An Economic Analysis of Mandatory Leased Channel Access for Cable Television

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Because of the technical characteristics of cable television, subscribers are usually able to purchase cable services only from the single system that serves their local area. Moreover, subject only to limited government regulation, cable operators choose the services offered over most of their channels and the prices charged for them. As a result, questions frequently arise about whether operators exercise excessive control over the dozens of channels offered by modern cable systems to homes and businesses. Some observers have proposed that cable operators be required to lease channels at nondiscriminatory rates to independent programmers.

Under a grant from the John and Mary R. Markle Foundation, this study deals with the economics of mandated leased access. Its major objectives are to analyze existing access arrangements between cable operators and service packagers, the effects of current government regulation on access, the effects of mandated leased access on subscriber prices and the range of services offered, the problems of implementing a leased access arrangement, and the effects of technologies competitive with cable.

Under the terms of the Markle Foundation grant, an earlier draft was distributed to participants in a conference on leased access held in Washington, D.C., on October 4, 1982. The conference included policymakers, public interest group leaders, industry participants, and academicians. On the basis of the comments received at the conference and from other sources, this final report was prepared.
SUMMARY

About a decade ago, there was widespread support for the view that cable systems should be required to make all or a large portion of their channel capacity available to others on a leased basis. This policy was advocated because economies of scale in the construction and operation of cable systems made competing cable systems uneconomic. Many agreed that the advantages of these economies could be retained, while still permitting competition for the patronage of subscribers, if channel lessees rather than the system operator provided cable services.

Interest in mandatory leased access, or "separations" as it is sometimes called, waned during the remainder of the 1970s. Recently, however, renewed interest has been expressed in this approach with the removal of regulatory restrictions on cable service offerings and the construction of large-capacity systems in the nation's major markets.

The economic case for mandated leased access to cable rests on four premises: (1) that competition among cable systems in a given market is infeasible; (2) that service offerings will be improved, or prices to subscribers will decline, or both, if cable systems are forced to lease all or a large proportion of their capacity to independent packagers; (3) that the regulatory costs of implementing a scheme of mandated leased access are smaller than the associated benefits; and (4) that competition from firms using other technologies--subscription television stations, multipoint distribution services, direct broadcast satellites, telephone companies, etc.--are inadequate to constrain the market power of the single cable system in a market.

This report is an analysis of the economic case for mandatory access. It briefly examines the evidence supporting the contention that only a single cable system is feasible in each market. It then analyzes in detail how various forms of mandated leased access affect service offerings and prices. Next, it identifies the regulatory problems that arise if leased access is mandated. Finally, it emphasizes the importance of competition from firms using other technologies as constraints on cable's market power.
With respect to the first premise above—that competition among cable systems within a given market is impossible—the evidence suggests that the economies of scale in cable construction and operation are sufficiently great to preclude competition in the foreseeable future. Cable operators are likely to retain monopolies within their franchise areas although, of course, they will face competition from other modes in delivering video, voice, and data services.

The second premise—about the effects of mandated access on service offerings and subscriber prices—is the focus of most of our analysis. Formal leased access arrangements between cable system operators and program packagers are currently rare. Moreover, in only a few cases—where advertising revenues are collected by program packagers—do packagers pay explicit access charges to operators. In fact, cable operators generally pay packagers for programs other than those on retransmitted broadcast signals. Typically, these parties enter into agreements in which the packager makes the programming available in return for a flat per-subscriber payment or for a payment that depends on the per-subscriber revenues generated by the program package. In these cases, there is an implicit access charge paid for the carriage of a packager’s programs. This implicit charge is equal to the operator’s subscriber revenues from the package minus the payment he makes to the packager. If, instead, the packager rather than the operator collected subscriber fees, the packager would pay an explicit access charge equal to this amount. He would remit to the cable operator the gross revenues minus the amount he would retain to cover his program packaging costs. However, because it is less costly for the cable operator to deal directly with subscribers, implicit rather than explicit access charges prevail today.

These implicit payments vary widely among program packagers ranging from about $3 to $5 per subscriber for a popular movie channel down to only a few pennies per subscriber for some cable networks carried as part of the operator’s basic service. Since these implicit payments vary among program packagers, it is useful to regard the present system as one in which cable operators make their capacity available on a discriminatory basis.
By contrast, advocates of mandatory leased access would require the operator to lease his capacity in return for explicit and nondiscriminatory payments from packagers. Under this arrangement, all packagers would deal directly with subscribers to obtain revenues from which to pay access fees.

Our analysis indicates that outcomes depend upon numerous assumptions, including those about (a) the degree to which programs carried are substitutes for or complements to each other, (b) whether the cable operator is free to set the nondiscriminatory rate or whether it is regulated by a government agency, and (c) whether the operator is required to lease all or only a portion of his capacity in excess of that required to carry broadcast station signals or dedicated to specific purposes (such as public access) required by local franchise agreements.

We conclude that, whether or not access rates are regulated, some services offered today are unlikely to be carried where nondiscriminatory leased access is mandated. Basic cable networks that pay very small access fees are the ones most likely to be discontinued. With mandatory nondiscriminatory access, the access rate set by a profit-maximizing cable operator, or a regulated rate sufficient to cover the operator's total cost, would exceed the amount that some of today's packagers could profitably meet. At the same time, the prices to subscribers for current services that continue to be carried will likely fall, while some services not now carried (particularly those competitive with current, popular, pay-movie channels) might be able to afford nondiscriminatory access charges and therefore would be added.

More specifically, if cable operators are unable to discriminate among program services, contrary to current practices, services that attract relatively small numbers of viewers would be unable to cover the nondiscriminatory access fees that would maximize the operator's profits. If rates are regulated and set to cover the operator's total cost—which requires that the per-channel rate be equal to his average per-channel cost—the nondiscriminatory access rate would fall. But it would still be higher than some of today's services would likely be able to afford: The cable operator who is free to discriminate may carry
services that cover their marginal channel costs, but not the higher average channel costs on which regulated rates would be based.

Under partial separations, the cable operator would be required to lease only a portion of his channel capacity. In setting the access fee for the channels he must lease, he will take into account the effect of competition from lessees on the profits from his own channels. As a result, the access fee will be higher than if the operator were required to lease all of his channels.

If the costs of regulation are ignored, the regulation of access rates can reduce the effect of mandating nondiscriminatory leased access on those program services reaching small numbers of viewers. Compared with the case where the nondiscriminatory access fee is unregulated, if access fees are required to equal the average cost of operating a channel, fewer services will be adversely affected by the leased access requirement. Moreover, the prices for those services that remain will be lower than those the operator would have charged for them.

Our estimates of the implicit access fees paid by some existing program services indicate that probably only the most attractive movie packages would be able to pay the nondiscriminatory access fee that cable operators would charge if access fees were unregulated. Paradoxically, it is those program services catering to small audiences, which advocates of mandated leased access wish to promote, that are likely to be affected most adversely. This problem will be exacerbated by the high costs of metering viewing that characterize today's cable technology.

Assessment of the potential benefits of mandatory access depends in part on the degree to which current regulatory schemes, particularly those embodied in local franchise agreements, encourage or discourage the cable operator from providing expanded access. The effects of a particular regulation or requirement depend on whether it changes either the marginal revenues or costs to the cable operator of carrying a service in question.

For example, the cost of competing for and obtaining franchises, involving such items as expenses incurred in preparing and defending franchise applications, providing public access studios, and contributing to local charities, do not directly affect the operator's
decisions about channel capacity or services because, being lump-sum costs, they do not affect his marginal costs and revenues. In contrast, access is directly affected by regulations that place limits on subscriber rates, impose franchise fees, mandate minimum channel requirements, require the dedication of channels for specific services, or impose technical standards. For example, the imposition of franchise fees, by reducing the after-tax marginal revenue to the cable operator, tends to reduce the number of services he is willing to carry by making them less profitable than otherwise.

Although strict regulation of subscriber rates would tend to increase access, we find that cable operators are presently much less constrained in setting subscriber rates than is true of participants in industries subject to common carrier regulation. We conclude that rate regulation has had rather little effect on the prices of basic and pay services. Mandating minimum channel requirements encourages expanded access by reducing the operator's marginal cost, since he would need to cover only the costs of operating the additional channels he would be forced to construct under the requirement.

The dedication of channels for specific purposes, such as public access, may or may not affect access for other services, depending on the specific assumptions discussed in our study. Imposition of technical standards higher than those the cable operator would voluntarily have chosen affect access primarily by reducing the cost of carrying services that benefit from the technical standards (such as high-quality two-way service).

All of the above types of regulation impose costs on the cable operator, however. Whether these costs are more than offset by benefits to the public remains an open question.

With respect to the third premise—the costs and benefits of regulating access charges and assuring that access is nondiscriminatory will create formidable difficulties for regulators. Determining recoverable costs and the allowed rate of return, and allocating costs among services, will consume substantial resources. Moreover, it will be difficult to prevent the operator from discriminating among packagers indirectly. Finally, to the extent that it is desired to promote discrimination, in
order to prevent the elimination of services desired by small numbers of
viewers, defining program classes entitled to preferential access rates
will add substantially to the burden of regulators.

With respect to the fourth promise—relating to development of
technologies competitive with cable—achieving the benefits sought by
mandating leased access will clearly entail substantial regulatory
costs. Some have argued that these costs should not be incurred
because, contrary to what was believed when mandated access was
initially proposed, cable faces many competitors using other
technologies. However, it is impossible to determine at this time
whether these competitors, just now entering the market, will make
sufficient inroads to constrain the behavior of cable system operators.
If they fail to do so, mandated leased access, with all of its
shortcomings, will be an important policy alternative.
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I. INTRODUCTION

In the early 1970s, a number of proposals were made to require cable television systems to lease to others all or a large portion of their channel capacity. Under these plans, variously dubbed "common carriage," "vertical disintegration," or "mandated leased access," a substantial proportion of the services available to cable subscribers would be provided not by the owners of the systems but by entities that lease time on cable systems and compete with other channel lessees, and perhaps the operator, for subscriber and advertiser support.

A number of advantages were claimed for the common carrier proposal. Principal among these was Owen's claim that it would allow "the carrier to take advantage of economies of scale in the transmission process, and at the same time provide an opportunity for considerable competition among message sources...."[1] In a similar vein, the Sloan Commission on Cable Communications, while rejecting full common carrier status for cable during its early years, proposed that all but two of the channels not mandated by regulation for other uses be available for lease by others in order to ensure "diversity and widespread access by a myriad of voices not subject to the control of the cable system owner."[2] The Committee for Economic Development proposed that cable systems be permitted to control or originate programming on only a limited number of channels and be required to demonstrate that they were not denying access to would-be lessees because, otherwise, "as cable systems mature, there will be increasing incentives for the owner to try to monopolize the system."[3] And the American Civil Liberties Union argued that "a cable operator who is also in the programming business is under pressure to increase profits by discouraging programming from other, independent sources."[4]

Common carriage, or mandated leased access, also received support in official circles. In its 1972 rulemaking that permitted cable systems in the major markets to retransmit distant broadcast signals, the FCC imposed a requirement that systems make available a limited number of channels for lease by others.[5] However, this was subsequently struck down by the courts on the grounds that similar requirements could not be imposed on broadcasters.[6] As a result, no federal requirement currently mandates leased access.

Interest in cable common carriage within the federal government peaked in 1974 when a Cabinet Committee report strongly endorsed the concept.[7] With two important qualifications, the Committee advocated complete separation of the ownership of cable systems and the provision of programs over cable channels. Apparently as part of a political compromise, the Committee would have permitted the cable operator to program "one or two" of its own channels. In addition, the Committee recommended that common carrier status not be imposed until the industry had matured, which it indicated would occur when cable penetration had reached 50 percent of television households. Subsequently, a report of a House Subcommittee staff strongly endorsed the Cabinet Committee proposal.[8]

After this spurt of interest, the question of access to cable faded while more pressing issues, those involving distant signal carriage, syndicated exclusivity, and pay-cable, occupied the attention of policymakers. Recently, however, there has been renewed interest in the concept of mandated leased access, or "separations," as it has come to be called. Concern that cable systems might limit access to their

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[5] 36 FCC 2d 241 (1972). This was in addition to three channels mandated for free access by the public or by governmental bodies. The requirement was imposed only on systems with at least 3500 subscribers.
channels has been expressed by representatives of the National League of Cities.[9] A petition to the FCC urged the Commission to adopt rules that would "limit the number of channels over which the system can control content and determine eligibility for use of the remaining channels."[10] And legislation introduced only this year would have had the FCC "require cable systems having twenty or more television broadcast channels . . . [to] set aside . . . 10 per centum of such channels for use by leased channel programmers."[11]

Not surprisingly, the cable industry has vigorously opposed the separations proposal.[12] Indeed, one of the bills introduced to amend the Communications Act would have explicitly prevented classification of cable systems as carriers, thus precluding the imposition of leased channel requirements by states or localities.[13]

This report is an economic analysis of mandated leased access. As the following sections make clear, "separations" is neither a single concept nor would its adoption be a panacea. Moreover, its implementation would raise a number of difficult regulatory issues. Our analysis is intended to analyze how various forms of separations might work, what regulations would be required to implement a policy of mandated leased access, and how successful mandated access would be in achieving its goals.

Our study is structured to reflect the fact that the economic case for mandated leased channel access to cable rests on four premises:[14]

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[14] A host of legal, perhaps even constitutional, issues arise that must also be considered in any complete evaluation of the access proposal. Here, we confine our attention to its economic effects. For a useful discussion of the access question from a noneconomic perspective, see D. L. Lange, "The Role of the Access Doctrine in the
(1) Economies of scale exist in the construction and operation of cable systems so that the cost of a single system with a given number of channels is smaller than the cost of two or more systems with the same combined capacity.

(2) Mandating leased access will produce lower prices to cable subscribers, or a wider variety of service offerings, or both, than would a system in which the operator determines the services to be provided and the prices to be charged.

(3) The costs of the regulatory system required to implement the leased access requirement are smaller than the gains to subscribers from imposing it.

(4) The actual or potential presence of alternative suppliers of the services that cable provides—over-the-air broadcasters, subscription television stations, multipoint distribution services, direct broadcast satellites, videocassettes, telephone companies—is insufficient to constrain the market power of the cable operator, so that he is able to set prices for his services that exceed their costs.

An access requirement cannot be justified on economic grounds if there are no scale economies in system construction and operation (in which case competitive cable systems would be feasible in the same area), or there are no reductions in prices or improvements in service offerings from mandated leased access, or the costs of implementing the requirement are very large, or other suppliers constrain the market power of even a "monopoly" cable system. This study addresses all four of these considerations.

Section II briefly discusses past regulation of the cable industry, including the regulation of access. It defines the "access question" and shows how some previous attempts to characterize it are erroneous. It also addresses the question of whether economies of scale exist in the construction and operation of cable systems (point 1 above). Section III examines existing relationships between cable systems and

service packagers. Although few of these arrangements are styled as channel leasing, all of them can be thought of as involving implicit access charges paid by packagers to cable systems. This section also examines the effects of regulations—such as those involving minimum channel capacity requirements and requirements that channels be dedicated for public purposes—on the terms and conditions under which access is provided. Section IV provides an economic analysis of the effects of various types of mandated leased access arrangements on the service offerings and prices available to cable subscribers (point 2 above). This section highlights how the performance of cable in serving viewers is sensitive to the regulatory arrangements surrounding leased access. Finally, Sec. V analyzes problems that would be faced by government regulators in implementing a leased access requirement (point 3 above). It also addresses the issue of whether competition from other technologies is likely to so constrain the market power of cable systems that the need for mandated leased access would be removed (point 4 above).
II. CABLE REGULATION AND THE ACCESS QUESTION

Until recently, the cable television industry consisted largely of many small systems, each with a limited channel capacity, whose principal offerings were a few retransmitted broadcast signals to areas with poor over-the-air service. Today, however, with the regulatory shackles that bound the industry almost entirely removed, cable is coming to the major cities with proposed channel capacities numbering in the dozens and proposed offerings going far beyond those available to over-the-air viewers.[1]

As long as cable systems made available to their subscribers all of the limited number of services that FCC rules permitted, the issue of whether those services were provided by channel lessees or the operator himself was relatively unimportant.[2] Indeed, early in its deliberations on the appropriate regulatory treatment of cable, the FCC rejected a proposal that it regulate cable systems under the common carrier provisions of the Communications Act.[3] Subsequently, the Commission reaffirmed this position in its "Inquiry into the Impact of Community Antenna Systems, TV Translators, TV 'Satellite' Stations, and TV 'Repeaters' on the Orderly Development of Television Broadcasting."[4] Now, however, with the potential for a substantially widened offering of services, resulting both from removal of regulatory restrictions and the growth of system capacities, the access question is more pressing.

