this reason, a 20 percent increase in audience size will increase advertising revenue by more than 20 percent for widely distributed networks.<sup>8</sup> This is one reason that broadcast networks still have higher CPMs than cable networks. Without bundling, the gap would be wider still, resulting in lower advertising revenues for cable networks.

### **Bundling Helps Achieve Distributive Efficiency**

From the point of view of economic welfare it is important to distribute a program or network at a low marginal cost, while preserving incentives for programmers to invest. Programs are what economists call “non-rivalrous” or “public” goods—once a program exists, it costs nothing to let one additional viewer enjoy it. Therefore, it is inefficient to charge a price that excludes viewers who place any value on the program. Of course, there has to be a way to pay programmers, or there will be no programs. Bundling helps to solve this dilemma. Once a household is wired to receive cable or satellite, there is essentially no social cost associated with allowing the household to receive more signals. Viewers, for their part, typically receive some positive enjoyment from additional signals. Bundling cable networks, and pricing the bundle so that consumers do not pay more for viewing additional hours or additional networks, increases social welfare. For example, bundling makes economically feasible certain programming and cable networks that could not be supported with a la carte pricing.

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<sup>8</sup> For empirical support see Franklin M. Fisher, John J. McGowan and David S. Evans in “The audience-revenue relationship for local television stations,” *The Bell Journal of Economics*, Autumn 1980, pp. 694-708.

## **Pay Services That Have Joined the Bundle**

In recent years there has been a migration of premium services onto the basic services tier. Examples include Bravo, Disney and virtually all of the regional sports networks. These moves indicate a belief that being part of a bundled service tier is important to the economic success of the majority of programming services. Analogously, on-line services such as AOL have moved from per-hour to flat rate pricing, as have cell phone service suppliers. It seems that for any given expenditure, consumers prefer not to have to deal with metered usage.

Disney Channel is one of the services that migrated from being a premium service to a basic service during the 1990s. As a result of this move, Disney Channel increased its distribution from about 5 million premium subscribers to over 80 million basic subscribers.<sup>9</sup> Disney Channel was also able to reduce its expenditures on acquiring subscribers and focused more of its marketing efforts on getting consumers to watch its programming. As a result of having a larger subscriber base and greater license fee revenue, Disney Channel increased its programming expenditures, particularly its spending on original programming. With a larger subscriber base, in an effort to attract a larger audience, Disney Channel began targeting some of its programming toward narrower segments of the market. As a result, Disney reports that Disney Channel has increased its ratings, reach, and audience composition of African-American and other minorities since 2000.

## **Discriminatory Incentives for Bundling**

Economic literature offers still another explanation for product bundling that depends on the incentive to discriminate among heterogeneous consumers. Bundling can be viewed as an implicit way to charge a higher price to those consumers who most value some components of the bundle and a lower price to those who value those components

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<sup>9</sup> Kagan Research, *Economics of Basic Cable Networks 2005: Key Spreadsheets*, June 2004.

least. Gregory Crawford presents an analysis of discriminatory incentives to bundle in the cable industry in a recent article.<sup>10</sup>

Prof. Crawford's results suggest that, on balance, bundling increases overall social welfare in cable television. Therefore, there would be social losses from unbundling. Crawford also finds that there are important distributional effects across consumers. The consumers who would lose most from bundling are those that place high value on only one or a few networks in the bundle, but are still willing to purchase the bundle. By contrast, bundling permits firms to lower prices (relative to the sum of unbundled prices) to the benefit of consumers that place moderate value on a large number of networks.<sup>11</sup>

Prof. Crawford recognizes, but does not incorporate into his analysis, the cost savings generated by bundling and therefore his results likely understate the social gains from bundling. He notes,

The least cost method of providing any cable service is to bundle all the programming. This is due to the underlying technology of video program distribution: all television networks are transmitted to each customer's home. It is *unbundling* networks that is costly, requiring methods to prevent consumption by non-subscribers. (Page 9, emphasis in original.)

Additionally, referencing a recent GAO report, Prof. Crawford discusses two additional reasons why cable systems do not unbundle basic and expanded basic services.<sup>12</sup>

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<sup>10</sup> Gregory Crawford, "The Discriminatory Incentives to Bundle in the Cable Television Industry," University of Arizona (working paper), April 2, 2004.

<sup>11</sup> Ignoring costs, Prof. Crawford finds that (discriminatory) bundling causes average consumer welfare to fall. (Page 20) It should also be noted that Prof. Crawford's study is based on cable industry data from 1996. That era is prior to the emergence of EchoStar and during the start-up period of DirecTV. The increased competition since 1996 may have allowed subscribers to capture a larger share of the benefits from bundling than they captured during the time period used in Prof. Crawford's analysis. This would reduce or eliminate average consumer welfare loss from bundling. Also, as discussed *infra*, Prof. Crawford does not incorporate the cost savings of bundling into his welfare analysis.

<sup>12</sup> GAO, *Issues Related to Competition and Subscriber Rates in the Cable Television Industry*, October 2003 ("GAO Report").



The first is that not all consumer[s] opt for addressable converters, even when offered by their system. Uniform deployment of converters, while likely in the long-run, could be costly at present. This raises the costs of unbundling. The second is that *networks* do not want to be unbundled. The average cable network earns about 50% of its revenue from advertising (GAO (2003)). Unbundling would clearly reduce the set of consumers that could watch a network and likely reduce the number that do watch. This would plausibly reduce advertising revenues and require uncertain increases in license fees to compensate.” (Page 10, footnotes omitted.)

Nevertheless, his paper does not incorporate the cost-saving incentives to bundle, but rather focuses only on the price discrimination incentive to bundle.

Appendices B and C contain two simple models that show how subscribers may benefit from bundling. The model in Appendix B considers three consumers and two programming choices. The model illustrates that consumers can be better off with bundling than with a la carte. Appendix C presents a richer model. It contains a continuum of consumers, but still focuses on two programming choices. The model illustrates that pure bundling can produce greater consumer benefits than either a la carte or mixed bundling (a combination of a la carte and bundling), even ignoring the additional costs associated with unbundling. This is because, ignoring costs and given the model’s assumptions, while some consumers may gain from a move to either a la carte or mixed bundling, more consumers will lose. In fact, in the model, most of the existing subscribers to the bundle are made worse off by unbundling. Uncertainty over how specific consumers will be affected is itself a strong argument against government intervention that results in retail unbundling.

### **III. EFFECTS OF UNBUNDLING**

A government mandate that results in retail unbundling would be inefficient and harmful to cable networks, MVPDs, and consumers. Unbundling would likely reduce the number of subscribers to any cable network, and hence reduce license fee revenues (at current prices). It is also likely to reduce both a cable network’s advertising revenue and an MVPD’s advertising revenue. Additionally, it will increase a cable network’s costs, an MVPD’s costs, and a consumer’s costs. The cable network will look to offset this

revenue loss and increased cost by increasing the license fee to the MVPD and/or by reducing the quality of its programming. The MVPD will respond by charging a la carte rates to its subscribers that exceed what subscribers now pay for the same collection of networks. These and other effects of unbundling are discussed below.

The analysis focuses on pure a la carte. As defined here, pure a la carte means the MVPD charges a flat fee for the basic service tier—consisting of broadcast television and PEG programming—and sells all other programming a la carte. Many of the conclusions also apply in a “mixed” environment. For instance, cable networks could be offered both a la carte and bundled by the same MVPDs, or a cable network could be offered a la carte by some MVPDs and bundled by other MVPDs. The conclusions also apply to cable networks that are split apart from other bundled networks and placed in a “theme” tier. The analysis considers how basic cable networks might be affected by unbundling and what impact this might have on consumers. The impact on MVPDs, or the exact response of MVPDs to changes in wholesale program pricing, is not examined in detail.

### **Impact on Consumer Demand**

If a cable network were unbundled and offered a la carte, the immediate effect would likely be that it would lose subscribers. Previously, any consumer subscribing to the bundle received the network at no incremental cost; now, subscribers would be required to pay some positive price for the network. The consumers most likely to decline the network a la carte are those that place the lowest value on the network. The value of the network will differ from consumer to consumer, and will be affected by many factors, including consumers’ income, the attractiveness of the programming and the availability of other programming that is perceived to be an adequate substitute. In general, the consumers placing a low value on the network are those who previously viewed the network least intensively when it was offered as part of a tier.<sup>13</sup> By the same logic, one

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<sup>13</sup> The impact of a la carte pricing on networks that are valued chiefly as an option depends on the ease with which consumers expect to be able to subscribe to it when a relevant contingency arises.

can expect that the consumers who choose to subscribe to the network a la carte will tend to be those that viewed the network most intensively when it was bundled.

It is beyond the scope of this paper to predict the subscriber loss that networks would experience moving to an unbundled environment, which would depend on the a la carte prices that MVPDs charge as well as many other factors. However, some insight can be gained by looking at the viewing intensity that various networks have experienced in the bundled environment. As an example, TBS Superstation is distributed to about 88 million homes. In May 2004, about 24 million homes (27 percent) did not view TBS Superstation at any time during the month. One might expect that, in an a la carte environment, most of these households would be unlikely to subscribe. If one defined “high-intensity” homes as those that tuned to a network at least 25 percent of the days in the month, TBS Superstation had 26.9 million high-intensity homes, making up about 31 percent of total bundled subscribers. Table 1 shows for a selection of networks the percentage of current bundled subscribing households who were high-intensity. Results could vary across time, particularly for networks like CNN and The Weather Channel that tend to be more event-driven.

**Table 1. Viewership Intensity for Selected Basic Networks**

	Total Homes	“High-Intensity” Homes	Percent “High-Intensity”
CNN	87.9	13.1	15%
Discovery	88.5	17.5	20%
TBS	88.0	26.9	31%
Weather Channel	87.6	14.6	17%

Source: ABC Networks, based on Nielsen data for May 2004.

If the subscribers in an a la carte world were the same as those that viewed the network with high intensity in the bundled world, based on these examples, networks

offered a la carte could expect to retain in the neighborhood of 15-30 percent of their current subscriber base.<sup>14</sup>

### Impact on Advertising Revenue

As described above, the subscribers that a network would lose when moving to an unbundled environment would tend to be those who previously viewed the network with relatively low intensity. Because the subscribers who would be retained tend to watch the network more than those who would be lost, the percentage reduction in viewership would be a smaller than the percentage reduction in subscribers. Nevertheless, casual viewers and channel surfers can account for a substantial share of a network’s viewing audience, and losing such viewers in an unbundled environment would lead to a decline in advertising revenues.