[2] It was important insofar as the prices at which services were available to viewers might differ between the two cases. But this factor was not sufficient to focus attention on the access question.
THE CABLE INDUSTRY AND ITS REGULATION

Almost from the time it started carrying distant broadcast signals into areas already served by local stations, cable television was subjected to restrictions on the services that it could offer. In 1962, the FCC denied authorization for a microwave relay system that would have been used to import distant signals into a market served by local broadcasters.[5] In 1965, the Commission imposed conditions on the authorization of microwave facilities to serve cable systems which, in effect, limited the number of distant signals that these systems could carry.[6] Starting in 1966, all cable systems in the major markets, whether using microwave relays or not, were severely constrained in retransmitting the signals of stations from other markets.[7] In 1970, the Commission added to its distant signal carriage rules an extensive set of restrictions on services that cable could offer in return for direct subscriber payments.[8] These anti-siphoning rules placed restrictions on movies, sports, and series programming that could be provided by cable on a direct pay basis. In all these cases, the principal rationale for the rules was that, unless cable were somehow constrained, local broadcasters would be harmed to the point of being unable to fulfill their public interest obligations.

In 1972, the logjam began to break when the Commission relaxed its distant signal carriage rules to permit, in effect, two imported signals to be carried by cable into most of the major markets.[9] However, other restrictions remained: a "leapfrogging" rule that confined imported signals to those from nearby markets, and a "syndicated exclusivity" rule that required the deletion of programs on imported

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signals for which local stations had obtained exclusive contracts. But the distant signal carriage rules were significantly less restrictive than those the Commission had adopted in 1966.

Later, the Commission granted exceptions to its rules and in various ad hoc ways limited their effect. Under the rubric of "reregulation," it permitted the importation of distant signals beyond those specified in its 1972 rules during times when local stations were not on the air.[10] In some cases, it accepted showings by cable systems that grants of a waiver of the carriage rules would have little or no effect on local broadcasters.[11] In 1976, it deleted its "leapfrogging" rules so that cable systems could choose the most attractive signals available for retransmission, regardless of where they originated.[12] This deletion facilitated the development of "superstations"--independent stations in major markets whose program offerings were carried by many geographically dispersed cable systems.

In the following year, an even more important development occurred, although here the initiative came from the courts and not the FCC. In the Home Box Office case,[13] the Court of Appeals for the District of Columbia struck down the Commission's anti-siphoning rules, in part on the grounds that the Commission had failed to show that such restrictions on cable were in the public interest. The result was to change pay-cable from an industry whose development was severely hampered by regulation to one which, since the Home Box Office decision, has exhibited explosive growth. Finally, in 1980, the Commission deleted its distant signal carriage and syndicated exclusivity rules.[14]

The emergence of "superstations," the expansion of pay-cable services, and the development for cable of service offerings not supported directly by subscriber fees, were greatly encouraged by a

series of decisions the Commission took in the early 1970s to open the market for domestic satellite services to competition.[15] In response, the number of companies providing satellite services and the number of available transponders have markedly increased. About 90 transponders are now devoted to video program distribution. Another 90 transponders will be added by 1985 if all proposed satellites are launched and the proportion of transponders devoted to video transmission does not change.[16]

At the same time, technological developments have reduced significantly the costs of satellite transmission and earth-station ownership, and the latter trend has been assisted by FCC decisions that have reduced or eliminated the regulation of receive-only earth stations. Together, these developments have led to the creation of program "networks" to serve cable systems as "affiliates."

A recent report lists 11 advertising- and subscriber-supported cable networks, reaching more than 60 million homes (ignoring overlap), over an average of 1,000 cable systems.[17] The same report indicates that the top ten pay-cable services had a total of over 10 million subscribers and appeared on an average of approximately 500 systems.[18] In 1970, none of these services existed, nor were any of the major market independents that are now viewed as "superstations" widely available to cable systems.

Finally, only about 6 percent of all cable systems had more than 12 channels in 1971.[19] In 1980, almost half of all systems had capacities exceeding 12 channels, and 13 percent of all systems had more than 30 channels.[20] Moreover, proposals for new franchises routinely

[18] Ibid., p. 74.
[20] Compiled from FCC data.
contain promises for channel capacities many times that amount. For example, the successful bidder in Dallas, Warner Amex Cable, is committed to the construction of an 80-channel system for subscribers in addition to a 54-channel institutional network;[21] Mile Hi, the winner in Denver, will build a 110-channel system;[22] and the successful bidder for the Fairfax County, Virginia, franchise, Media General, will offer 126 channels.[23]

THE ACCESS QUESTION

With the restrictions on cable service offerings now largely eliminated, and large-capacity systems soon to be built in all of the nation's major cities, the access question has reemerged. Simply put, should cable system operators be permitted to control the content of all of their channels, or should they be forced to lease some or all of their channel capacity to others? Advocates of mandated leased access argue that, without such a requirement, cable systems will possess substantial market power through their control of a large portion of the channel capacity available in many areas. A cable system with such control could, they argue, unduly limit the types of programs available to subscribers and charge excessively high prices for those services that it offers. Moreover, apart from the economic issues involved, supporters of mandated access argue that it is poor public policy to vest control in a single entity over such a large number of outlets in the "market for ideas," because of the threat that such control could be used to limit the range of viewpoints expressed.

The access question is hardly new, of course. In the early 1970s, all the major groups that addressed the appropriate scope of regulation of the cable industry advocated some form of leased access. The Sloan Commission, for example, proposed that cable system owners be permitted to operate only two of their channels and that others be mandated for particular users or made available for leasing on a nondiscriminatory basis.[24] The Commission did not address the question of whether and how access rates should be regulated.

[22] Ibid., March 1, 1982, p. 34.
At about the same time, the Committee for Economic Development (CED), as part of a wide-ranging analysis of telecommunications policy, concluded that cable systems should be permitted to program only a limited number of their channels and should be required to demonstrate that they were not denying access to potential channel lessees. [25] As in the case of the Sloan Commission, the CED was unspecific about the regulatory regime that it would have imposed. Exactly what a "limited" number of channels meant was unclear, precisely how a system could "demonstrate" that it was not denying access was unspecified, and the Committee was silent on whether access charges would be regulated.

The idea that all, or a significant portion, of the channel capacity of cable systems should be made available to others on a leased basis received its most prominent support in the Cabinet Committee report. [26] Notably, the report, which advocated almost complete "separations," concluded that there would be no need to regulate access charges. But it provided little to support this position. [27]

In its 1972 cable rules, the FCC also imposed an access requirement. As part of its attempt to induce cable systems to do more than simply retransmit broadcast signals—in addition to its requirements for minimum channel capacity, program origination, two-way capacity, and access channels to be set aside for free use by the public, local governments, and educational institutions—the Commission also required that cable systems make available a portion of their channel capacity on a leased basis. The Commission’s rule required that each system having 3,500 or more subscribers shall maintain at least one specially designated channel for leased access uses. In addition, other portions of its nonbroadcast bandwidth, including unused portions of the specially designated [public, educational, and local

[26] Ibid.
[27] "Rate-of-return regulation of the rates which cable operators charge channel users should not be imposed by any level of government unless there is a clearly defined need for it." Ibid., p. 42.
government access] channels, shall be available for leased access. On at least one of the leased channels, priority shall be given part-time users.[28]

The Commission ultimately modified or abandoned its attempt to impose many of these requirements, on the grounds that their existence unduly raised the costs of constructing and operating cable systems.[29] However, the access requirement was not lifted until the Commission's jurisdiction was challenged in FCC v. Midwest Video Corp.[30] In that case, the Supreme Court struck down the access requirement, as well as the requirement that cable systems have a minimum capacity of 20 channels. The majority of the court held that the access requirement was tantamount to treating cable systems as common carriers. It held that since the Communications Act explicitly prevents the FCC from treating broadcasters as common carriers, and since cable system functions are in many respects analogous to those of broadcasters, no common carrier requirements could be placed on cable systems by the Commission.[31]

As the FCC moved from re-regulation to deregulation, first easing and then eliminating its distant signal carriage and anti-siphoning rules, issues of industry structure, including the access question, receded into the background. Recently, however, there have been a number of new proposals for mandated leased access. Prominent among the advocates is Henry Geller, former Assistant Secretary of Commerce for Communications and Information. In a petition with Ira Barron to the FCC,[32] Geller proposed that "any cable channels in excess of the

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[28] CFR, Title 47, Sec. 76.254(a)(4).
[31] The minority argued that, since the access requirement served the statutory objectives, it was permissible for the Commission to impose it.
minimum permitted for broadcast like purposes shall be authorized for use by the cable system only for common carrier service."[33] Geller and Barron would impose the requirement only on systems with at least 30 channels and would have the operator reserve a percentage of his capacity for potential lessees.[34] For example, systems with between 30 and 49 channels would be required to lease from 5 to 10 percent of their capacity, while those with 100 or more channels would be required to comply with a figure of 20 to 25 percent. Significantly, they argued that there was "no need for the Commission to concern itself with the reasonableness of the carrier's lease charges--so long as they were nondiscriminating."[35]

The Geller-Barron proposal received support in comments filed by the National League of Cities at the FCC.[36] The League argued that, since cable operators have an economic incentive to deny access to some programmers and to charge monopoly prices, the FCC should adopt regulations to guarantee third-party access to cable systems. It argued, further, that the Commission should not preempt access requirements that might be adopted by states and localities.

In legislation introduced in the Senate earlier this year, provisions similar to those proposed by Geller appeared. Senate bill S. 2172 initially would have had the FCC mandate leased access to 10 percent of the channels of cable systems with 20 or more channels.[37] And, echoing the argument that regulation of access rates was not required, the bill provided that neither the federal government nor the states or localities could "establish, fix, or otherwise restrict, the rates charged channel programmers by cable system operators."[38] Subsequently, the bill was amended and its access provision changed so

[33] Ibid., p. 32, footnote omitted.
[34] Ibid., pp. 50-51.
[35] Ibid., p. 35. However, they did hold out the possibility that the Commission might regulate rates if "any substantial unreasonableness should develop."
[38] Ibid., Sec. 607(c). A bill introduced shortly thereafter, S. 2445, to Amend the Communications Act of 1934 Regarding Cable
that the operator of a system with 20 or more channels would be required to "dedicate or set aside for access, from available channels . . . 10 percent of such available channels for use by other channel programmers."[39] The operator would have complete control of these channels.[40] The revised version subsequently passed the Senate Commerce Committee.

WHAT THE ACCESS PROBLEM IS NOT

Confusion surrounds the nature of the problem that mandated leased channel access is supposed to solve. Both proponents and opponents of mandated access have characterized the problem incorrectly and, in so doing, have either embraced it or rejected it for the wrong reasons. Before proceeding with our own analysis, we hope to clear up some of this confusion by discussing why these characterizations are misleading or wrong.

"Mandated Access Is Not Needed Because the Range of Cable Services Is Growing Rapidly"

Opponents of mandated leased access, in particular the cable industry itself, are fond of pointing to the rapid growth of the services that cable systems provide as evidence that mandated leased access is not necessary. Moreover, they contend that this trend will continue as large-capacity systems are constructed in major markets and as existing limited-capacity systems are rebuilt. Finally, they emphasize the rapid increase in the supply of program packages from which cable operators may choose as evidence that the present system is working well. In this connection, they point to the specialized ethnic,

Communications, and for Other Purposes, April 27, 1982, took a different approach. It would permit the FCC to order access to a cable system on a nondiscriminatory basis if it finds that access has been denied, that such denial was unreasonable and was intended to restrict competition, that the cable system was an essential facility, and that the cable system effectively is the exclusive means to deliver a service.

cultural, and news and public affairs services now available to cable systems.

That argument does not address two important facets of the access question, however. First, all the comparisons made are between cable offerings now and those in the past. With technical progress in system construction and satellite interconnection, and with the elimination of FCC rules, especially the "anti-siphoning" rules for pay-cable, such comparisons are obviously favorable to cable. The access issue, however, does not pertain to cable's past and present under the existing industry structure, but to how cable system offerings would compare between mandated leased access and the current situation in which the cable operator makes all programming decisions. The mere fact that cable systems are offering substantially more services than they did in the past is, by itself, insufficient for rejecting the notion of mandated access since the issue remains of whether its adoption would lead to even greater availability of services.

Second, this argument neglects the prices at which services are available to cable subscribers. The availability of a wide range of offerings at prices that discourage many subscribers from taking them may be inferior to a situation in which a narrower range of offerings at lower prices is available. Of course, this does not imply that lower prices would necessarily emerge under leased access, but only that a comparison that fails to take service prices into account is necessarily incomplete.

"Mandated Leased Access Is Not Needed Because Cable Operators Have a Strong Incentive to Serve Subscriber Needs"

Cable operators frequently argue that they need not be required to provide access because they already have incentives to provide the best possible services to their subscribers. Recently, Thomas E. Wheeler, President of the National Cable Television Association, argued that "cable operators have every incentive not only to keep the customers they now have, but to attract as many more as possible. To do this, operators must offer the right mix of programming at the right price."[41] Similar statements appear in an FCC Staff Report examining

[41] Statement before the Subcommittee on Communications, Committee
FCC policies on cable ownership. The staff argues, for example, that: "Any cable system owner must be responsive to the demands of subscribers in order to make profits."[42]

These statements are either incorrect or misleading. Although it is true that, in a sense, cable operators provide services that their customers desire (otherwise they would not survive), it is not true that they have "every" incentive to offer the "right" mix of programming at the "right" price or, for that matter, to attract as many customers as possible.

If a cable operator has any market power at all (i.e., if he can raise his prices without losing all of his subscribers), maximizing the number of subscribers is not equivalent to maximizing the system's profits. To be sure, as subscriber fees rise some customers will not purchase services that they would have chosen at lower prices. But the higher price collected from the remaining subscribers and the reduction in costs that results from serving a smaller number of subscribers will, over some range, more than offset the reduction in subscribers, leaving the system with larger total profits.

Just as any other firm does not wish to maximize the number of units of output that it sells, neither would a cable system with market power wish to maximize the number of its customers. We are not suggesting here that cable systems have market power but only that, if they do, their incentives are not necessarily to provide "the right mix of programming at the right price."

---

"Mandated Leased Access Is Not Needed Because Cable Systems Provide All Available Services"

Sometimes it is argued that mandated access is unimportant because cable systems presently offer all services that are available to them. Since no services are available that are not being provided, nothing is to be gained, it is contended, by mandating access.

Apart from whether this argument is factually correct, the conclusion derived from it is not. As we noted earlier, the prices cable subscribers must pay are as relevant as the services they are offered. Even if a cable system provided all available pay television packages to its subscribers, subscribers might be better off if these services were provided in a market where packagers competed for audience than in a market in which the cable operator determined the prices charged for all services. This conclusion, supported more rigorously by the analysis in Sec. IV, emerges because, in determining his prices, a cable operator controlling all of his channels will realize that although a reduction in the price of a given service may attract new customers, it will also draw customers from his other services. In calculating his net gain, therefore, the operator will take into account any losses from his other services. Thus, the cable operator's incentives to reduce prices will generally be weaker than those of competitive channel lessees, for whom all additional customers are either new subscribers or are the patrons of other packagers. Consequently, for the same set of services, the cable operator's prices will be higher than those charged by competitive channel lessees. Even if all available services are provided by cable systems, this is not, by itself, evidence that mandated access would not improve the situation for consumers, since competition among lessees will lead to lower service prices.

"Mandated Leased Access Is Not Needed Because Few Firms Are Demanding Access"

It is sometimes contended that mandating leased access is unnecessary because there is no evidence that there are program services that cannot obtain access to cable systems.[43] This argument is

[43] However, one program supplier, Optical System, Inc., has filed
deficient for a number of reasons. First, firms that would lease
channels if they knew that leases were available may not even exist if
access is not assured. Second, packagers who favor access requirements
may be reluctant to propose them for fear that, if they are
unsuccessful, they will have difficulty selling their services to the
cable industry. Finally, existing program packagers and cable systems
may both benefit from the present system at the expense of the viewing
public. To the extent that access to cable is limited, subscriber
prices may be higher than otherwise. This may increase the profits to
be divided among cable systems and suppliers of any resources that are
able to produce especially large cable audiences. If existing resource
suppliers benefit from the current system at the expense of would-be
newcomers, it is hardly surprising that existing suppliers are not
demanding expanded access.

"Mandated Access Is Needed Because Cable Operators Will Vertically
Integrate into Program Packaging to Exclude Competitors"

The final argument we wish to deal with is advanced by those who
favor mandating leased access. According to this argument, unless cable
systems are forced to lease all or a substantial portion of their
channel capacity to others, they will favor their own program services—
those in which they have an ownership interest.[44] Moreover,
independent program packagers, those without cable system holdings, will
be at a competitive disadvantage and cable system operators will be able
to extend their local monopolies into program packaging. For this
reason, it is argued, mandated leased access is required.