**Table 2. Viewership Intensity and Audience for Selected Basic Networks**

	High-Intensity Homes as Percent of Homes Receiving Network	High-Intensity Homes as Percent of Audience
CNN	15%	86%
Discovery	20%	57%
TBS	31%	69%
Weather Channel	17%	81%

Source: ABC Networks, based on Nielsen data for May 2004.

Like Table 1, Table 2 shows for selected basic cable networks the percentage of households that are “high-intensity.” Table 2 also shows the percentage of the viewing audience that comes from the high-intensity homes. For TBS Superstation, for instance, such homes are only 31 percent of the subscriber base, but they account for 69 percent of the audience. For TBS Superstation, these households have a viewing intensity about twice that of the average household subscribing in the current bundled environment. Viewing appears to be somewhat more skewed towards the high-intensity viewers for

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<sup>14</sup> This analysis does not consider whether these “high-intensity” homes would be willing to pay the price that would be charged for these networks if they were sold a la carte.

The Weather Channel and CNN, about five to six times the average subscribing household.

As a first approximation, one might naively expect the percentage reduction in advertising revenue resulting from unbundling to be about equal to the percentage reduction in audience. However, various other factors would tend to further reduce advertising revenues. For example, the remaining audience in the a la carte environment will tend to be less valuable because it is smaller.<sup>15</sup> As discussed above, advertisers value unduplicated reach and pay a premium for a larger audience. Additionally, fewer subscribers imply that ratings data will be harder to obtain for some networks. The absence of ratings data reduces advertising rates because of uncertainty over audience size and demographics. .

An offsetting factor that might reduce the loss of advertising revenue is a change in viewing patterns. Consumers that choose to take a network a la carte may watch the network more intensely than they did previously, because they would be decreasing their viewing of other networks to which they choose not to subscribe a la carte.<sup>16</sup>

### **Increased Network Costs Due to Unbundling**

In an unbundled environment, a cable network would face additional marketing costs, since it would have to attract subscribers in competition with many other a la carte cable networks. A network's additional marketing costs would consist of subscriber retention programs, telemarketing, and subscriber acquisition programs, such as free previews of the network, promotional offers, direct-mail advertising, and consumer premiums. These expenditures are designed to increase the total number of subscribers

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<sup>15</sup> It is possible that if the network attracts a niche audience, advertisers of niche products may be willing to pay more per audience member for the a la carte audience than for the tiered audience. However, most advertisers sell products that appeal to a broad audience and purchase time to reach a broad audience. For such advertisers, there is little or no benefit, and perhaps a disadvantage, from restricting the audience to niche viewers.

<sup>16</sup> If the network in question is one of only a few networks that are offered a la carte and its subscribers still subscribe to other basic networks on a bundled basis, this effect may not apply.

and to counteract the loss of households that discontinue their subscriptions. In addition to these marketing expenses, there are associated costs of the personnel needed to implement the marketing program.

In considering networks' marketing costs, it is important to bear in mind that moving to an a la carte environment would significantly change the way that consumers get information about networks. Unlike in a bundled environment, consumers would likely not be able to easily and costlessly browse other networks to sample their programming. Hence, there would be a significant reduction in consumer awareness of viewing options. To illustrate, imagine what would happen if the *Washington Post* were required to offer each section of the newspaper a la carte. Subscribers who now glance at, but do not read, certain sections would lose their current awareness of the content of such sections. When and if such content becomes relevant, they would have to engage in a relatively costly search process. For a new or repositioned network, the challenge of informing consumers about the network's programming would likely be much higher than in a bundled environment.

When it was marketed primarily as an a la carte service in the early 1990s (1990-93), Disney Channel spent about \$17 million per year on customer acquisition and telemarketing costs and about \$5 million per year on retention programs such as the *Disney Channel Magazine*. Since the network had around 4.6 million subscribers at that time, this translates to a cost of about \$4.70 per subscriber per year. In addition to this cost, there were the costs associated with the personnel implementing the programs. Including personnel costs could double Disney Channel's acquisition cost per subscriber.

### **Impact on Program Quality and Diversity**

Some of the effects of unbundling on network programming can be illustrated by considering ESPN. While ESPN is used for illustration, similar effects would apply to other cable networks as well. First, an unbundled ESPN is likely to offer less niche sports programming. In order to broaden its appeal to occasional viewers, ESPN has expanded the categories of sports that it offers, such as women's college basketball and the World Series of Poker. Compared to the bundled environment, it would be much more difficult

for ESPN to attract occasional viewers with specialized interests, because such consumers would have to contact their MVPD and start a subscription. Instead, ESPN would respond to the reduction in subscriber and advertising revenue resulting from unbundling by focusing on mainstream, broad-appeal programming to attract a core audience. This would likely hinder ESPN's ability to nurture the development of new audiences.

ESPN may also lose the ability to keep high-profile sports and sports events. The sellers of rights to televise sports and sports events want wide distribution.<sup>17</sup> With a smaller ESPN audience, the rights owners may well turn to other outlets. That is, if MVPDs shift ESPN to a la carte or a theme tier, rights owners may well seek substitute media with wider distribution. One possibility is that existing sports programming on ESPN would migrate to other cable networks with larger audiences. Such an audience differential would likely be most pronounced if ESPN is unbundled, or on a theme tier, and other cable networks remain bundled. In this case, unbundling ESPN accomplishes nothing as far as addressing any perceived link between high sports programming costs and subscription fees for consumers. The other possibility is that rights holders will find no suitable alternatives to ESPN and would simply drop the ESPN-type distribution outlet, limiting themselves to broadcast networks, regional sports networks, and high-end packages such as NFL Sunday Ticket. In that case, there would be a further reduction in sports programs available to the typical viewer compared to the bundled environment.

### **Impact on Subscribers**

Offered as an individual service, a cable network would likely have fewer subscribers, a smaller audience, and increased marketing costs. Fewer subscribers means less license fee revenue, holding license fees constant. A smaller audience means less advertising revenue. Less revenue and increased cost reduces the funds available to acquire programming, and thus reduces the quality of programming available on the network, or raises subscriber price, or both.

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<sup>17</sup> See GAO Report, pp. 38-39.

As the GAO noted, “under a la carte it is possible that cable rates could actually increase for some consumers.”<sup>18</sup> This is because to the extent that networks want to maintain programming quality they will increase license fees to offset the decline in revenue and the increase in costs, and these license fee increases are likely to be passed on to subscribers. Indeed, the only way that networks can maintain their current level of programming expenditure (and cash flow) and offset the decline in advertising revenue and the increase in marketing costs is if, on average, subscribers pay more.

Instead of raising license fees to maintain programming expenditures, a network may respond by decreasing programming expenditures. However, any decrease in program quality is also a cost to consumers. It is also quite possible that a network may not be able to attract enough subscribers to support the network and may fail.<sup>19</sup>

Because consumers’ expectations would likely be unfulfilled—due to unrealized savings, the reduction in program quality, or the exit of certain networks—there may be further pressure on Congress and the Commission to regulate cable rates and cable network and MVPD behavior.

### **Comments on “Mixed” A La Carte and Bundled Environments**

As discussed above, if a network that was previously offered as part of a bundle begins to be offered a la carte, it will lose subscribers, audience, and subscriber and advertising revenue. To the extent that the network continues to be available as part of a bundle on some MVPDs, the effects are reduced. However, in such an environment, the network is likely to experience higher costs and lower efficiency than in either a pure bundled environment, as at present, or a pure a la carte environment. Networks would be forced to conduct two types of advertising and marketing simultaneously, which would tend to increase costs. In addition, because MVPDs offering the network a la carte may be scattered throughout the country, it would likely be less efficient to reach potential a la

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<sup>18</sup> GAO Report, p. 34.

<sup>19</sup> See GAO Report, p. 36.



carte subscribers through mass media. It may also be more difficult for networks to choose optimal programming in this mixed environment, because the programming that would attract an audience in a bundled environment may be different from what would best attract a la carte subscribers. Uneven subscriber coverage throughout the country may also make the network less attractive when selling national advertising.

Under some proposals, such as a “theme tier,” apparently most basic cable networks would continue to be offered as part of a bundle and a few networks would be offered in a smaller bundle. Those networks that are excluded from the principal bundle will experience reductions in subscribers and audience. In fact, the effects on subscribers and audience may be even greater than they would be in a pure a la carte environment. If only some networks are unbundled and placed in a theme tier, those unbundled networks will suffer for the same reasons that an a la carte network suffers. The networks excluded from the principal tier would have to attract customers who already had available to them a large bundle of networks, with the associated efficiencies of bundling enjoyed by the consumers, MVPDs and the included networks. Moreover, since the composition of the “theme tier” will be determined by individual MVPDs, a network may be part of the theme tier in some areas and part of the larger bundle in others. For the reasons just discussed, this may make it more difficult for a network to program, to promote itself, and to sell advertising. As the GAO noted, “Creating a greater number of smaller tiers could cause many of the same technological and economic concerns as an a la carte approach.”<sup>20</sup>

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<sup>20</sup> GAO Report, p. 30.

## Appendix A: Examples of Spikes in Viewership

“Hanging on the wall of Cable News Network President Tom Johnson’s office...is a bright-red chart with flat lines punctuated by occasional spikes that rise and fall in an unpredictable pattern. ...[T]he peaks and valleys on the wall document CNN’s simple commercial truth: News sells. Each spike represents a major event since 1985, and the bigger the spike, the bigger CNN’s viewer ratings. The explosion of Pan Am Flight 103 over Scotland, the Clarence Thomas hearings and the rescue of baby Jessica from an abandoned Texas well all generated strong numbers for CNN. And while the Persian Gulf war mustered record numbers for the cablecaster, CNN has found an even juicier draw in recent months: the O.J. Simpson trial. ...[A] major event such as the Simpson trial can more than double its audience.” (*U.S. World & News Report*, April 10, 1995, p. 56.)

“Speaking of peaks, MSNBC said its viewership rose to more than 621,000 when police closed in on Andrew Cunanan in Miami during prime time.” (*Electronic Media*, July 28, 1997, p. 3)

“As viewers flocked to coverage of Princess Diana’s death, the cable-news networks drew un-accustomed kingly ratings. Cable News Network and relative newcomers Fox News Channel and MSNBC all reached ratings milestones with their Diana reportage.” (*Multichannel News*, September 8, 1997, p. 19.)

“All three cable networks providing gavel-to-gavel coverage of the Simpson trial -- CNN, Court TV and E! -- say their ratings are up strongly.” (*Mediaweek*, February 6, 1995, p. 5.)

“After years of struggling, regional cable news networks are finding an audience and advertisers. ... ‘When there’s a breaking news story, whether it’s severe weather in the Pacific Northwest, a pipe bursting in New York or the inauguration in Washington, RNNs can grab five times their normal ratings,’ said Stuart Zuckerman, director of sales at National Cable Communications, which sells national ads for seven major market RNNs...” (*Multichannel News*, April 14, 1997, p. 30A.)