In analyzing this claim, we must first examine the factual premise
underlying it. Many of the cable services discussed in Sec. IV are
provided by firms with little or no cable system ownership. Services
such as ESPN, CNN, and SIN, for example, are provided by such firms.

an antitrust suit against Comcast Cablevision Corp., the cable operator
in Flint, Michigan, alleging that it denied access to Optical's pay-
program service, Channel 100, in favor of a joint venture with Home Box
Office. See "Disenfranchised Pay Supplier Strikes Back," Broadcasting,
April 28, 1980, pp. 59-60.

[44] See, e.g., Comments of National League of Cities, In Re FCC
Second, many cable system operators, even those serving large numbers of subscribers, obtain all of their program offerings from firms in which they are not co-owners. At the same time, all of the major pay-cable packagers do own cable systems serving large numbers of subscribers.

A more general question is, Why would a cable operator be expected to integrate into program packaging? There are three possible reasons. First, it is argued that, to the extent that rates for local service are regulated, a vertically integrated subsidiary provides a possible means through which to escape the effects of regulation. If rates for local service were cost-based and regulators were not able to detect inflated costs, vertical integration would permit a packager to inflate the prices at which he "sells" programs to his co-owned cable system and therefore permit prices to subscribers to be increased. The problem with this argument today is that rates for local service are not effectively regulated and, indeed, for pay services there is a prohibition against the imposition of local rate control.[45]

A second possible reason for vertical integration is attempted monopolization of the program supply industry. For monopolization to be a plausible strategy, however, a cable operator must serve a sufficiently large share of cable subscribers that his programming decisions can affect the viability of independent packagers. If an integrated cable-system program-packager succeeded in driving rival packagers out of business, the combination would then possess market power in its dealings with other cable systems.[46] However, a cable operator who drives rival program packagers out of business would gain market power only in the share of the market in which he does not own systems. As long as program packaging is competitive, the cable system will capture any excess profits in its own markets whether or not it is vertically integrated. Moreover, to the extent that a cable system operator is not as efficient a packager as are others, profits in his


[46] This ignores the fact that the packager can choose to market his programs through distributors using other technologies, e.g., STV, MDS, DBS.
own markets will decline if he vertically integrates, and this loss must be smaller than his gain in other markets for him to pursue an exclusionary strategy. In any event, no multiple system operator (MSO) seems to have a large enough market share for him to extend his market power into the packaging market. TCI, the largest MSO, has about 2.1 million subscribers, or only about 9 percent of the subscriber market.[47]

A final reason that a cable operator might integrate into program packaging is that he is more efficient than other packagers. Indeed, this may be the most plausible reason for vertical integration. If cable operators do not integrate in order to escape the effects of regulation or to monopolize program packaging, they must be integrating because they can package programs more efficiently than can others. In other words, for the same cost, they can package and distribute programs that generate larger subscriber revenues than can other packagers. This can result either from their ability to package at lower cost, or because they can develop more attractive packages for the same cost, or both. If a cable operator is more efficient at packaging than are others, he will increase his profits by integrating. On the other hand, if he is less efficient, total profits will be smaller with integration, and he can increase profits by purchasing packages from other firms.

Whether or not readers accept this analysis, they should recognize that the access question is not synonymous with the concern that cable operators will "favor" program services in which they have financial interests. Indeed, the analysis of this report is concerned almost entirely with the program choices and pricing decisions made by channel lessees and cable operators where the operators are independent of program packagers. This approach serves to highlight the distinction between the cable access question and that of "self-dealing."[48]

[47] Broadcasting, May 3, 1982, provides subscriber data for the top 50 MSOs (p. 99), and total cable subscribers in the United States (p. 37). The data are for early 1982. TCI is part owner, along with Time-Mirror, Cox Cable, Storer Cable, and Cablevision Co., of a new pay program service, Spotlight. Collectively, the partners serve about 3 million subscribers, or about 20 percent of the market, but they presently do not offer Spotlight to systems owned by others.

[48] Some industry participants apparently believe that vertical integration is the problem. Although he is quoted as being opposed to common carrier status for cable, Ted Turner, President of Turner
WHAT THE ACCESS PROBLEM IS

Clearly, there would be little or no need to consider the question of access if anyone denied access could construct and operate his own cable system at a per-channel cost equal to, or less than, the incumbent's, or if more than one multiple-channel system could operate profitably in the same market. The potential for market power possessed by cable operators arises from the fact that each viewer is likely to be able to subscribe to only a single cable system.

The empirical evidence seems to suggest that the cost of providing a given number of channels of service with two or more systems, each providing a portion of the channels, is substantially higher than when the same number of channels is provided by a single system. Thus, for example, Owen and Greenhalgh find a 49-percent cost increase when a 56-channel system is divided into two 28-channel systems, each with the same number of subscribers as the larger system.[49] Less clear is what happens when a given number of subscribers is divided between two or more systems providing the same number of channels. Owen and Greenhalgh find that when the subscribers of a 56-channel system are divided equally between two 56-channel systems, total cost increases by only about 18 percent.

The difference between these findings apparently stems from the two sources of economies of scale in cable. If there were few economies of scale in constructing a cable distribution system, so that it was only slightly more costly to construct, say, two 10-channel systems than one

Broadcasting System, would "separate control of program production from control of program dissemination" by placing limits on the number of channels any entity could program on a given cable system, with the most stringent limitations being placed on the broadcast networks and multiple system owners. See "CNN Willing to Dicker?" Broadcasting, October 19, 1981, pp. 32-33. And, as noted above, the principal effect of the version of S. 2172 that passed the Senate Commerce Committee, if it had any effect at all, would be to limit the number of channels a cable operator could fill with programs from a co-owned packager, but would place no restrictions on arrangements between independent packagers and cable operators.

[49] B. M. Owen and P. R. Greenhalgh, Competitive Policy Considerations in Cable Television Franchising, Owen, Greenhalgh, and Myslinski Economists, Inc., Washington, D.C., October 1982. It should be emphasized that the cost data analyzed are from franchise proposals, not from actual operations.
20-channel system, but there were significant subscriber costs that were independent of the number of channels received on a given system, then one would obtain results similar to those of Owen and Greenhaigh. While these results indicate that competition among systems each providing "specialized" services is not feasible, they suggest that competition among "full service" systems may be.[50]

The economic problem that leased access is supposed to solve arises from the fact that, because of economies of scale, only one cable system is likely to be available to each subscriber. Cable transmission is, in short, a "natural monopoly."[51] The result may, therefore, be that cable systems will be able to restrict the range of services that they offer, or to raise their prices above their costs, in a way that firms facing competition cannot. But, it is reasoned, since the supply of programming services is not a natural monopoly, why not separate the naturally monopolistic part of the industry—the transmission of programming—from the competitive part—the supply of programming? By separating "medium" from "message," the economies of scale that result from having a single cable system could be exploited while, at the same time, obtaining the benefits of competition in the supply of programming services. This report is an economic analysis of that idea.

[50] If subscriber-specific costs consist largely of the acquisition and maintenance of converters used to monitor usage, and if the same converter could be used for more than one cable system, then the only remaining economies of scale would be those arising from construction of the distribution system.

[51] Whether it is a monopoly at all depends on the competition from other technologies so that even if there is only one cable system in a market, it may possess little or no market power. Whether the cable operator's market power may be constrained by competitors using other technologies to deliver services, e.g., the telephone company, over-the-air broadcast stations, subscription television stations, multipoint distribution services, direct broadcast satellites, etc., is considered below.
III. CURRENT ARRANGEMENTS FOR ACCESS TO CABLE SYSTEMS BY PROGRAM PACKAGERS

At present, formal leased access arrangements are rare in the cable industry. Table 3.1 gives some indication of the current availability of channels for leasing on existing cable systems. The data are for channels held out by cable systems for transactions formally characterized as leases.

Of the 5,128 cable systems for which data are available, only 360, or about 7 percent, presently make any channels available on a leased basis.[1] Of systems with 12 channels or fewer, only about 3 percent make any channels available for lease; however, more than one-quarter of systems with 30 or more channels are prepared to lease some of their channels. But with only one system in 100 making more than a single

<table>
<thead>
<tr>
<th>Channel Capacity</th>
<th>Number of Systems</th>
<th>Channels Available for Lease</th>
<th>Percent with Channels Available for Lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 12</td>
<td>163</td>
<td>160 3 -- --</td>
<td>1.8</td>
</tr>
<tr>
<td>12</td>
<td>2493</td>
<td>2421 63 5 4</td>
<td>2.9</td>
</tr>
<tr>
<td>13-20</td>
<td>884</td>
<td>834 46 3 1</td>
<td>5.7</td>
</tr>
<tr>
<td>21-30</td>
<td>910</td>
<td>864 35 6 5</td>
<td>5.1</td>
</tr>
<tr>
<td>More than 30</td>
<td>678</td>
<td>489 161 18 10</td>
<td>27.9</td>
</tr>
</tbody>
</table>

SOURCE: Compiled from FCC data for 1980.

[1] We use the terminology "channels available for lease" rather than "channel leasing" because the data provide no indication of the extent to which leasing actually occurs. Some shortcomings appear in the Commission data. For example, one system with only 12 channels is reported as making 7 channels available for lease. Nevertheless, the data provide a useful general picture of the availability of channels for leasing.
channel available to potential lessees, channel leasing clearly is a very rare phenomenon.

The purposes of this section are to

- Describe current arrangements between program packagers and cable operators involving payments to packagers to cover their costs of acquiring or producing programs;
- Discuss how these arrangements involve both implicit and explicit charges imposed by cable operators for access;
- Show how these access charges are determined; and
- Discuss ways in which access charges are affected by government regulation and the costs of obtaining cable franchises.

This discussion will provide the foundation for addressing problems of implementing mandatory leased access arrangements, treated in detail in Sec. V.

THE STRUCTURE OF IMPLICIT AND EXPLICIT ACCESS CHARGES

Explicit access charges are imposed on those program packagers who pay directly to rent channels—for example, newspapers that use cable to provide classified advertising. Much more common, however, are cases in which packagers—for example, pay-television programmers—pay implicitly rather than explicitly for access. The implicit charge is equal to subscriber revenues collected by the cable system operator for the service in question, less the payments he makes to packagers and any customer billing and marketing costs he incurs to provide the service. These charges can be thought of as the payments that packagers would have made to the cable operator if they, rather than the operator, had collected fees directly from subscribers.\[^2\] The charge must at least cover the additional cost of carrying the service, including the cost of channel time. The cost of channel time (for full-time use) is equal to

\[^2\] The different ways of viewing the access charge are analogous to regarding network television affiliates as either leasing time to, or purchasing programs from, the networks. For an analysis of this relationship see Federal Communications Commission, Network Inquiry Special Staff, An Analysis of the Network-Affiliate Relationship in Television, October 1980, Chap. V.
the smallest of (a) the cost of operating an existing vacant channel, 
(b) the loss in profit from discontinuing an existing use of a channel, 
or (c) the cost of constructing and operating an additional channel.

These arrangements can best be understood by considering the three 
principal types of cable services: (a) those supported exclusively by 
subscribers, (b) those supported only by advertisers (or by other 
sponsors), and (c) those supported by subscribers and others.

Subscriber-Supported Services

Subscriber-supported services presently include (a) pay television, 
involved in a periodic subscriber fee for program packages, generally on a 
per-channel basis, (b) programs free of advertising included in the 
cable operator's "basic" service package that encompasses a bundle of 
programs (some of which include advertising) for which the subscriber 
pays a fixed periodic fee, and (c) specialized services, such as home 
security systems, for which the subscriber pays a fee.

Pay Television. Leading examples of pay services, consisting 
largely of movies, are listed in Table 3.2. In all cases, cable 
operators remit to program packagers a portion of the revenues collected 
from subscribers. The portion retained by the operator, less his 
transaction costs, is the net implicit access fee. Transactions costs 
include the additional costs of subscriber billing and collection, and 
of advertising and other marketing activities, incurred by adding this 
service to existing ones.

The formulas under which packagers are remunerated take a variety 
of forms: a percentage of the subscriber fee that is independent of the 
size of fee or the number of subscribers; a fixed amount per subscriber 
regardless of the size of the subscriber fee; a fixed amount per 
subscriber plus a percentage of the subscriber fee that exceeds a 
specified level; and payments that depend on both the size of the 
subscriber fee and the number of subscribers. Monthly payments to 
suppliers run from about $3 to $5 per subscriber, with the gross 
implicit access fee (including the operator's transactions costs) about 
the same amount.[3]

[3] The implicit access fee is estimated on the basis of a monthly 
subscriber payment of $6 to $10 and a 50:50 split in gross revenues 
between operator and packager.
<table>
<thead>
<tr>
<th>Name of Service (Ownership)</th>
<th>Number of Subscribers</th>
<th>Number of Systems</th>
<th>Approximate Market Share</th>
<th>Rates to Affiliates</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Box Office (Time Inc.)</td>
<td>6 million+</td>
<td>2000+</td>
<td>35%</td>
<td>Based on retail charge with perif. and volume discounts $2.69/mo./subscriber + 35% of retail charge over $7 and volume discounts</td>
<td>Movies, sports, specials</td>
</tr>
<tr>
<td>Showtime (Viacom &amp; Teleprompter)</td>
<td>2 million</td>
<td>1100</td>
<td>20%</td>
<td>Average $3.70/mo./subscriber (based on rate charged by operators and number of subscribers)</td>
<td>Movies, specials</td>
</tr>
<tr>
<td>The Movie Channel (Warner Amex Satellite Entertainment Co.)</td>
<td>975,000</td>
<td>3050</td>
<td>10%</td>
<td>$3.75/mo./subscriber regardless of what operators charge subscribers</td>
<td>Movies</td>
</tr>
<tr>
<td>Cinemax (Time Inc.)</td>
<td>400,000+</td>
<td>140+</td>
<td>4%</td>
<td>Under $20; varies according to market conditions</td>
<td>Movies, specials, sports</td>
</tr>
<tr>
<td>Spotlight (Time Mirror Satellite Prog.)</td>
<td>210,000</td>
<td>N.A.</td>
<td>2%</td>
<td>Available only to Times Mirror Cable Television Systems</td>
<td>Movies, specials</td>
</tr>
<tr>
<td>PRISM (Independent)</td>
<td>220,000</td>
<td>60</td>
<td>2%</td>
<td>$5.75/mo./subscriber</td>
<td>Movies, sports</td>
</tr>
<tr>
<td>Home Theater Network (Westinghouse Broadcasting Co.)</td>
<td>130,000</td>
<td>105</td>
<td>3%</td>
<td>$2/mo./subscriber plus sliding scale percentage if operator charges over $5</td>
<td>Movies, documentaries</td>
</tr>
<tr>
<td>Bravo and Escapade (Rainbow Prog. Services)</td>
<td>100,000</td>
<td>40</td>
<td>4%</td>
<td>$2.95/mo./subscriber for Bravo; $2.95/mo./subscriber for Escapade discount based on number of subscribers</td>
<td>Cultural and adult movies</td>
</tr>
<tr>
<td>Private Screenings (Sarno Prod.)</td>
<td>85,000</td>
<td>5</td>
<td>12%</td>
<td>$1.50/mo./subscriber plus 30% of subscription fee in excess of $5</td>
<td>Adult, hard R movies</td>
</tr>
<tr>
<td>X-tra Vision (Sig Natl’l Spanish Television Network)</td>
<td>75,000</td>
<td>80</td>
<td>12%</td>
<td>$1/2 of operator’s fee (54/month average)</td>
<td>Movies, sports, news, specials</td>
</tr>
</tbody>
</table>


N/A - not available.
To illustrate the equivalence of the present arrangement with one in which packagers pay an explicit fee for access, consider an example in which the operator collects a monthly subscriber fee of $10 for a service and remits $4 to the packager. The $6 retained by the operator, less any transactions costs incurred by the operator on behalf of the packager, is the net implicit access charge. It is equal to subscriber revenues minus both the operator's transactions costs and his payment to the service packager. The net access charge minus the cost of channel time and any revenue losses on services that are substitutes for the service in question is the operator's net revenue from adding the service. The cable operator seeking to maximize profit will carry the service only if this net revenue is positive.

If the packager dealt directly with subscribers and incurred the associated transactions costs, he would remit to the cable operator an explicit access charge of $6 per subscriber minus the transactions costs the cable operator would otherwise have borne—an amount equal to the net implicit charge.[4]

If transactions costs are equal for both the operator and the packager, the parties will be indifferent between the two types of arrangements. However, since the program supplier's transactions costs are likely to exceed those of the operator, both parties will usually be better off when the operator collects the subscriber fees and bears the transactions costs.[5]

[4] To demonstrate that the implicit and explicit charges are equal when transactions costs are the same for the packager and cable operator, consider the following:
SR = subscriber revenues;
IAC = implicit access charge;
EAC = explicit access charge;
PP = payment to program packagers if operator collects SR;
PC = program costs incurred by packager;
PR = packager's profits;
TC = operator's transactions costs;
SC = packager's transactions costs.
If the operator collects SR, then IAC = SR - PP - TC. If the supplier collects SR and incurs the transaction costs, EAC = SR - PC - SC. Thus, EAC = IAC if TC = SC, since PP = PC + PR.

[5] This is analogous to the arrangement in network television
Access charges are determined by a wide variety of deals struck between operators and packagers, depending on relative bargaining power and other factors. For example, the cable operator may pay for the program package and also obtain a portion of the packager's profits. Under this arrangement, the implicit access charge is equal to the additional subscriber revenues plus the operator's share of the packager's profits, minus the direct payment to the packager. Such arrangements are notable in that they take into account the value of the program services to the operator and the value of access to packagers, with net revenues to both depending on the service's success.

Basic Services. Table 3.3 describes two subscriber-supported program packages, offering entertainment and public affairs, usually sold to the operator for inclusion in his basic services. A major distinction between these services and the pay services discussed earlier is that the payment to the packager is only a few cents per subscriber, in contrast to the several dollars remitted for a typical pay service. This situation reflects differences in production costs of the program packages, and in the willingness of subscribers to pay.

In addition to the examples in Table 3.3, the basic services of some systems include (a) Southern Satellite Systems' offering of CableText, which transmits Reuters News View, UPI, View Weather, Dow Jones, and Quottrader, (b) Dow Jones Cable News, which includes stock market and financial news and articles from financial journals, (c) Reuters Monitor Service, which provides encoded text retrieval service, and (d) The Appalachian Community Service Network, which emphasizes college credit, continuing education, and professional development programming. As in the offerings listed in Table 3.3, cable operators usually pay a small monthly charge--up to a maximum of about 20 cents per subscriber.[7]

---


### Table 3.3

**Subscriber-Supported Services**

<table>
<thead>
<tr>
<th>Network Call Letters (Owner)</th>
<th>Number of Homes Reached (millions)</th>
<th>Number of Cable Systems</th>
<th>Audience</th>
<th>Content</th>
<th>Support</th>
<th>Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickelodeon</td>
<td>7.5</td>
<td>1725</td>
<td>Preschool children through teenagers</td>
<td>Age-specific programming for young people</td>
<td>Supported by cable company revenues</td>
<td>No advertising. Cable operators pay 10 cents per month per subscriber</td>
</tr>
<tr>
<td>Cable Satellite Public Affairs Network C-SPAN</td>
<td>10.0</td>
<td>1000</td>
<td>Daytime viewers</td>
<td>Live coverage of U.S. House of Representatives, interviews with Washington officials, National Press Club luncheon speeches, and other government events</td>
<td>Supported by major cable companies and other independently owned cable systems</td>
<td>Cable affiliates pay one cent per month per subscriber</td>
</tr>
</tbody>
</table>

Packagers of these services could, in principle, deal directly with subscribers and pay explicit access charges to cable operators. But the pennies rather than dollars per subscriber involved make an arrangement where the operator incurs the transaction costs even more advantageous here than for pay services.

Transactions costs also affect the method by which subscribers pay for services. In principle, the cable operator could exact a separate charge for each channel or program the subscriber views. The subscriber's bill, resembling a telephone bill for long-distance service, would include an itemized list of all channels or programs viewed and the charge for each. In this case, there would be no distinction between basic and pay service.

This arrangement has not yet developed because limitations of current technology would make the separate metering of all channels and programs exorbitantly expensive. Only when programs on a particular channel (such as recent movies) are highly valued by subscribers are revenues sufficient to justify the additional costs entailed in limiting the availability of that channel to those willing to pay.[8] When subscribers place a high value on several such channels offered simultaneously, cable operators have an incentive to offer more than one pay service. In 1980, more than 800 cable systems carried multiple pay channels.[9]

With continuing technological advance, the distinction between basic and pay services may become blurred. The development of addressable converters and two-way cable systems will reduce the cost of metering the viewing of both individual channels and individual

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[8] In a few instances, packagers have offered a particular program only to viewers who pay for it. For example, the recent Leonard-Hearns welterweight championship fight was offered on Oak Industries' five over-the-air subscription television stations serving 550,000 subscribers. About 7,000 subscribers to the Warner-Amex cable system in Columbus, Ohio, paid $12 to see the fight, with their viewing monitored by the interactive Qubo System. Broadcasting, September 28, 1981, p. 50.

programs.[10] If so, channels or programs now included in basic service packages may be offered separately in the future.

Advertiser-Supported Services

Several services shown in Table 3.4, offered at no charge to cable operators, are supported by advertisers and other sponsors. In some cases, program packagers pay an explicit access charge because they have a strong incentive to expand their advertising base. For example, the National Spanish Television Network (SIN) makes an explicit payment of 10 cents for each subscriber with a Spanish surname.

Another example of advertiser-supported services involves newspapers. A recent survey by the American Newspaper Publishers Association describes 54 arrangements between newspapers and cable systems for full-time use of one or more cable channels and 15 arrangements for part-time use.[11] All of the newspapers surveyed delivered character-generated text and, in most cases, retail and classified advertising. Some include video coverage of newscasts, public affairs shows, and local sports.

Although 40 of the 54 full-time arrangements are called leases, they are similar to the joint ventures described above. The majority involve a payment to the operator of 5 to 25 percent of gross advertising revenues. Others involve a flat monthly fee per subscriber, typically between 6 and 12 cents. Still others involve a share of gross revenue, with a flat fee per subscriber if revenue falls below a specified figure. Some include "trade-outs" where, as part of the deal, the newspaper carries cable program listings or advertising for the cable system.[12] The remaining 14 arrangements involve public access


[12] These findings were obtained in our interviews with representatives of the American Newspaper Publishers Association.
**Table 3.4**

**ADVERTISER-SUPPORTED SERVICES**

<table>
<thead>
<tr>
<th>Network Call Letters (Also Known)</th>
<th>Number of Names Reached (in millions)</th>
<th>Number of Cable Systems</th>
<th>Audience</th>
<th>Content</th>
<th>Support</th>
<th>Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite Programming Network (Satellite Syndicated Systems)</td>
<td>4.3</td>
<td>461</td>
<td>Women and family audiences</td>
<td>Talk shows, movies, how-to's, music, foreign films, general audience entertainment</td>
<td>Advertisers provide programming and pay for air time. Revenue also derived from national advertising spots. Systems receive programs without charge.</td>
<td>Vary by time of day and number of showings: $1000 for one-hour and one-time-only special feature, $500 per 30-minute, 60-seconds program which will run throughout the 18 show season. SPN sells 60-second spots for $250 to $400 depending on time shown.</td>
</tr>
<tr>
<td>Christian Broadcasting Network, Inc.</td>
<td>4.6</td>
<td>2980</td>
<td>All age groups</td>
<td>Religious programming for all denominations</td>
<td>Funded by voluntary individual contributions, viewer clubs, and biannual 10-year telethon; those who contribute $10 or more in any given year are eligible to receive one free church enrollment.</td>
<td>Members of “700 Club” pay $15 a month to support the network. All other contributions are voluntary. Advertising rates, from June 1, 1981 on, will be $100 to $250 for a 30-second spot in prime time, up to $450 for a 60-second prime time spot.</td>
</tr>
<tr>
<td>National Spanish Television Network</td>
<td>3.7</td>
<td>102</td>
<td>Spanish-speaking people</td>
<td>News, newsmagazines, sports, variety, music, movies, specials</td>
<td>Supported by national advertising. Affiliates may add their own programming. Rates vary depending on how many of the stations participate. For full network showing, 30-second spots are $200 to $250 depending on time shown. STN pays cable operators $10 cents for each subscriber with a Spanish package.</td>
<td></td>
</tr>
<tr>
<td>Alpha Repertory Television Service</td>
<td>6.4</td>
<td>1000</td>
<td>Viewers of all ages interested in the arts</td>
<td>Quality performing arts programming, including ballet, concerts, art shows, opera and theater</td>
<td>Served by advertising underwriters. Free to cable operators who carry Nickelodean.</td>
<td>Rate is $750,000 per underwriter for one year.</td>
</tr>
<tr>
<td>Modern Satellite Network</td>
<td>4.1</td>
<td>310</td>
<td>Daytime viewers of all ages</td>
<td>Educational, informational and consumer-oriented programming produced by advertisers, business, government</td>
<td>Advertising and sponsor supported</td>
<td>Advertisers provide their own programming and pay for air time. Basic cost is $3000 entry fee plus $125 per running minute for program. Discounts are given for multiple entries. Special one-time-only rates are offered for 30-second public service announcements. Rates vary with length of program and number of air plays.</td>
</tr>
</tbody>
</table>

channels that cable operators are required to provide to specified classes of users under the terms of their franchise.

Although these services are directly supported by advertising revenues collected by packagers, some or all are indirectly supported by subscribers as well, since their inclusion on the system may result in higher cable penetration or permit the operator to charge a higher basic fee.\[13\] A cable operator would be willing to carry a service without payment of an access charge only if the additional revenue it generated were no less than the operator's additional costs.

Another major example of advertiser-supported programming is that broadcast by commercial stations and retransmitted by cable operators. The cable operator benefits by the increase in basic subscriber revenues generated by the retransmissions. As discussed in Sec. II, the retransmission of broadcast signals provided the foundation for the growth of cable systems prior to the proliferation of pay-television services. Under terms of copyright legislation passed in 1976, cable operators must obtain a license for the distant signals they carry.\[14\] They must also pay the cost of terrestrial microwave or satellite service required to receive signals from distant stations.\[15\] Three superstations--WGN (Chicago), WOR (New York), and WTBS (Atlanta)--are presently transmitted via satellite.

There is no explicit access charge for these retransmissions. Since the cable system retains all subscriber revenues, the implicit access charge is equal to the increase in revenues (minus copyright fees and retransmission costs borne by the cable operator) that results from carrying the distant signal.

One situation arises, however, where the implicit access fee may be smaller than one the cable operator would voluntarily set. Under the FCC's "must carry" rules, the cable operator is required to carry the signals of all local broadcasting stations.\[16\] Some operators argue

\[13\] This increase in revenue is the implicit access fee.
\[15\] No separate charge is levied for the transmission of services like ESPN or SIN.
\[16\] 47 C.F.R. Sec. 76.57(a), Sec. 76.59(a), Sec. 76.61(a), Sec. 76.63(a).
that this requirement is increasingly burdensome because they are forced
to carry some signals that add little to their revenues, while occupying
channels that could be used more remuneratively in other ways.

Subscriber- and Advertiser-Supported Programming

A final service category is shown in Table 3.5. In addition to
advertiser revenues, some service packagers collect a per-subscriber fee
from the cable operator. In contrast to the examples in Table 3.4,
these services add enough to subscriber revenues to make their carriage
worthwhile even if the cable operator must pay the packager for the
service. As in the case of pay channels, the implicit charge must be no
less than the operator's additional costs.

Note that the service category illustrated in Table 3.5 is only a
modest variant of the services in Table 3.4. The examples in Table 3.5
are categorized as directly supported by subscribers, in that cable
operators make no explicit payment to suppliers. But, as previously
discussed, the services in Table 3.4 offered to cable systems free of
charge are also supported by subscribers, since otherwise the operator
would incur losses by carrying them.

Determinants of Explicit and Implicit Access Charges

We have discussed generally how subscriber and advertising
revenues, and cable service costs, affect the level of access charges.
Here we present a brief analysis that illustrates these relationships
for a single cable system and a single program package. We assume that
the operator's revenues from this package are not affected by whatever
other packages are carried on his cable system.[17] We also assume that
the operator is unregulated and seeks to maximize profit.

In Fig. 3.1, subscriber fees and payments between the operator and
the packager are shown on the vertical axis. The number of viewers
subscribing to the package is shown on the horizontal axis. Curve $D_m$
is the market demand curve for a package "m", say a movie package, under
the assumption that the cable operator collects payments from

[17] Section IV addresses the more complex cases of interdependence
among multiple packages offered on a cable system.
<table>
<thead>
<tr>
<th>Network Cell</th>
<th>Number of Homes Reached (in million)</th>
<th>Number of Cables Systems</th>
<th>Audience</th>
<th>Content</th>
<th>Support</th>
<th>Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment and Sports Programming Network</td>
<td>15.6</td>
<td>2200</td>
<td>All age groups</td>
<td>Live and taped sports events</td>
<td>Primarily advertising supported</td>
<td>Advertisers pay $550 for 20 seconds during prime time, but rates will go up as circulation grows. Cable systems pay four cents per month per subscriber but receive 30 cents cooperative advertising credit per month per subscriber if they pay ESPN on basic full-time channel.</td>
</tr>
<tr>
<td>USA Network</td>
<td>30.9</td>
<td>1700</td>
<td>All age groups</td>
<td>Live broadcasts of sporting events, two-hour English Channel cultural programming and Saturday programming for children</td>
<td>About 75% of revenues from affiliates, 25% from advertising</td>
<td>Cable affiliates pay $10 per month per subscriber, if on healthy rates, 25 cents per month, if on star. Advertising rates are approximately $400 per 30 seconds with variations based on advertiser commitment and programming involved.</td>
</tr>
<tr>
<td>Black Entertainment Television</td>
<td>9.0</td>
<td>85</td>
<td>Men and women 25-to-40 year age range</td>
<td>Black-oriented sports programs, movies, feature films and music specials</td>
<td>Supported by national advertising and monthly charge per subscriber to operators</td>
<td>Advertisers pay $750 per minute for 15-, 26- and 32-week bars. Cable operators pay one cent per month per subscriber.</td>
</tr>
<tr>
<td>Cable News Network</td>
<td>11.8</td>
<td>2162</td>
<td>General audience of all ages with news preference</td>
<td>News coverage, including late-breaking stories and related features</td>
<td>Advertising and cable system revenues (50% from each)</td>
<td>Advertisers pay $100 to $700 per 30 seconds, depending on time the ads are shown. Systems pay 15 cents per home per month if they carry both CNN and superstation WGN; 20 cents per home per month for CNN alone.</td>
</tr>
<tr>
<td>CBS Cable</td>
<td>4.0</td>
<td>350</td>
<td>Viewers interested in the arts</td>
<td>Opera, concerts, theater, original productions for cable</td>
<td>Advertising and cable system revenues</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Fig. 3.1 -- Determinants of access charges: subscriber-supported service

subscribers. It is downward sloping because more cable subscribers are willing to purchase the package as the subscriber fee declines.\[18\] For expository convenience, we draw it as a straight line. $\text{MR}_m$ shows the additional or marginal revenue of adding a subscriber on the assumption that all subscribers pay the same price for the service. For example, if a subscriber is added to an existing subscriber base of size $N_1$ in response to a reduction in the subscriber fee, the additional revenue would be zero since $\text{MR}_m$ intersects the horizontal axis at point $N_1$. $\text{MR}_m$ is steeper than $\text{DM}_m$ because the loss of revenue from other subscribers resulting from the reduced price they pay must be subtracted from the payment made by the added subscriber. Thus, marginal revenue is zero at point $N_1$, where the price paid by the additional subscriber is just equal to the loss of revenue from other subscribers caused by the price reduction. Because $\text{DM}_m$ is a straight line, $\text{MR}_m$ necessarily intersects the horizontal axis at the point $N_1$.

\[18\] The demand $\text{DM}_m$ is net of transactions costs. For simplicity, we assume either that the operator incurs no additional costs in operating the channel on which package $m$ is carried or that these costs are paid directly by subscribers.
which is exactly one-half the distance between zero and the point \( N_2 \),
where \( D_m \) meets the horizontal axis.

For simplicity, we assume that program packagers compete for sales
of package \( m \) to the operator and that they all incur the same cost of
producing the package. This cost, \( C \), is independent of the number of
subscribers who view the package. Thus the operator's per-subscriber
cost of buying the package from one of the competitors is shown by the
curve \( C/N \)-the total cost, \( C \), divided by the number of subscribers, \( N \).
Geometrically, it is a rectangular hyperbola, which is a curve so drawn
that the total cost of the package to the operator is constant,
regardless of the number of viewers. The marginal cost of the package-
the change in total cost when a subscriber is added--is zero since total
cost is constant. Thus, marginal cost is coincident with the horizontal
axis.