“The Weather Channel and the three 24-hour local cable news outfits – Washington’s Newschannel 8, New England Cable News and New York 1 – that covered the blizzard nonstop all reported huge ratings gains during the storm. ...[A] spokesman for Cable News network said its storm coverage caused a 20 percent jump in viewership on Monday, Jan. 8, over the previous Monday ratings. ...TWC set a ratings record on Jan. 7, when it averaged a 1.5 rating from 6 a.m.-midnight. The network’s viewership peaked at 2.9, also the highest in its 13-and-a-half year history. In Washington, Newschannel 8 peaked at a 7 rating in its cable universe, which is about seven times its usual audience...” (*Multichannel News*, January 15, 1996, p. 12.)

“Naturally, folks at the [Weather] channel are always on the lookout for a really big storm. When Hurricane Erin hit in August, viewership jumped to 1.4 million. ‘Hurricanes are like the O.J. Simpson trial for us,’ says [Michael] Eckert,” The Weather Channel’s chief executive. (*Forbes*, October 23, 1995, p. 320.)

On September 6, 1995, Cal Ripken passed Lou Gehrig’s record for consecutive games played. The ESPN Wednesday night game that night averaged a 6.98 rating, which is 320 percent greater than the 1995 season average of 1.66 for Wednesday night games. Following the game was coverage of “Cal Ripken Ceremonies,” which attained an even higher audience--a 7.27 rating.

On January 6, 1994, Nancy Kerrigan was attacked in an ice skating arena in Detroit. On that evening, Sportscenter ESPN at 7PM averaged a 1.65 rating which is 42 percent greater than the previous day’s rating, and 54 percent greater than the 1994 Sportscenter average of 1.07.

In October 1993, Michael Jordan announced his “retirement” from the NBA. Live coverage of this announcement on October 6 at 11am in a special edition of Sportscenter attained a 1.87 rating. Sportscenter at 7PM on that same day averaged a 1.61 rating, which is 45 percent greater than the previous day’s rating and 30 percent greater than the 1993 season average.

Some movies on Lifetime, such as “Any Mother’s Son” and “Fifteen & Pregnant,” have generated ratings over three times as high as the network’s average prime-time rating.

Some documentaries on Discovery, such as “Titanic: Anatomy of a Disaster,” “Raging Planet” and “Wolves at Our Door,” have generated ratings at close to or over three times as high as the network’s average prime-time rating.

The Comedy Central program “South Park” has achieved ratings four times higher than the network’s average prime-time rating.

Some movies on TNT, such as “Buffalo Soldiers” and “Last Stand at Saber River,” have generated ratings over three times as high as the network’s average prime-time rating.

Some movies on TBS Superstation, such as “Dumb & Dumber” and “Total Recall,” have generated ratings over three times as high as the network’s average prime-time rating.

## Appendix B: Example of Inefficiency from Unbundling

This appendix provides a simple example to show how unbundling can make some or even all consumers worse off. Consider a cable operator that carries two networks—Network X and Network Y.<sup>21</sup> Assume that, for every viewer (A) who really values the programming on Network X, there are two viewers (B and C) who care relatively little about Network X. Assume further that the representative Viewer A values Network X at \$150 per year and Network Y at \$60 per year; in contrast, the other two typical viewers value Network X at only \$20 per year and place a total annual value on Network Y of \$200. The representative subscribers' valuations of the programming networks are presented in the following table. For purposes of this example, it is assumed that the marginal cost of supplying a subscriber with either Network X or Network Y is zero.

SUBSCRIBER VALUATIONS OF PROGRAMMING NETWORKS			
	Network X	Network Y	Total
<b>Viewer A</b>	150	60	210
<b>Viewer B</b>	20	200	220
<b>Viewer C</b>	20	200	220
<b>Total</b>	190	460	650

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<sup>21</sup> Networks X and Y can be thought of either as individual cable networks or bundles of cable networks.

Under the current arrangement in which all networks are bundled together, the cable operator charges a bundled price of \$210 per year to all viewers, because this is the price that gives the cable operator the most profit. Revenue at this price equals \$210 for each of the three viewers, or \$630 total. If the same cable operator offered the networks a la carte, the operator would price Network Y at \$200 per year. It would choose this price because if it set the price sufficiently low to induce Viewer A to purchase Network Y (\$60 in this example), it would have to lower price to all viewers, and it is more profitable to sell Network Y to two viewers at \$200 each than to sell it to all three at \$60. Similarly, the cable operator would offer the Network X at \$150 to one viewer rather than drastically reducing the price (to \$20) in order to sell it to all the viewers.

In this example, unbundling makes everyone worse off. The cable operator's revenue drops significantly (as do its profits, since its costs are essentially unaffected by the number of signals viewers choose to receive). Perhaps less obvious is the fact that consumers are worse off as well. In particular, Viewers B and C are hurt by the regulation because they lose Network X's programming that they value at \$20/year, but they save only \$10 in annual cable bills. On balance, both viewers are \$10 worse off than if they were "required" to purchase Network X. Viewer A loses programming valued at \$60, but at least he saves that much on his cable bills. Social welfare is also reduced. This is because Viewer A no longer receives \$60 in enjoyment from viewing Network Y. Similarly, the other viewers no longer each receive the \$20 in benefits from Network X. Social welfare is reduced by \$100 because viewer benefits have fallen \$100 without any offsetting cost savings to society.