Whether the operator earns a profit by carrying the package depends
on his success in spreading the fixed cost, \( C \), over a sufficiently large
subscriber base. As \( C/N \) is drawn in Fig. 3.1, the operator does receive
a profit. He sets a price of \( P_1 \) which attracts a subscriber base of \( N_1 \),
where \( MR \) intersects the horizontal axis; for it is at this intersection
(where marginal revenue is zero) that the operator's total revenue is
maximized. In other words, his total revenue grows as long as marginal
revenue is positive. He maximizes his profit at the point where
marginal revenue is equal to marginal cost. Since both are zero at
point \( N_2 \), his total profit is also maximized at point \( N_2 \).

Total revenue is shown by the rectangular area bounded by the
points \( OP_1 BN_1 \) (equal to price \( P_1 \) times quantity \( N_1 \)). The operator pays
\( P_2 \) per subscriber to the program packager so that his total payments are
shown by the rectangular area \( OP_2 cN_1 \). His total profit is shown by the
area \( P_1P_2eb \). Here the packager pays a per-subscriber implicit charge of
\( P_1 \) minus \( P_2 \), or a total implicit charge of \( P_1P_2eb \).

If the packager directly collects subscriber revenues, and if his
transactions costs are the same as those otherwise incurred by the
operator, the packager would collect \( P_1 \) from each subscriber and remit
to the cable operator an explicit per subscriber access fee of \( P_1 \) minus
\( P_2 \). Consistent with the earlier discussion, the outcome would be the
same regardless of who collects subscriber fees. Whether the packager or the operator collects subscriber fees and remits a portion to the other party, their relative bargaining power would be unaffected and the net proceeds to each would remain unchanged.

If the cost of the program package increases to $C^*$, the rectangular hyperbola would rise to $C^*/N$ as shown in Fig. 3.1. Since $C^*/N$ is tangent to $D_m$, the operator would break even if the package were carried. He would set price $P_j$ as before (since $P_j$ remains the price at which total revenue is maximized) and pay a per-subscriber fee to the packager equal to $P_j$. His profit and the implicit access charge would both be equal to zero.

Figure 3.2 illustrates a case where the cable operator collects subscriber fees and shares in the advertising revenues collected by the packager. Here, the packager who does not collect revenues directly from subscribers nevertheless pays an explicit access charge. Let us

![Diagram](image)

**Fig. 3.2** -- Determinants of access charges: advertiser and subscriber supported services

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[19] If the packager's transactions costs are greater than those of the operator, curves $D_m$ and $MR_m$ would shift downward, resulting in fewer subscribers.
call this service i, which is an information and classified advertising service. The curve $D_i$ is the subscribers' demand curve for the package. The per-subscriber cost to the operator reflects not only the cost of the package spread over the subscriber base, but also the packager's advertising revenues, whose size depends on the number of subscribers. The cost curve $AC_i$ facing the cable operator is, therefore, no longer a rectangular hyperbola but a curve that intersects the horizontal axis. Curve $AC_i$ is the per-subscriber cost of the package to the operator, defined as the cost of producing the package minus advertising revenues, divided by the number of subscribers. It falls below the horizontal axis in cases where advertising revenues exceed the packager's production cost. For example, at a subscriber level of $N_3$, per-subscriber advertising revenues exceed the packager's per-subscriber production costs by the amount shown by the distance $OP_4$. Curve $MC_i$, the operator's marginal cost (which is negative here), is equal to the additional advertising revenue collected by the packager when the operator adds a subscriber.[20]

To maximize profits, the operator sets a subscriber price $P_3$ at the point where $MR_i$ intersects $MCD_i$ (where his marginal cost and marginal revenue are equal), and attracts $N_3$ subscribers. His revenue from subscriber fees is equal to the rectangular area $OP_3fN_3$. In addition, the packager pays an explicit access charge equal to the rectangular area $OP_4gN_3$---the amount by which his advertising revenue exceeds his production cost. The implicit access charge is equal to the whole area $P_3fP_4g$, since it is the amount the packager would remit as an explicit access charge to the cable operator if the packager rather than the operator collected subscriber fees. In all these cases, all excess profits will accrue to the cable operator, assumed to be a monopolist, if there are many competing packagers all with the same costs. If, however, some packagers are more efficient than others, they will earn excess returns.

[20] If advertisers pay a constant amount per subscriber, $MC_i$ will be a horizontal line lying below the horizontal axis by that amount. $AC_i$ would asymptotically approach $MC_i$ from above as the number of subscribers increases.
THE EFFECTS OF GOVERNMENT REGULATION
AND COSTS OF OBTAINING FRANCHISES

In addition to the FCC's "must carry" rules noted above, other local, state, and federal actions may affect the arrangements between cable operators and program packagers. Here we explore the effects of other major kinds of regulations, and the costs of competing for and obtaining franchises, on the terms under which packagers obtain access to cable.

Government regulation directly affects access through:

- Placing limits on subscriber rates;
- Imposing franchise fees;
- Mandating minimum channel requirements;
- Requiring the dedication of channels for specific services;
- Imposing technical standards.

In contrast, the costs of competing for and obtaining franchises do not directly affect the operator's decisions about channel capacity or services. That is, they do not affect the marginal revenue or marginal cost curves shown in Figs. 3.1 and 3.2 and, therefore, they do not affect the prices charged by the cable operator or the services he decides to carry.[21] These costs include such items as expenses incurred in preparing and defending franchise applications, in providing public access studios, and in contributing to local charities and other activities having nothing to do with the cable system.

Rate Regulation

Municipalities and some states exercise control over basic service rates.[22] The FCC has preempted the authority of states to regulate

[21] However, as discussed below, they may indirectly affect prices and services offered by altering the ability of cable firms to attract investment funds.

rates for pay television, although it has not chosen to exercise that authority.[23]

Given the difficulties involved in implementing rate-of-return regulation, and the continuing questions about the degree to which cable operators are in fact able to exercise monopoly power, state and local governments have generally eschewed use of "strict" regulation of basic subscriber rates in favor of more informal mechanisms. Typically, the cable operator approaches the regulatory body with a proposal for a rate increase arguing, perhaps, that it is justified because of general inflation or because of inclusion of new services in the basic service package. In some cases, the cable operator agrees, as a condition of the franchise, not to apply for a rate increase for a specified length of time. To the extent that this prevents a cable operator from immediately raising his rates, he might decide to postpone carriage of a service. Indeed, he might not carry the service at all.

Our survey of the literature suggests, however, that in comparison with rate regulation in some industries (e.g., the electric utility industry), the control of rates for basic cable services poses a far less stringent limitation. A survey of regulatory activities during the period January 1976 through June 1980 indicated that about 92 percent of the requests by cable operators for rate increases were granted. Moreover, nearly 100 percent of the amounts requested were granted.[24] According to responses to a survey of 350 cable systems conducted by the Copyright Royalty Tribunal in early 1980, over 90 percent of the amount of rate increases requested had been granted. The average elapsed time

Braunstein et al., Economic Impact of State Cable TV Regulation, October 1978; and Larry S. Levine, The Regulation of Cable Television Subscriber Rates by State Commissions, July 1978. The latter three studies were published by the Program on Information Resources Policy, Harvard University, Cambridge, Mass.

[23] Clarification of Cable Television Rules, 46 FCC 2d 175, 186 (1974) and Brookhaven Cable TV, Inc. v. Kelly, 573 F. 2d 765 (2d Cir. 1978), cert. denied 441 U.S. 904 (1979). If the distinction between basic and pay services becomes less clear for the reasons discussed earlier, jurisdictional boundaries between federal and nonfederal rate regulation will pose troubling issues.

[24] CO Exhibit 9, Motion Picture Association of America, Inflation Adjustment Proceeding before the Copyright Royalty Tribunal, September 1981.
between the date of request for an increase to the date of effective action ran to 3.5 months—a much shorter period than is commonly involved in rate proceedings for more heavily regulated industries.\[25\]

More generally, our survey suggests that, although operators are concerned about governmentally imposed regulations and requirements, the issue of control over basic subscriber rates does not stand at the forefront.\[26\] Of nagging concern, however, is the possibility of common-carrier type regulation of the industry.

For these reasons, we conclude that rate regulation has had little effect on the prices of services included either as part of a cable system's basic services or as a pay service. The evidence suggests that most requests for rate increases are granted, albeit with a delay of a few months. The issue is less whether the regulatory authority will grant a requested rate increase, but rather how current and potential subscribers will respond to the increase.

**Franchise Fees**

Of greater concern to cable operators is the fee, usually expressed as a percentage of revenues, imposed by the franchising authority. Currently, the FCC limits franchise fees to no more than three percent of a system's gross revenues. The Commission sometimes grants a waiver, in which case the fee can range up to five percent. However, the circumstances under which higher fees may be obtained are rather vaguely defined, and the Commission is now addressing the question of whether the ceiling should be modified or lifted.\[27\] One survey of 408 systems

\[25\] Material supplied to authors by the National Cable Television Association, Washington, D.C. Of course, additional time is required by the applicant for internal preparations prior to formal filing for a rate increase. According to an unpublished survey by the National Cable Television Association, these internal steps consume an average of about eight months.

\[26\] See, for example, the testimony of Thomas E. Wheeler, President, National Cable Television Association, before the Subcommittee on Communications, Committee on Commerce, Science and Transportation, U.S. Senate, April 26, 1982. While expressing strong concerns about constraints and requirements imposed on cable operators, particularly through municipal franchises, he does not single out control of basic service rates as a current major problem.

\[27\] One study notes that "for example, the Commission must approve a higher franchise fee if there is a reasonable showing by the franchisee that it will not interfere with the regulatory goals. These
discloses that slightly more than half pay three percent or less, while others pay rates as high as seven percent. [28]

The effect of the franchise fee depends on the price elasticity of demand by subscribers. If subscriber demand were totally insensitive to price, the cable operator could pass on the entire fee in the form of higher rates, and the number of subscribers would remain constant. In the much more likely case where price elasticity of demand exceeds zero, i.e., subscribers' demand is sensitive to prices, only a portion of the fee would be reflected in higher rates, with the remainder absorbed in reduced net revenues to the operator. The effect of the franchise fee is, thus, to reduce the cable operator's demand for a service. As illustrated in Fig 3.1, $D_m$ (net of tax) would shift downward. Curve $HR_m$ would also shift downward, intersecting the horizontal axis at a point to the left of $N_1$. Therefore, the cable operator would charge a higher price for the service than otherwise, with fewer viewers subscribing. Moreover, if $D_m$ shifted far enough downward, it would lie below the G/N curve, and the service would not be offered. In sum, imposition of a franchise fee based on subscriber revenues tends to increase subscriber rates and to reduce the number of services offered. [29]

**Minimum Channel Requirements**

As a condition in the franchise, or as a result of competition among franchise bidders, some cable operators agree to provide more channel capacity than they would voluntarily choose. This requirement reduces the cost of adding services, since doing so is more likely to involve the lower cost of operating an otherwise vacant channel than (a)


[28] Study by National Economic Research Associates for the National Cable Television Association, December 1979. Some systems pay franchise fees above five percent because the fees were grandfathered under the FCC rules.

forgoing the revenues of an existing service that must be displaced in a
system already operating at capacity, or (b) constructing a new channel
to accommodate the service. As a result, forced to build a system
larger than he would have voluntarily chosen, the operator is likely to
carry more services than otherwise.[30] Similarly, a requirement to
provide a specified number of two-way channels may encourage the
development and growth of two-way services.

Of course, this outcome does not necessarily mean that imposition
of a minimum channel capacity requirement is in society's interest.
Such requirements inevitably increase the overall cost of building the
system that, one way or another, burdens cable stockholders,
subscribers, or both.[31] At the extreme, the minimum channel capacity
could be set so high that it would be unprofitable to build the system,
thereby denying cable service to all potential subscribers. In other
cases, channels required by the franchise agreement would remain vacant.
Although further discussion of the merits of minimum channel
requirements is beyond the scope of this study, a basic issue is whether
the shift in resources from cable stockholders and subscribers to
construction of additional channels confers a greater social benefit
than would use of these resources for other activities.

Dedicated Channels

A typical franchise requirement is that a specified number of
"free" channels be set aside for specific purposes, such as use by
public schools and government agencies, and those for public access. If
the imposition of a minimum channel capacity requirement itself requires
sufficient capacity to meet all needs, enough could be set aside to meet
dedicated service requirements without imposing additional construction

[30] One may be tempted to conclude that cable operators, seeking
to recoup the costs of building the larger system, would attempt to
raise subscriber rates for services that would also have been carried on
a smaller system. However, if the cable operator seeks to maximize
profits, he would in any event charge the profit-maximizing rates and
these rates would not necessarily be higher in the larger capacity
system. Indeed, they would be lower insofar as additional services
carried on the larger system are partial substitutes, thereby reducing
the subscriber rate that maximizes the operator's profits.

[31] Comanor and Mitchell, op. cit.
costs. The interesting question, then, relates to the effects that arise when the dedicated channels cannot be accommodated using the excess capacity on the system.

The outcome depends on whether the additional cost of adding channels is constant or increasing, and whether programs carried on these channels are substitutes for other programming. If additional costs are constant and if program substitutability is zero (i.e., viewers do not watch the dedicated channels rather than pay-television and other channels), the operator would build additional capacity to accommodate the number of required dedicated channels. The additional cost of doing so would be borne as a lump-sum reduction in the cable operator's profits but it would not affect other services since it would not change either their revenues or their cost of channel time.

The reason for adding this full increment of capacity is that displacement of other services by using their channels for the "free" dedicated channels would force the operator to forgo whatever profit he otherwise would have earned on these other services. He would be better off continuing to carry these services and to add capacity to meet the dedicated uses. However, if substitutability exists between the programs on dedicated channels and other programming, the operator might find that programming on these channels reduces the profitability of some of these services below zero. If so, he would discontinue these services and use their channels to meet at least a portion of the requirement for dedicated use. Thus, he would likely add capacity, but by less than the full amount of the dedicated channel requirement, with the shortfall accommodated by dropping other services.

Likewise, if the additional cost of adding channels is increasing, and with no program substitutability, the operator might again meet the dedicated channel requirement, at least in part, by dropping other services. He would do so if the increase in the cost of adding a channel is greater than the profit being earned on an existing service. In this case, dropping the service and using the vacated channel for dedicated purposes would result in a smaller overall loss in profit than would the continuation of this service while adding a channel for
dedicated use. Moreover, the existence of program substitutability would reinforce this conclusion.[32]

**Technical Requirements**

Franchises commonly include a large number of technical requirements, including minimum standards for reliability, redundancy, and signal quality.[33] To the extent that the operator would not have voluntarily chosen to meet the standards, compliance increases construction and operating costs. If these requirements raise the cost of constructing or operating an additional channel, they would tend to reduce the number of services offered. If, however, the increase in costs were independent of the number of channels, the number of services would be unaffected.

Technical requirements may also affect services differentially, with some benefiting from technical standards that the operator would not have voluntarily chosen. For example, compliance with particular technical standards may reduce the cost of providing two-way channels, thereby encouraging the development of new services. Other services may benefit from higher degrees of operational reliability than the cable system would otherwise achieve. Of course, these advantages would come at the expense of those services that do not benefit from the higher standards but must nevertheless bear the increased costs of the cable system's compliance with them.

**The Cost of Competing for Franchises**

A major burden facing cable operators—one about which they have vociferously complained—is the high cost of competing for franchises.

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[32] A special case of a dedicated channel requirement is the stipulation that channels be set aside for leased access. The effects of mandated leased access on arrangements between cable operators and packagers, and the problems posed in implementing leased access requirements, are discussed in Sec. V.

[33] For example, the "Provisional Cable Television License" granted to Cablevision Systems Boston Corporation by the City of Boston (March 25, 1982) includes numerous technical requirements, such as that "battery standby power units shall be provided throughout the System wherever there is a System power supply derived from electric utility service" and "Headend Hub interconnection cables shall use a maximum
The expenses for attorneys, accountants, engineers, and others to assemble and defend applications, and the time and expense of dealing with local community groups, can amount to hundreds of thousands of dollars for a cable company competing in a major metropolitan area.[34]

These costs are different from those discussed above in that they do not directly affect the operator's revenues or costs for particular services. Therefore, they do not affect the services offered. Whether a cable operator decides to carry a particular service, and the subscription prices charged, are independent of expenditures required to obtain the franchise.[35]

To be sure, services that are subsidized through these expenditures, for example, the provision of studios for public access, facilitate access for these particular purposes. Used in conjunction with dedicated channels, a requirement for public access studios reduces the cost to eligible groups for using the cable system. The primary effect of this requirement, however, is to reduce the probability that dedicated public access channels remain vacant. The provision of studio facilities to stimulate the use of channels already set aside for public access would not affect the revenues or costs of carrying other services.[36] The costs of the studio facilities themselves would be, in effect, a lump-sum payment by the operator as a condition of receiving the franchise, similar to the other costs of obtaining the franchise noted above.[37]

frequency of one-hundred ten Megahertz (110 MHz), and shall have no more than six (6) amplifiers in cascade" (p. 26).