Offering the networks a la carte reduces total welfare because it induces pricing so as to exclude some consumers. This effect is most pronounced when the value of a network is concentrated in a relatively small number of viewers, and when these viewers derive most of their utility from a small number of networks. Under those circumstances, the cable operator will tend to price the a la carte offering so as to exclude a large number of viewers with low valuations for a particular channel. While all networks are produced, distribution is severely limited under these circumstances and total welfare suffers as a result.

Similarly, unbundling particular networks (or forming a small tier of similar networks) may result in severe welfare losses, particularly if such networks are highly valued by a relatively small number of subscribers. The losses occur because profit-maximizing cable operators would price the small tier of networks in such a way as to exclude many viewers with relatively low valuations for the networks. Moreover, the cable operator will price the bundle of remaining networks at a level that excludes those who derive most of their viewing enjoyment from the a la carte or mini-tier offering.

## Appendix C: Example of Inefficiency from Unbundling or Mixed Bundling

This appendix uses an extended numerical example to illustrate the effects of unbundling on consumer welfare, which are complex. This example abstracts from welfare losses arising from advertising revenue/audience size feedback effects and also ignores welfare losses arising from increased consumer search costs and increased supplier marketing costs. While the precise magnitudes of the effects depend on the specific numeric values chosen, the general conclusion is that departures from bundling can make a sizeable portion of consumers worse off.

Consider a cable operator that carries two networks—Network X and Network Y.<sup>22</sup> The operator can market these networks to consumers under one of three possible regimes. Under an a la carte regime, the operator sells each network separately. Under the pure bundle regime, the operator sells the networks only as a bundled product. Under the mixed bundle regime, the operator offers to sell the networks both individually and as a bundle.

Assume that consumer preferences for each network are uniformly distributed identically and independently from \$0 to \$1 for each network.<sup>23</sup> That is, consumers can be thought of as being uniformly distributed across a unit square, with any given consumer's valuation of Network X being measured along the x-axis and the consumer's valuation of Network Y measured along the y-axis. See Figure C1.<sup>24</sup> Also assume, for purposes of this example, that the marginal cost of supplying a subscriber with either Network X or Network Y is zero.

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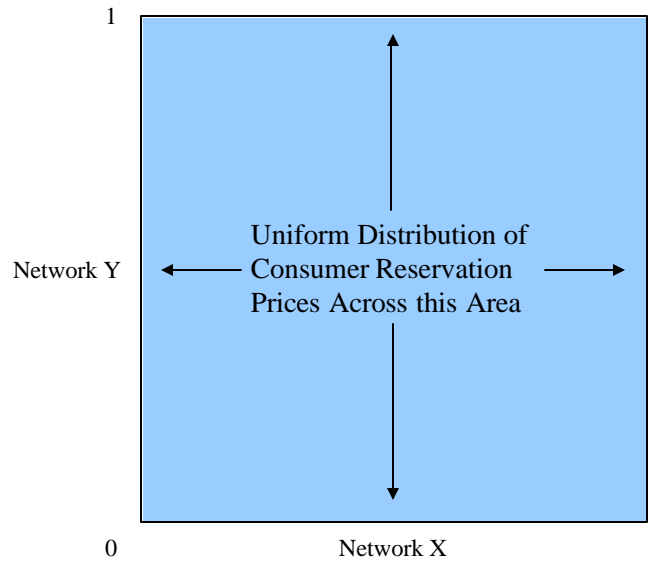
<sup>22</sup> Networks X and Y can be thought of either as individual cable networks or bundles of cable networks.

<sup>23</sup> The upper bound of the range is not important and does not affect the analysis.

<sup>24</sup> See Adams and Yellen, "Commodity Bundling and the Burden of Monopoly," *Quarterly Journal of Economics*, Vol. XC, No. 3 (August 1976), pp. 475-498.



Figure C1



### Pure Bundling

First consider the operator's profit-maximizing behavior under a pure bundling regime. The operator gets to select the profit-maximizing price for the bundle consisting of Networks X and Y. In setting the price, the operator knows that only those consumers whose combined valuation of Network X and Network Y exceeds the price set will purchase the bundle. Under the assumptions of this model, the profit-maximizing price is approximately \$0.82.<sup>25</sup> The profit-maximizing equilibrium is depicted in Figure C2. Consumers in region A value the bundle at less than \$0.82 and do not purchase it. In contrast, consumers in region B value the bundle at more than \$0.82 and subscribe.<sup>26</sup> Table C1 summarizes various characteristics of the pure bundling equilibrium.

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<sup>25</sup> Throughout this appendix, all numerical values in the text will be rounded to 2 decimal places and numerical values in tables will be rounded to 4 decimal places.

<sup>26</sup> Consumers on the line value the bundle at exactly \$0.82 and are indifferent about subscribing.