[34] A recent example is the time and money spent by competing bidders for franchises in New York City's boroughs outside of Manhattan. See, for example, Laura Landro, "Down to the Wire: New York Today Picks Its Cable-TV Winners from Four Boroughs," Wall Street Journal, November 18, 1981, p. 1.

[35] Of course, the magnitude of these costs may discourage competing for the cable system franchise in the first place.

[36] Again, the statement must be qualified by noting that revenues of other services will be affected to the extent that public access and other programming are substitutes.

[37] As in the case of minimum channel requirements, these charges for services would be unaffected by the cost of obtaining the franchise, since the marginal revenue and marginal costs of services are unchanged.
CONCLUDING REMARKS

Current arrangements between cable operators and program packagers involve, in effect, discriminatory access, where the access charge can be either implicit or explicit. The magnitude of these charges is affected by the cost of program packages, the strength of subscriber demand, and the nature of government regulation. For program packagers who have market power, access charges are affected by the relative bargaining strength of packagers and cable operators, with a wide variety of deals being struck between them. As we show in Sec. V, charges vary widely among services.

In Sec. IV, we present an expanded analysis, taking into account multiple services offered by the cable operator, to show the effects of alternative nondiscriminatory leased access arrangements.
IV. THE ECONOMICS OF MANDATORY LEASED ACCESS

Using economic analysis, this section examines the effects of mandating leased access on (1) the services offered to cable subscribers and (2) the prices to subscribers of these services. In particular, we compare subscriber prices and service offerings where (a) the cable operator is totally free to set prices and choose offerings and (b) the operator is constrained by four alternative mandatory leased access requirements:

- The operator must make available for lease his entire channel capacity on a nondiscriminatory basis, which we define to mean that all lessees pay the same charge for a given amount of channel capacity. Channel lessees, in turn, compete with one another for the patronage of subscribers. Access fees are unregulated.[1]
- The operator retains control of the offerings on some of his channels, an arrangement which we call "partial separation."
- The operator must provide nondiscriminatory access, but the price at which channels are leased is regulated.
- The operator must provide nondiscriminatory access under which all channel lessees pay the same per-customer access charge. Access fees are unregulated.

THE CABLE OPERATOR WITHOUT MANDATED LEASED ACCESS: THE BASE CASE [2]

We consider an isolated cable system that does not share its program costs with any other system and we assume that the cable

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[1] Here, we ignore a large number of problems associated with defining nondiscriminatory behavior, including the determination of charges for auxiliary services that may be provided by the operator, as well as with the manner in which charges are set for different bandwidths, different times of use, and differences between full- and part-time users. We consider these issues in Sec. V.

[2] The non-technical reader who is interested primarily in the conclusions of the analysis may proceed to the heading "Summary" at the end of this section.
operator has some market power, by which we mean that he is free to set prices to subscribers without losing all of his customers to other firms, e.g., subscription television stations, multipoint distribution services, telephone companies. Second, we assume that the cable system and the producer of the services offered to subscribers are not jointly owned. As we argued in Sec. II, we do not believe that vertical integration between program packagers and cable systems owners is the essence of the access question. To show that the access issue arises even in the absence of such integration, we assume throughout that the cable operator acquires all of his programs from independent sources. Third, we assume that the prices paid by cable subscribers are unregulated. Finally, we assume that all of the services provided by the cable operator are perfect substitutes for one another.

For concreteness, one can think of the various services as packages of movies, say, Home Box Office, Showtime, and The Movie Channel. Consumers differ with respect to the prices they are willing to pay for the first movie service they take, the second service, etc., but, except for the prices being charged, they are indifferent among services. Subscribers who purchase more than one service will always choose those that have the lowest prices before they purchase more expensive ones. Although consumers are indifferent among services, they may purchase more than one because doing so increases the probability that, on a given night, they will be able to find a movie they regard as attractive. This increase in probability declines, however, the larger is the number of services being purchased.

Since the services provided are public goods (i.e., additional consumers can be served with no increase in the cost of production), not all services will sell at the same price. We do assume, however, that all consumers of a given service pay the same price.

Figure 4.1 depicts the situation for a cable operator who is completely free to set the prices for the various services that he offers, i.e., subscriber rates are unconstrained by regulation, and is under no obligation to lease any of his channels. It is similar to Fig.
3.1 except that here we consider more than a single service. The demand curves labeled \( D_1, D_2, \ldots, D_n \), drawn as straight lines for convenience, indicate the prices that various customers are willing to pay for the first, second, ..., nth units of the service that they purchase. For example, the highest point on \( D_1 \) represents the highest value that any customer places on the first unit of the service that he purchases. The next highest point represents the value placed on the first unit purchased by the person willing to pay the second highest amount. The curve is the array of prices, from highest to lowest, that each potential subscriber would be willing to pay on the first unit that he might purchase. All consumers are assumed to be willing to pay smaller and smaller amounts for each additional service consumed so that \( D_2 \) is everywhere lower than \( D_1 \).

If we assume that all movie packages have the same cost, that the cost of adding a channel to deliver a package is constant, and if we call the sum of these amounts \( C \), the number of services offered by the
operator and the prices charged for each can be determined easily.\[3\] The curve C/N represents the cost per subscriber of each service, which depends, of course, on the number of subscribers who take the service. As we discussed in Sec. III, the price that maximizes the revenues, and hence the profits, from each service occurs at the midpoint of each demand curve.\[4\] Thus, a price of \( P_1 \) will be charged for the first service taken, \( P_2 \) for the second, and \( P_3 \) for the third.

Since the operator will continue to add services as long as they add to his profits, the "last" service provided just breaks even, which occurs where the curve C/N is tangent to a demand curve, shown in Fig. 4.1 at \( D_3 \). For the third service, total revenues just equal total costs at the price that maximizes the revenues from adding the service. No additional services can profitably be provided.

Of course, some consumers will be purchasing only one service, a somewhat smaller number will buy two services, and a still smaller number will purchase three services. Although, by assumption, customers of the same service are not charged different prices, different prices must be charged for different services in order to maximize the profits of the operator. Thus, the operator will offer one service at a price of \( P_1 \), two services at a price of \( (P_1 + P_2) \), and three services at a price of \( (P_1 + P_2 + P_3) \). The operator is, of course, indifferent to which services various consumers purchase, being concerned only with the number that they purchase.\[5\] Note that this price structure is identical to the way in which prices are set by many cable operators who offer more than one movie package. Consumers who purchase more than one such service generally pay lower per-unit prices than those who choose only a single service.

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[3] We implicitly assume that any costs of adding a subscriber to a given service, e.g., for billing, are borne by the subscribers.

[4] In Fig. 3.1, point b--the point showing the combination of price and number of subscribers that maximizes revenues--lies at the midpoint of \( D_m \). This follows from the fact that \( NR_m \) necessarily intersects the horizontal axis at one-half the distance between \( O \) and \( N_2 \).

[5] Similarly, consumers who purchase, say, two services from the three offered are indifferent as to which two they receive.
Thus far, we have concluded that the operator will set the price for each service to maximize the additions to his revenue from that service, and will continue to add services as long as they add to his profits. Eventually, a point will be reached at which an additional service adds more to costs than to revenues so that the operator will suffer a loss if he provides it. Moreover, the increment to profits from adding services declines as more are added, so that the first service adds more to profit than does the addition of the second, and so forth. If there is competition to supply programs to cable systems, payments to packagers will just equal their costs. Any excess of subscriber revenues over the costs of program production and distribution will be captured by cable systems even if all programs are acquired from independent packagers.[6]

UNREGULATED NONDISCRIMINATORY ACCESS

Now assume that the operator is forced to lease channel capacity on a nondiscriminatory basis, i.e., he must charge all lessees the same per-channel rate, but he is free to set any rate he chooses. To analyze this situation we must examine more closely the incentives of both potential channel lessees and of the operator.

Recall our assumptions that (a) the various services provided to subscribers are perfect substitutes for one another, (b) additional subscribers can be served with no increase in cost, and (c) a large number of firms can produce services at the same cost. Under these assumptions, we can take advantage of the results obtained by Oakland in analyzing the perfectly competitive production of public goods.[7] Since many channel lessees can provide a service at the same cost, if

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[6] Packagers may, however, capture payments in excess of their costs if they are more efficient than their competitors. Moreover, profits of cable operators will increase if they acquire programs from independent packagers who are more efficient in packaging programs than the operators.

any existing lessee obtains revenues that exceed its costs, including a normal profit, entry will occur and the prices to consumers will be driven down. In equilibrium, therefore, all lessees will earn merely normal profits. However, not all services will sell at the same price per consumer. Those purchased by large numbers will sell at low prices because their cost per consumer is low. Those purchased by small numbers will, as a consequence, sell at high prices. Of course, consumers who are purchasing services sold at high prices are also purchasing all that are priced more cheaply. Purchasers of many services will pay high prices for some and low prices for others, but they will never consume some services at higher prices than those they are not purchasing.

Now consider the problem of the cable operator. If he sets his channel access fee at a low level, many program services will be able to generate enough revenues to cover the cost of producing programs and the access fee. On the other hand, if the operator sets a very high price for access, only a few services will be able to operate profitably. To maximize his profits, the operator will set the access fee so that the number of channels leased times the access fee minus the cost of constructing and operating the cable system is maximized. Graphically, in equilibrium, the cost curve of the channel lessees (programmers) will have shifted from C/N to (C+A)/N in Fig. 4.1, where the access fee is A plus the additional cost of constructing and operating a channel.[8] Since A is positive, a smaller number of program services will be able to cover their costs than the number the unregulated operator would have been willing to provide. Thus, in Fig. 4.1, the third service (which was marginal for the operator to have provided if he faced no leased access requirement) cannot cover the cost of program production and of constructing and operating a channel, and also cover the access fee, since (C+A)/N lies everywhere above D_3. Thus, imposition of a leased channel requirement, where the only restriction is that access rates be nondiscriminatory, results in the elimination of some services that the operator would have provided.[9]

[8] These additional costs are, it should be recalled, included in C.
[9] The result that the services provided by channel lessees are a subset of those provided in the base case is an artifact of the
Our second result is that the prices charged to subscribers for the remaining services are below the prices in the base case. The prices for services that will be charged by channel lessees to their customers can be found as the intersections of \((C+A)/N\) and the various demand curves, since these are the points at which price and average cost per subscriber are equal, i.e., they are break-even points. Competition among lessees drives service prices down to their costs. Unlike the cable operator who, because he operates many channels, will take into account the effect of a change in the price of one service on the demand for others, the threat of entry from other programmers will prevent lessees from setting prices that exceed their costs. Thus, the price for service 1, \(P_1^a\), is below \(P_1\)---the price the operator would have charged for that service. Geometrically, \((C+A)/N\) must intersect \(D_1\) below the midpoint of the demand curve. For the new marginal service, in this case service 2, the price is unchanged from that in the base case.

It is also useful to demonstrate in a slightly different manner the determination of the number of channels programmed in the two cases. In Fig. 4.2, arrayed along \(DD\) are the incremental revenues obtained by the cable operator as he provides services on additional channels. For the reasons discussed above, the incremental revenues on the operator's first channel are greater than those on his second, which in turn are greater than those on his third, etc. If \(C\) is the additional cost of constructing and operating a channel, including the cost of programming, the operator will program \(X_3\) channels since at that point the additional revenues from adding a channel just equal the additional costs of operating it. Operating fewer channels would mean failure to provide program services that add more to revenues than they do to costs. Going beyond that point would mean adding services that add more to costs than they do to revenues.

Now consider the case in which the operator must lease all of his channels on a nondiscriminatory basis. The determination of the access assumption that the services are perfect substitutes. Below we consider more general cases.
fee that maximizes his profits, and the associated number of leased channels, is a relatively straightforward matter. Figure 4.1 shows that the incremental revenue that the cable operator receives by adding the nth channel is equal to the access fee which, when added to the cost of programming an additional channel, permits n channel lessees to operate profitably. That is, lessees (programmers) of all n channels will receive revenues just equal to that access fee plus the costs of programming an additional channel, so that all lessees earn a normal rate of return. Or, to put it slightly differently, at that access fee, n channels will be demanded by channel lessees.

To determine the access fee that maximizes the profits of the operator from channel leasing, one constructs the marginal revenue curve to DD in Fig. 4.2 and finds the point at which it intersects C. The number of leased channels that maximizes the operator's profit is thus
The profit-maximizing access charge is simply the sum of $A$, which is the difference between the height of $DD$ at that point and the marginal cost of operating and programming a channel, and the cost of operating the channel, i.e., not including programming costs. The product of $A$ and $X_2$ minus the costs of system operation that are independent of the number of channels are the profits earned by the cable operator from channel leasing.\[^{[10]}\]

An intuitive basis exists for the finding that some services will be eliminated when a requirement of nondiscriminatory access is imposed. It can be seen by recalling the previous observation that an operator who is free to determine service offerings and prices will obtain different profits from adding each of his channels. For some services, revenues will barely exceed programming costs and the cost of constructing and operating the channel, but they will, nonetheless, be provided since they add something to the operator’s profits. In effect, the operator can be thought of as leasing channels to himself at different prices based on their relative profitability.

When the operator must provide leased access on a nondiscriminatory basis, he will not set the access charge at the profits of his least profitable channel. But in setting a higher charge, some services the operator would otherwise have provided are unable to cover their costs and the access charge.

The effect of mandating nondiscriminatory access on the welfare of viewers is, therefore, ambiguous. On the one hand, some services the operator would have provided will not be offered. On the other, lower prices will prevail on the remaining services. One cannot tell, on a priori grounds alone, which effect will dominate.

One final point must also be addressed. A cable system required to lease its entire capacity on a nondiscriminatory but unregulated basis may not be profitable, even though a wholly unregulated cable system would be. The reason is that there may be no single access fee that permits the operator to cover the cost of construction and operation. Only if different prices are charged to different lessees—which is

\[^{[10]}\) Alternatively, one can think of the operator making available the channel and the programming to the lessee. If the operator’s marginal cost is $C$, he maximizes profits when the curve marginal to $DD$ intersects $C$.\]
what, in effect, occurs without regulation--will it be possible for such a system to operate profitably. If all channels must be leased on a nondiscriminatory basis, the system will not be built and, clearly, viewers will be worse off.

PARTIAL SEPARATION

A number of proposals for mandating leased access would permit the operator to control the offerings on some of his channels. Whether it is the "one or two" channels that the Cabinet committee would have reserved for the operator, or the 90 percent of capacity that the earlier version of S. 2172 would have made available, most proposals do not contemplate the total separation that we have analyzed. Here, we examine how the existence of channels controlled by the operator affects our findings. Throughout this analysis, we assume that the operator cannot discriminate among channel lessees, but that the charge he imposes on them is not regulated. We also continue to assume that services are perfect substitutes.

The principal difference between this case and the one of complete separation is that, here, the operator will take into account the effect of his access fee not only on the number of channel lessees but also on the profits from his own service offerings. As a result, he will set a higher access charge than if he controlled none of his channels. Indeed, one can even imagine an extreme case in which the operator would establish a price for access so high that no one could profitably lease channels, leaving the operator free to set prices on his own services without fear of losing customers to lessees. The cost of constructing the idle channels would be treated as a lump-sum tax on his profits.

Whether this extreme outcome is likely depends on how many channels the operator is permitted to retain for his own use. If he must set aside for lease a relatively small number of channels, and the bulk of his earnings comes from services on his own channels, setting a very high access fee is likely to be the most profitable strategy. Even if the optimal fee is not so high as to exclude all lessees, it will be set with an eye to preventing lessees from establishing service prices that attract many of the operator's own customers. On the other hand, if only a small number of channels are reserved for the operator, he will
not be able to afford a large number of "dark" channels and, in any event, the price he sets for access may not differ much from that under complete separation. Since most recent proposals would require relatively modest percentages of channel capacity to be made available for lease, we would expect the operator to set relatively high prices for them to avoid significant reductions in the profits on those channels he continues to control.[11]

REGULATED NONDISCRIMINATORY ACCESS CHARGES

Next, we consider the effect of regulating the access rates themselves. Initially, we assume that the cable operator is required to set access rates equal to the marginal cost of constructing and operating a channel, i.e., to engage in marginal cost pricing for access.[12] Here, we ignore the possibility that, at access fees equal to marginal cost, total operator costs may not be covered. Moreover, we assume that the entire capacity of the system must be leased.