Figure C2

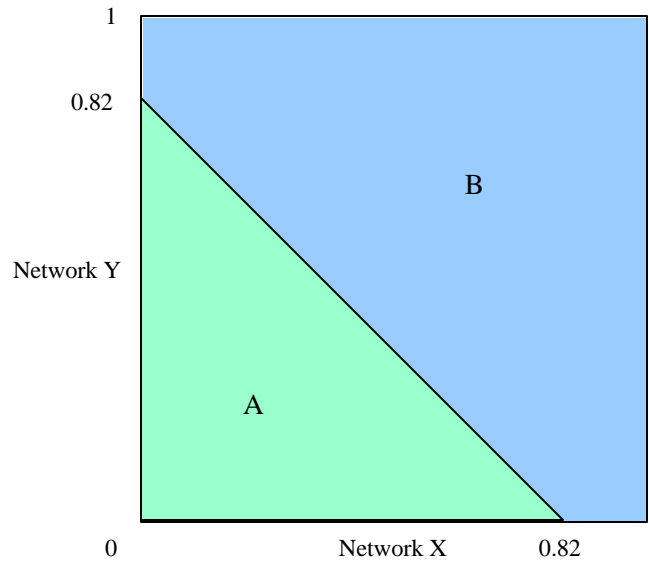


Table C1

Price Network X	N/A	Consumer Surplus	\$0.2742
Price Network Y	N/A	Social Surplus	\$0.8186
Price Bundle	\$0.8165	Subscribers to Network X	0.6667
Profit	\$0.5443	Subscribers to Network Y	0.6667

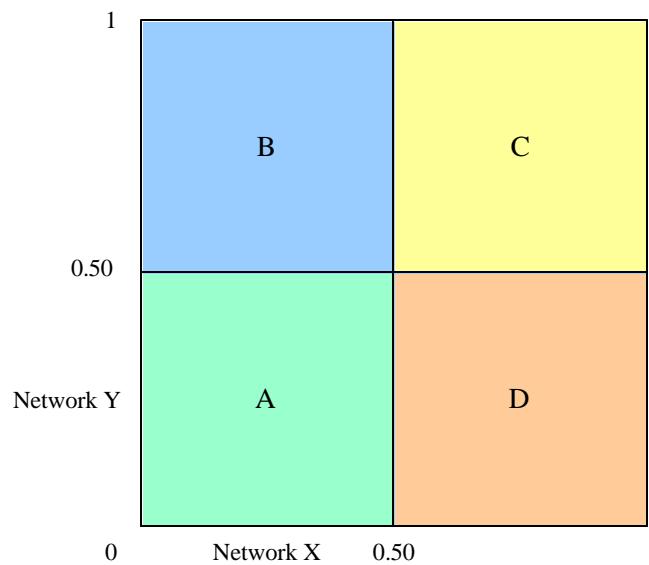
**A la Carte**

Next consider the operator’s profit-maximizing behavior under an a la carte regime. Now the operator selects the profit-maximizing prices for each network separately. In setting the price, the operator knows that only those consumers who value either Network X or Network Y in excess of the price set for that network will purchase that network. Moreover, the price set for one network, and whether a consumer subscribes to that network or not, does not affect the consumer’s decision about whether to subscribe to the other network.

Under the assumptions of this model, and due to the symmetry of the model, the profit-maximizing price for both Networks X and Y is \$0.50. The profit-maximizing equilibrium is depicted in Figure C3. Consumers in region A value each network at less

than \$0.50 and subscriber to neither network. Consumers in region B value Network Y at more than \$0.50 but value Network X at less than \$0.50, so they only subscribe to Network Y. Similarly, consumers in region D only subscribe to Network X since they value Network X at more than \$0.50 but value Network Y at less than \$0.50. Finally, Consumers in region C subscribe to both networks, since they value both networks at more than \$0.50. Table C2 summarizes various characteristics of the a la carte equilibrium.

*Figure C3*



*Table C2*

Price Network X	\$0.5000		Consumer Surplus	\$0.2500
Price Network Y	\$0.5000		Social Surplus	\$0.7500
Price Bundle	N/A		Subscribers to Network X	0.5000
Profit	\$0.5000		Subscribers to Network Y	0.5000

Under this example, a move from pure bundling to an a la carte regime reduces profit, reduces consumer surplus, reduces social surplus (defined as the sum of profit and consumer surplus), and reduces the number of subscribers to each of the networks.

## Mixed Bundling

Next consider the operator's profit-maximizing behavior under a mixed bundling regime. Now the operator selects the profit-maximizing prices for each network if sold separately and the price of the bundle. The operator sets each price realizing that the consumer will select the option that yields that largest consumer surplus. That is, for example, the consumer may value the bundle at more than the price of the bundle but will still choose to purchase only one of the networks if that option yields a larger surplus to the consumer.

Under the assumptions of this model, and due to the symmetry of the model, the profit-maximizing price for both Networks X and Y is \$0.67 and the profit-maximizing price for the bundle is \$0.86. The profit-maximizing equilibrium is depicted in Figure C4. Consumers in region A do not subscribe to either network or the bundle. Consumers in region B only subscribe to Network Y. This is because the surplus they receive from buying only network Y exceeds the surplus they get from buying the bundle. Similarly, consumers in region D only subscribe to Network X. Consumers in region C purchase the bundle. Table C3 summarizes various characteristics of the mixed bundling equilibrium.