As shown in Fig. 4.1, the cost curve of a channel lessee, including both the cost of leasing the channel and producing the program, is C/N, since C includes the marginal cost of constructing and operating the channel. Long-run equilibria are found, therefore, at the intersections of C/N and the various demand curves. Note that now, services 1 through 3 will all be provided, so that the effect of mandating leased access is not, as in the previous case, to reduce service offerings. Moreover, the prices for most services are lower than those in the base case; for example, the price for service 1 is $P_1$. Only the price $P_3$ of service 3 (the marginal service in the base case) is unaffected.

Of course, if we ignore the costs of imposing the regulations, the benefits from a system of mandated leased channel access are unambiguous. All services the cable operator would himself have provided in the base case are provided by lessees, and the prices of all except one (service 3) are lower than those the operator would set if

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[11] There would also be a concern by the operator that, if the access fee were set too low, some of the services from which he acquired programs might prefer, instead, to become channel lessees.

[12] If the capacity of the system is limited, marginal cost pricing is equivalent to setting an access fee at which the supply and demand for channels are equated.
free to do so. Consumer welfare is increased and economic efficiency is improved.

Two comments are in order about this outcome. First, as Oakland points out, as long as the same price is charged to all purchasers of a given public good, the result cannot be economically efficient. The reason is that the price being charged results in the exclusion of subscribers who could be served at no increase in cost. Only prices that reflect differences in consumer evaluations of the good can prevent this from occurring.[13] But while the outcome is not efficient, it clearly is to be preferred, the costs of regulation aside, to that under either operator control or unregulated nondiscriminatory access.

Second, given our assumption that economies of scale exist in system construction and operation, marginal cost pricing for access by channel lessees will not cover the total cost of the system if marginal cost is below average cost.[14] Operators will be unwilling to construct systems under such terms unless they receive subsidies to cover their losses.

To prevent losses from occurring, operators can be permitted to set access rates equal to average cost. However, an additional inefficiency is introduced since some channel lessees who would be willing to lease a channel at marginal cost are unable to do so. Thus, average cost pricing for channels results in some services not being offered that would have been provided by the cable operator, some being offered that would not have been provided under nondiscriminatory access without rate regulation, and some not being offered that would have been provided under marginal cost pricing for channels.[15] At the same time, prices

[13] In the Demsetz model, where it is assumed that price discrimination is possible, the outcome is efficient.

[14] Recall that the condition we use to characterize economies of scale is that the cost of a single system with a given capacity is smaller than the cost of two or more systems with the same combined capacity. It is possible for that condition to be met even where marginal cost is above average cost. If this occurred, marginal cost pricing could be consistent with the operator earning enough to cover his costs and earn a normal profit.

[15] The cost-per-subscriber curve in Fig. 4.1 will lie between C/N and (C+A)/N under average cost pricing for channels. Of course, there may be no single price at which the operator can cover his costs.
for those services that continue to be offered are lower than those in the base case, lower than under nondiscriminatory access without rate regulation, but higher than under marginal cost pricing for channels. As in the case of nondiscriminatory access without rate regulation, some services are not offered that are provided in the base case, but the prices of remaining services also fall. Again, then, we cannot be sure whether subscribers are better off under average cost pricing than where there is no leased access requirement. But we can say that average cost pricing produces a better outcome than does a requirement of unregulated nondiscriminatory access.

AN ALTERNATIVE DEFINITION OF NONDISCRIMINATION

Thus far we have defined nondiscriminatory access as requiring the same charge per channel to all lessees. Under this definition, lessees providing services to only a few subscribers pay a higher access price per subscriber than do the providers of services that are patronized by a large number of customers. An alternative definition of nondiscrimination that might be considered, therefore, is one under which each channel lessee pays the same price per subscriber, so that services that reach only a small number of subscribers pay smaller lease charges than do those that are purchased by large numbers.

Recall that when all lessees pay the same per-channel access charge, the access charge shifts the curve representing the cost per subscriber upward, but by smaller and smaller amounts as the number of subscribers served increases. As shown in Fig. 4.3, this occurs because spreading a given access charge over progressively more subscribers reduces the per-subscriber charge. By contrast, where the access charge is the same per subscriber, the effect is to shift per-subscriber cost upward, but by the same amount everywhere. As a result, the new per-subscriber cost curve is parallel to the original one. But, of course, this per-subscriber cost curve must at some point intersect the one drawn for a constant charge per channel, since for the latter the access fee per subscriber approaches zero as the number of subscribers approaches infinity.
Fig. 4.3 -- A comparison of the effects of nondiscriminatory per-subscriber and per-channel access charges

Three conclusions emerge. First, a per-subscriber charge (like a per-channel charge) would result in fewer services being offered than in the base case. Some services that the cable operator would have provided in the base case cannot profitably be provided by channel lessees, because the per-subscriber cost curve has been shifted upward by the access charge. Second, fewer services are likely to be eliminated by the imposition of a per-subscriber charge than by a per-channel charge.[16] This follows from the fact that, for services patronized by a small number of subscribers, the upward shift in the per-subscriber cost curve is smaller where the nondiscriminatory access charge is set on a per-subscriber basis. A corollary is that the prices of these services will not rise by as much as when a per-channel charge is levied.

[16] This result is guaranteed only where services are perfect substitutes. Otherwise, the demand curves for service may intersect, leading to results different from those described above.
Finally, for services patronized by large numbers of subscribers, subscriber prices may be higher (and thus the number of subscribers taking the services will be smaller) where the access fee is set on a per-subscriber rather than on a per-channel basis. Prices will be higher if the per-subscriber charge is higher than the per-subscriber cost when a per-channel charge is imposed.

Assessing the effects on consumer satisfaction is especially difficult here. Fewer services are offered than in the base case, but more are offered than under a per-channel access charge. And, of the services that continue to be provided, prices for some may be higher and for others they will be lower than when the access charge is imposed on a per-channel basis. In both cases, of course, the prices are lower than those that would have been set by the cable operator.

THE CASE OF INDEPENDENT SERVICES

The previous discussion proceeded under the assumption that the various services provided were perfect substitutes for one another. For concreteness, we described the services as packages of movies and assumed that consumers would, because they regarded the services as substitutes, always choose the least expensive ones first. In this section, we consider the opposite case—that in which the services are not substitutes at all—where a decline in the price of one does not lead to a substitution of any other for it. Again for concreteness, one can think of one service as a movie channel, another a burglar alarm service, a third involving information retrieval, and so on. Since we developed our analytical apparatus at length in the previous sections, the treatment is briefer here.

First, consider the case of a cable operator free of leased access requirements. His situation is much the same as it was where services were perfect substitutes. The price for a service that maximizes its revenues occurs at the midpoint of its demand curve. Thus, in Fig. 4.4, the cable system will charge $P_M$ for the movie channel, $P_B$ for the burglar alarm channel, and $P_I$ for the information channel. We assume that the cost of providing each service is the same and that the combined cost of programming and operating a channel is $C$, as before.
Fig. 4.4 -- Determination of service offerings and prices: the case of independent services

Here services B, M, and I are provided, but not service R, the religious channel, and the prices are set to maximize profits.

If there are many possible producers of each type of service, the price of each will be driven to its cost, i.e., no excess profits will be earned. For example, the price of the movie channel falls to $P_M$. The potential for entry by other producers keeps incumbents from charging prices that exceed costs, even if only one unit of each type of service is provided. Thus, the effect of mandating leased access without regulating access charges is here, as in the case where services are perfect substitutes, to eliminate some service offerings and to lower prices for the remaining services.[17]

[17] The result that the services provided by lessees are among those the operator would have offered is an artifact of the assumption that services are independent.
Now consider the case of leased access where access charges are unregulated and where only a single firm can produce each service. As before, the operator will set the access charge to maximize his profits, and some services will not be provided by lessees that would have been provided by the operator—i.e., in this case service I. For the services that continue to be provided, however, the producer will charge the same price as would the cable operator. Thus, since service prices do not fall, and the range of service offerings falls, the welfare effect of mandating nondiscriminatory leased access is unambiguously negative.

Finally, consider the case where access fees are regulated and are equal to marginal cost. Here, if only one firm can produce a given service, the regulation results simply in a transfer of profits from the cable operator to the producers of various services, since the prices to subscribers are unaffected and the same range of services is offered. Consequently, the differences between revenues and costs, including the access fee for each service, accrue to channel lessees.

Where the markets for services are competitive, however, the price of each service is equal to the cost of providing that service, including the cost of constructing and operating the channel, which is lower than the price in the base case charge. For example, in Fig. 4.4 the price of the movie channel is \( P^M \) rather than \( P^M \). Again, although the outcome is not an efficient one, the inefficiency is the result of the failure to charge different prices to different consumers of the same service.

THE CASE OF IMPERFECT SUBSTITUTES

In the cases where services were assumed to be either perfect substitutes or independent goods, we were able to show that the effect of mandating nondiscriminatory access is to eliminate some of the services that an unregulated operator would have provided. In these cases, moreover, the services that channel lessees offer are always among those that the operator would have provided. This latter result is, however, an artifact of the perfect-substitution or independent-good assumptions.
Where program services are substitutes for one another, but imperfectly so, services supplied by lessees will generally differ from those that an operator would furnish. For example, although a cable operator would provide only one service of each type where services are independent, channel lessees might offer more than one variant of the more popular services and divide subscribership among them. Thus, not only will some services be eliminated when a nondiscriminatory access requirement is imposed, but some will also be added.

The result—that there may be "duplication" when services are provided by competitors—is similar to that of Steiner's classic analysis of program choices in radio. [18] In the Steiner model, consumers will not purchase programs that are not their "first choice." Nevertheless, more than one version of the same program can be provided, since programs are advertiser-supported and the audience for any program type is assumed to be divided equally among those stations that provide it. Here, by contrast, only imperfect substitutes can be provided by competitors since services are supported by direct subscriber payments. Lessees cannot offer identical versions of a service where goods are independent, since all consumers will purchase the version available at the lowest price. Where services are independent, each is a "natural monopoly," although competition to provide the service prevents excess profits from being earned. [19]

In this case, analyzing the effect on subscribers of mandating nondiscriminatory leased access is especially difficult. Not only will some services be eliminated when an access requirement is imposed, but some will also be added. Thus, although services demanded by small numbers of subscribers may not be offered by channel lessees, several versions of more popular programs may be offered. At the same time, competition among service packagers will drive service prices to their costs. The net effect on subscribers is, to say the least, ambiguous.


[19] More than one version of the perfect substitutes analyzed above may be provided because consumers may wish to purchase more than one service.
THE CASE OF COMPLEMENTARY SERVICES

For most situations, it is reasonable to think of the services offered by cable systems as either substitutes for one another or independent goods. That is, a reduction in the price of one service either reduces or leaves unchanged the demand for others. There are, however, situations in which services may be complements, so that a reduction in the price of one leads to an increase in the demand for others. This section explores the sources of such complementarities and the implications for our previous results.

There are two possible ways in which complementarities can occur. The first occurs where consumers must pay a fee that is independent of the number of services taken in order to obtain any cable service. For example, cable systems frequently charge a connection fee when service is first instituted. For a household to subscribe, therefore, the "surplus" from the services it takes if it subscribes, i.e., the value over and above the price of the service, must exceed the "entry" fee. In this case, a reduction in the price of one service may, by increasing the "surplus," induce some consumers to subscribe and to take other services as well.[20]

Second, subscribers may be required to purchase one service in order to obtain another. For example, cable subscribers presently must take the basic service if they wish to subscribe to a pay service. A reduction in the price of either basic or pay service may thus cause some nonsubscribers to subscribe and take the pay service. For these consumers, basic and pay services are complements, in that a reduction in the price of one results in an increase in the demand for the other.

We should begin by noting that, where services are complements, an unregulated cable operator might charge lower prices for them than if they are provided by independent packagers. This contrasts with our previous results, where services were assumed to be either substitutes or independent goods. The reason is that when the operator reduces the price for one of his services, it increases the demand for others, and

[20] Although for these consumers the services are complements, they will be substitutes for all other subscribers, so the net effect of a reduction in the price of one service on the demand for others is ambiguous.
thus the "return" from the price reduction is greater than if the services were offered by different suppliers. If services are complements, but the cable operator is required to lease his entire capacity at nondiscriminatory but unregulated rates, these complementarities cannot easily be exploited by competitive suppliers. This is so for two reasons. First, packagers of complementary services must agree both on the prices to be charged, in order to maximize their joint profits, and on the distribution of the profits among them. This is likely to be more costly, and thus less likely, than where the operator controls all of the channels.[21] Second, although the operator can attempt to take complementarities into account in setting his access fee, this is likely to be a blunt instrument since the same reduction in price affects all service suppliers equally, whether they provide complementary services or not. The result is that, where complementarities are important, the reduction in price that accompanies a shift to a mandated leased access arrangement will be smaller than where services are independent or substitutes, and it is even possible that some prices will be lower if the operator rather than channel lessees provide services.

A second instance in which our previous findings must be modified to reflect the presence of complementarities occurs where there are partial separations and the services provided by channel lessees are complements of those provided by the operator.[22] We argued previously that, under partial separations, the cable operator will, in setting his access fee, take into account the effect of the services provided by lessees on the profits from his own services. If the services are complements, the operator may wish to lower the prices of his own services, in order to encourage the demand for the services of lessees, to whom he can then charge a higher access fee, or to lower the access fee, in order to encourage the demand for his own services. However,

[21] Another possibility is for the suppliers of complementary services to merge which, while reducing transactions costs, raises the possibility that firms will merge not only to exploit complementarities but also to collude on price.

[22] A similar situation arises where the operator continues to provide a basic service, say, the retransmission of broadcast signals.
for the reasons suggested above, it is likely to be far more difficult for complementarities to be exploited in this fashion than where the operator controls all channels so that prices may be lower with operator control than under mandated leased access.

THE CASE OF MULTIPLE MARKETS

Thus far, our analysis has been confined to a single isolated cable system where the entire cost of each service is covered by the revenues from its own subscribers. Where several cable systems offer the same service, the analysis becomes somewhat more complex but similar conclusions emerge.

It is first necessary to recall that, in our base case, cable operators will maximize the revenue from each service and add services as long as doing so contributes more to revenues than to costs. Where many cable systems share the cost of a service, the marginal service for all systems combined is one for which, given the maximum revenue that can be obtained from subscribers of all systems, total revenues just equal the cost of producing the service.

If we consider the case of unregulated but nondiscriminatory mandatory leased access, and if we continue to assume that there are many competitive suppliers of each program service, we can show that, as in the case of a single isolated system, subscriber prices are reduced below those in the base case.

The existence of competition guarantees here, as it did previously, that the total revenues of each packager, in this case from a number of systems, just equal his total costs. If this were not the case, entry would take place and prices would be driven downward. Moreover, no packager would set a price in any market that exceeded the price that the cable operator, free to maximize profits, would charge. Doing so would needlessly forgo revenue. A packager who chose a price that exceeded the revenue-maximizing price of the operator would be vulnerable to entry by a competing packager offering lower prices for the same service.
SUMMARY

To summarize the conclusions of our analysis, we find that, as compared with a system in which the operator determines prices and service offerings, mandating nondiscriminatory leased access without regulating access charges has the effect of excluding some services that the cable operator would have provided had he been able to determine program offerings. This occurs because, at the nondiscriminatory access fee that maximizes operator profits from channel leasing, services that are marginal will be unable to cover their costs and the access fee. Where the operator controls the content of all channels and can, in effect, impose discriminatory access fees, some of these services will be profitable since they will pay a lower access fee than more attractive services. At the same time, competition among channel lessees generally leads to subscriber prices for other services that are below those that the operator would have charged for them. The operator will, unlike channel lessees, take into account the effect on the demand for all services of a change in the price of one. Where services are substitutes, prices will be higher under monopoly than under competition.[23]

Under partial separation, where the operator retains control of some of his channel capacity, in setting access charges he will take into account not only the effect of rates on the number of channels leased but also the effect of services offered by lessees on the profits of his own channels. Since these services will usually be substitutes for his own, he will generally set higher access fees than he would under complete separation. The increase in rates rises as the number of operator-controlled channels falls.