*Figure C4*

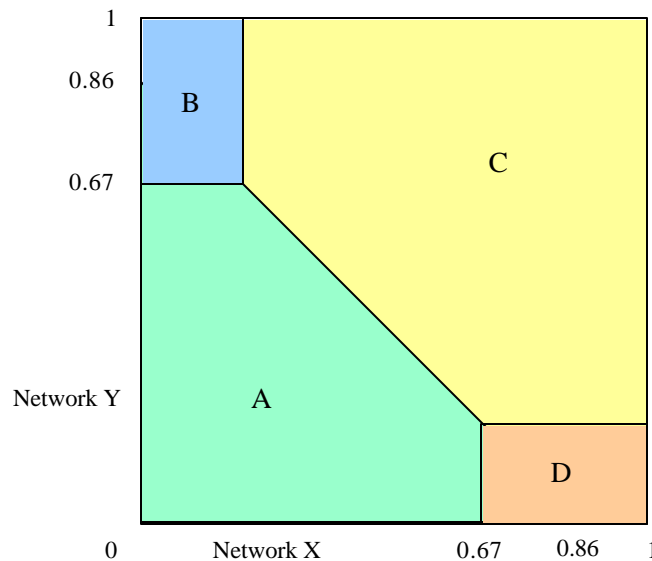


Table C3

Price Network X	\$0.6667		Consumer Surplus	\$0.2550
Price Network Y	\$0.6667		Social Surplus	\$0.8042
Price Bundle	\$0.8619		Subscribers to Network X	0.6016
Profit	\$0.5492		Subscribers to Network Y	0.6016

Under this example, a move from pure bundling to a mixed bundling regime increases profit, reduces consumer surplus, reduces social surplus (defined as the sum of profit and consumer surplus), and reduces the number of subscribers to each of the networks.

### **Impact on Consumers**

Figures C5 and C6 show how consumers fare under an a la carte regime or a mixed bundling regime relative to pure bundling. Some consumers are better off and others are worse off. In both figures, consumers in region A do not purchase either network under either regime. Consumers in region B purchase Network Y under a la carte or mixed bundling but neither network under pure bundling. In a similar fashion, consumers in region F purchase network X under a la carte or mixed bundling but neither network under pure bundling. These consumers are better off under a la carte or mixed bundling since they are subscribing to one of the networks whereas under pure bundling they did not.

Consumers in regions C1 and C2 only subscribe to Network Y, whereas they subscribed to both networks under pure bundling. Likewise, consumers in regions E1 and E2 only subscribe to Network X, whereas they subscribed to both networks under pure bundling. Consumers in C1 and E1 have a larger consumer surplus under a la carte or mixed bundling than under pure bundling. In contrast, consumers in C2 and E2 had a larger consumer surplus under pure bundling than under a la carte or mixed bundling.

Figure C5

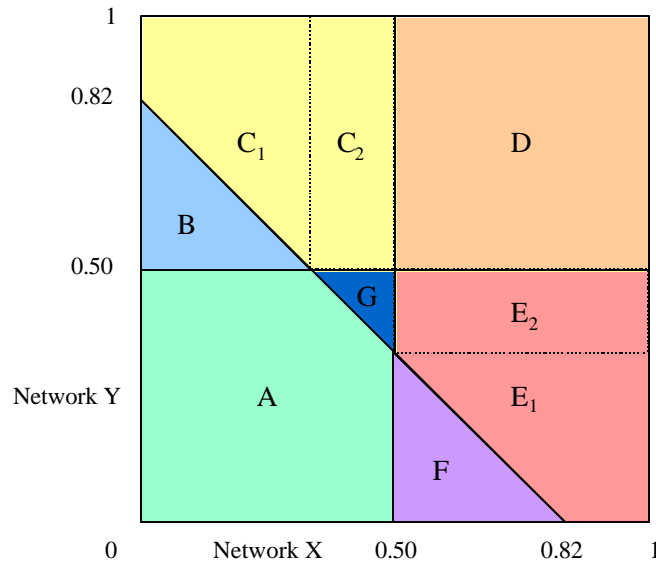
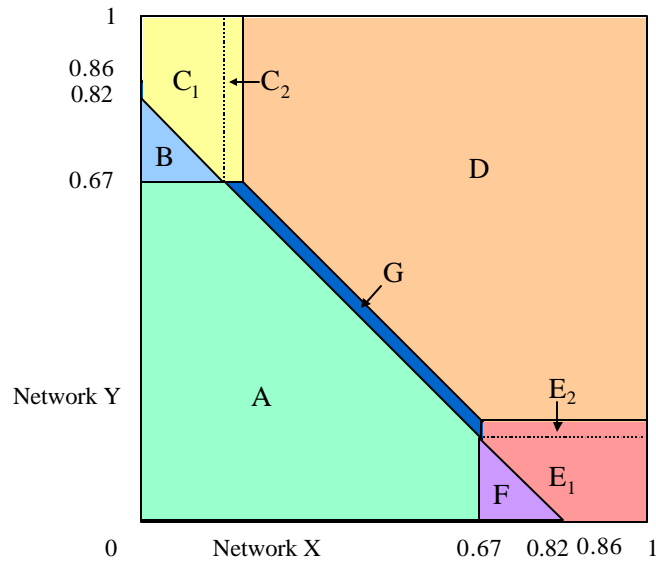


Figure C6



Consumers in region D subscribe to both networks, but pay a total of \$1.00 under a la carte or \$0.86 under mixed bundling compared to only \$0.82 under pure bundling. These consumers were better off under pure bundling.

Finally, consumers in region G subscribed to both networks under pure bundling but neither network under a la carte or mixed bundling. These consumers were better off under pure bundling.

In this example, a move from pure bundling to a la carte makes about 45.0 percent of consumers worse off, about 31.7 percent better off, and leaves 23.3 percent unaffected. A move from pure bundling to mixed bundling makes about 58.2 percent of consumers worse off, about 10.4 better off, and leaves 31.4 percent unaffected.