[23] In one limiting case, that where the various services provided are completely nonsubstitutable for one another, i.e., where an increase in the price of one service does not induce customers to shift to another, and only a single firm can provide each service, the effect of mandating nondiscriminatory leased access is to reduce the range of service offerings but to leave the prices of the remaining services unchanged. In what we regard as the unlikely case that services are complements, i.e., a reduction in the price of one service leads to an increase in the demand for others, prices can be lower if the operator provides services.
The results are different if rates for leased access are regulated.\[24\] If access charges are regulated to reflect the additional cost of constructing and operating a channel, requiring nondiscriminatory access leaves the array of program offerings unchanged from that chosen by the cable operator and reduces the prices to consumers for those services.\[25\] The reason that no services are eliminated is that, as in the case of an unregulated operator, any service that generates revenues in excess of the incremental cost of a channel can profitably be provided. Where access charges are set equal to average costs, however, both service offerings and prices are reduced below those set by the operator. Service offerings are reduced because some services that can cover production costs and an access charge equal to marginal cost are unprofitable when a (higher) access charge equal to average cost is imposed. However, the reductions in service offerings and prices are smaller than where an unregulated but nondiscriminatory access charge is imposed, because the regulated access charges will be lower than those set by an unregulated operator.

Finally, where access charges are the same per subscriber but the level of the charge is unregulated, some services the operator would have provided are unprofitable for lessees to offer, but the decline in the number of services offered is smaller than where access fees are set on a per-channel basis. In particular, some services that reach relatively small numbers of subscribers will be offered by lessees although they would not be provided when access fees are set on a per-channel basis. This occurs because these lessees pay smaller access fees. However, the prices to subscribers for services that have large patronage may be higher than where a per-channel access fee is imposed.

\[24\] In this section, we ignore the difficulties involved in regulating these rates. These problems are considered in Sec. V.

\[25\] In the limiting case where services are completely nonsubstitutable, the result is to leave both prices and service offerings unaffected.
The following tabulation brings together our major conclusions:

- In the case where (a) leased access requirements are imposed, (b) access charges are unregulated, and (c) the market for program services is competitive, and (d) services are either perfect substitutes or independent goods, subscriber prices are lower and fewer services are offered than in the base case where the operator faces no such requirements. Thus, we cannot determine on a priori grounds whether viewers are better off, on balance, with mandatory leased access.

- If only a single firm can produce each program service, however, the results are unambiguously worse than in the base case, since the range of service offerings falls but without subscriber prices being reduced.

- Mandatory leased access produces unambiguously better results than those of the base case only if access charges are regulated and set equal to the marginal cost of constructing and operating a channel. (The problem of rate regulation will be treated in Sec. V.)

- If rate regulation is based on average rather than marginal cost, the results again are ambiguous relative to the base case, since fewer services will be offered but prices of the remaining services will also fall. But average cost pricing produces better results than those where access requirements are imposed without rate regulation, since prices are lower and more services are offered.

- A requirement of nondiscrimination on a per-subscriber rather than on a per-channel basis would encourage the development of services catering to small audiences, while discouraging services having mass audience appeal.

- If the operator is required to offer only a small portion of the channel capacity for leased access, he will set a higher access charge than he would if all of his channels came under the requirement. Without rate regulation, one can even imagine an extreme case in which the operator would establish a price for access so high that no one could afford to lease channels, leaving the operator free to set prices on his own services without fear of losing customers to lessees.
V. PROBLEMS OF IMPLEMENTING MANDATORY LEASED ACCESS

Drawing from the preceding analysis, this section focuses on identifying and assessing problems that may arise in implementing alternative forms of mandatory leased access. The discussion will proceed within the context of current arrangements for access by program packagers to cable systems, using as concrete examples some of the arrangements noted in Sec. III. Moreover, we will be concerned with program packages that are imperfect substitutes for each other, typical of today's situation, in contrast to the polar cases of perfect substitutability and complete independence treated in detail in the preceding section. The following topics are addressed:

- The problems posed by placing all cable services under a single nondiscriminatory access scheme, in light of the large differences among implicit access charges presently paid by packagers.
- The effects of defining nondiscrimination on a per-subscriber rather than per-channel basis.
- The alternative of classifying services, with nondiscrimination enforced within each class, and with access charges allowed to vary among classes.
- The alternative of requiring the operator to lease only a portion of his capacity.
- The enforcement of mandatory leased access schemes, given that cable operators may seek covertly to discriminate among packagers.
- Government regulation of access rates.
- Policy instruments that may be attractive alternatives to mandatory leased access.

PROBLEMS POSED BY FULL NONDISCRIMINATION

The most fundamental problem posed by mandating nondiscriminatory access is that some packages, including some currently found among basic service offerings, would probably not be carried. As we concluded in
the preceding section, whether viewers would, on balance, be better off or worse off is unclear. On the one hand, some program packages that continue to be carried might be offered to subscribers at lower prices as a result of competition among packagers, while packages not offered today might be added. On the other hand, some services now offered would not survive.

This problem of survival arises because packagers vary widely in their ability to pay access charges depending on the strength of subscriber and advertiser demand, and on program production costs. A popular movie package can support a far higher access charge—perhaps by a factor of 10, 20, or even more—than can a news and information package. If the operator is forced to set the same per-channel access fee for all channels, the fee that would maximize his profits would be higher than some existing packagers could pay.

Today, the operator seeking to maximize profits is free to carry services that just cover their marginal costs and simultaneously to set access for other services, such as pay movie packages, at much higher rates to cover other costs. This result is desirable insofar as subscribers have access to services that just cover their marginal costs. By requiring the operator to treat all services alike—whether they are popular movie packages or information services directed at specialized audiences—mandatory nondiscrimination forces the operator to forgo some services he otherwise would have carried.

Even if the operator were prevented from maximizing profits but instead were required to cover only his costs, including a "normal" profit, some packages would not survive. The operator would set the access fee to equal his average per-channel costs, which exceed his marginal costs.[1] Thus, those program packagers willing to pay an access fee falling between the operator’s average and marginal costs would be excluded.

This situation is made worse by today’s high metering costs for individual channels. As noted in Sec. III, current technology permits the imposition of separate per-channel charges only where subscribers pay an amount sufficient to offset the high cost of metering. Thus,

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[1] Average costs will exceed marginal cost since there are expenses, e.g., administrative and overhead charges, that are incurred regardless of the number of channels occupied.
movie services, where monthly charges of $6 to $10 are common, are presently billed for separately. Although continued development of addressable converters will reduce the significance of metering costs, the pace at which this will proceed is uncertain.

To analyze these factors in more detail, we will consider two cases. First, we assume that metering costs are zero in order to show how variations in viewers' willingness to pay for various packages, combined with marginal costs for channel time that are below average costs, would force the discontinuation of some services. Second, we show how positive metering costs, characteristic of today's technology, contribute to the problem of program survival.[2]

The Case of Zero Metering Costs

As discussed in Sec. III, to reduce overall transactions costs (including metering costs) most program packagers presently pay implicitly rather than explicitly for access, while cable operators bill and collect revenues from subscribers. An initial problem of implementing a leased access system involves developing a way for program packagers to collect subscriber fees directly in order to have the revenues to pay for access.

If the cost of metering individual channels were zero, the distinction between pay and basic services could be eliminated since subscribers could be billed separately for each channel.[3] Each packager could collect directly from subscribers and, in contrast to current arrangements, pay explicitly rather than implicitly for access.

To be sure, metering is only one portion of overall transactions, which also include subscriber billing and collection, and advertising and other marketing activities. These costs might rise if each channel lessee attempted to deal directly with subscribers rather than leaving this function to cable operators. However, new mechanisms might be established to permit packagers to collect revenues without substantially adding to overall transactions costs. They might

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[2] For simplicity, we assume the channels used for carrying signals from broadcasting stations would continue to be devoted to these services and would not be affected by leased access requirements.

[3] However, a basic service package, consisting of signals carried under the FCC "must carry" rules and other services required by local franchise agreements, could remain.
establish a central collection mechanism with a single subscriber bill for all pay services. More likely, they would cooperate with cable operators so that, as today, the subscriber would receive only one bill, with revenues subsequently remitted to packagers. With only small changes in accounting required, collection of subscriber fees by packagers would probably add little to transactions costs.

Complications might arise in performing advertising and other marketing functions. If the operator is to avoid discrimination, he would either not advertise individual services, or he would establish a tariff for advertising as well as for channels. For example, he might post a fee for inclusion of envelope stuffers in monthly subscribers' statements. Or he might offer to include advertising in the subscribers' program guide, in much the same way that telephone companies sell space in their yellow pages.[4] The challenge of preventing the operator from discriminating among packagers through his pricing of advertising services is discussed below.

To estimate the size of the revenues out of which program packagers would pay access fees, we assume that packagers and operators presently divide these revenues equally, as is the case for pay movie services, and that gross revenues to be divided consist of both subscriber fees and advertiser receipts. We conjecture, however, that packagers of services that attract small audiences probably collect an even larger proportion of gross revenues, so that our estimates of revenues for these services are overstated.

Under this assumption, a purely subscriber-supported service like Nickelodeon, geared to children's needs as shown in Table 3.3, would collect perhaps 20 cents per subscriber. A service like C-SPAN in Table 3.3, catering to small audiences interested in federal government activities, would collect only about 2 cents per system subscriber. The U.S.A. Network, an advertiser- and subscriber-supported service shown in Table 3.5, supported by a per-subscriber contribution of 11 cents and advertising revenues of about 4 cents per subscriber, would have gross per-subscriber revenues of perhaps 30 cents.[5]

[4] Alternatively, some packagers might advertise jointly or a third party might provide advertising services for several packagers.
[5] This estimate must be adjusted upward if the revenues of the U.S.A. Network are significantly affected by its being carried on a pay tier at the 26-cent rate shown in Table 3.5.
Again, in all these cases, the gross revenue for the service in question minus its transactions costs and program procurement and packaging costs would constitute the maximum access charge the packager could pay. The fact that some services (such as C-SPAN) presently pay very low access charges arises from the fact that these charges nevertheless cover the operator’s marginal costs, so that he finds it profitable, or at least not unprofitable, to carry them.

We cannot estimate here the operator’s optimal nondiscriminatory access charge. But, whatever its magnitude, it would result in a reduction in the operator’s profits and in the discontinuation of some services. To demonstrate, if an operator set a per-channel charge equivalent to 30 cents per subscriber to the cable system, most or all of the above-mentioned services would probably be discontinued. At the same time, today’s pay-program packagers would be entitled to access at a charge far less than some pay today. To estimate their current (implicit) payment, we must first note that since only a portion of the subscribers to cable systems also subscribe to current pay services, a pay packager would remit more than 30 cents for each of his subscribers. (For example, if one-half of the system subscribers also took the pay service, the packager would pay the equivalent of 60 cents for each of his subscribers.) As noted in Sec. III, pay packagers currently pay a gross implicit access charge of roughly $3 to $5 for each of their subscribers. At the $3 lower-bound estimate, the gross implicit access fee remitted today by a pay packager exceeds the equivalent of 30 cents per subscriber to the system if more than 10 percent of those subscribers take the pay service. At the upper-bound estimate of $5, the gross fee currently paid by the packager exceeds 30 cents if more than 6 percent of the system subscribers take the pay service. To estimate the net implicit access charge, we would subtract transactions costs from these gross figures, including the prorated cost of converters and other special equipment required for pay services. We do not have data on these transactions costs, but the net access fee for at least some pay packagers apparently far exceeds 30 cents per subscriber to the system, since approximately 41 percent of all system subscribers who are presently offered one pay service take it along with the basic service.[6]

[6] At the end of 1981, 2,430 cable systems offered one pay service
With such a low access charge, new pay packagers might be attracted to the business, resulting in more packages being offered on the system. Presumably, packagers would be attracted to the point where the marginal packager, paying the low access charge, would just break even. But the problem would remain of viewers being denied many, if not all, of the offerings included today in basic services.

The cable operator would suffer a reduction in profits (relative to the outcome under current arrangements with packagers), since a 30-cent access charge would be lower than some pay packagers implicitly pay today, while the operator would also lose whatever profits he would otherwise have earned on the discontinued services. To recoup some of the revenue lost to the most lucrative of the pay packages, the operator might raise the access charge above the 30-cent level postulated above. But to do so would only further ensure the demise of services of the sort listed in Tables 3.3, 3.4, and 3.5. Again, we cannot compute here the cable operator's optimal nondiscriminatory access charge. But it is unlikely that he would set access charges so low that all services currently included in basic service packages would survive.

The Case of Positive Metering Costs

Although today's pay packagers listed in Table 3.2 would benefit from reduced metering costs, their revenues are sufficiently large to absorb metering costs characteristic of current technology. But these costs pose a more severe problem for packages offered today as part of basic services. In addition to difficulties in paying a nondiscriminatory access fee, as emphasized above, packagers would be burdened with metering costs. That these costs are currently substantial is suggested by the fact that, in general, only packages that have strong audience appeal (i.e., those involving a subscriber payment of $6 to $10 per month) are presently offered on a pay basis.

To avoid the costs of metering separate channels, packagers might cooperate in leasing a block of channels to be offered as a bundle to subscribers, similar to the way that basic services are currently sold.

The packagers would agree among themselves as to how to divide their total revenues. In this way, the cost of metering the bundle would be less, on a per-channel basis, than would be the cost of metering each channel. But each packager, faced with paying a share of the group's metering costs, would still have greater difficulty gaining access to cable than he would with zero metering costs.

**PER-SUBSCRIBER VS. PER-CHANNEL CHARGES**

One way to encourage the continuation of services that otherwise would not survive under nondiscriminatory access is to define nondiscrimination in terms of per-subscriber rather than per-channel charges, as analyzed in Sec. IV. Since small-audience programs would pay less than they would under per-channel charges, more of the services now included in basic services might be carried than otherwise; and relatively profitable mass audience movie packages would pay more per channel if they attract large numbers of subscribers.

However, the number of subscribers may sometimes be a poor measure of revenues generated by a service and, hence, a poor measure of its ability to pay access charges in order to survive. A news and information channel, for example, may draw a large audience with each viewer willing to pay only a low price, while a smaller group of viewers of a movie channel may each be willing to pay a higher price. Total revenues (net of programming costs) might be far smaller for the news and information channel than for the movie channel, yet the former would face a higher total access charge that the packager might be unable to pay. Thus, the per-subscriber approach would not assure the continuation of all services the operator carries today.

**RATE DIFFERENTIALS AMONG USER CLASSES**

Another way to seek the continuation of services that otherwise would not survive involves abandonment of full nondiscriminatory access. Here, there would be several classes of users paying different access charges, with nondiscrimination enforced within each class. For example, movie packagers might pay higher rates than would basic service packagers. This approach would encourage provision of additional services; but it raises troublesome issues about the definition of user classes.
At first blush, it might appear easy enough to establish user classes where, for example, pay services of the sort shown in Table 3.2 could be charged a high rate; services supported by both advertising and subscriber fees might pay an intermediate rate; and other services (especially those of "public service" nature) might pay a rate just high enough to cover the operator's marginal cost.

But problems of definition quickly appear. For example, how does one define a pay movie channel for purposes of establishing a uniform access charge? Would one want a film package of Shakespearean plays to pay the same rate as a package of horror movies directed to teenage audiences? Is there any reason to distinguish between movies produced for recent theatrical release and low-budget movies produced especially for television? Within basic service packages, should packages such as C-SPAN or others produced by nonprofit organizations be accorded preferential treatment? What about instructional offerings for high school or college credits? Should programs with little advertising pay differently from those laden with commercials? Our purpose is not to answer these questions but to identify a Pandora's box.

It is easy enough to imagine the interminable debate and jockeying, as packagers seek waivers and other means to obtain preferential treatment. While the ground rules for access were thrashed out (including petitions for exceptions, appeals and court challenges), legal and other administrative costs would mount.

Complications would likely emerge also in other dimensions. Thus far, we have treated only packages that require full-time video channels. But part-time use may be no less important. A service using a channel only half-time presumably would pay somewhat more than half of the full-time rate to reflect additional costs imposed on the operator. But whatever differential the operator establishes is likely to be challenged by those who feel disadvantaged.[7] The sharing and resale

of channel time by packagers, similar to sharing and reselling of WATS telephone lines permitted by the FCC,[8] would mitigate the problem.

Use by time of day is also relevant. If the operator has excess capacity, his cost of carrying a program in the early morning hours is the same as that during prime time. Would differential rates designed to reflect relative values to viewers be regarded as nondiscriminatory?

In addition to video, tariffs would also need to be established for voice and data channels. We would expect these rates to be lower than for video because of their lower capacity requirements. But it is not out of the question that users would value more highly a given amount of bandwidth on certain data channels (e.g., return links for home security systems) than they would for the same bandwidth included in basic services. Would such differentials be treated as discriminatory?

Ironically, the greater is the number of user classes, and the greater is the operator's freedom to set differential access rates across classes, the closer would be the outcome to today's system of discriminatory access!

PARTIAL LEASED ACCESS

Another approach to preventing the elimination of services as a result of mandating a nondiscriminatory leased access is to require the operator to offer for lease only a portion, rather than 100 percent, of his system's capacity. Since the operator could discriminate among the users of his remaining channels, some of these services might still be carried. As originally written, a bill introduced in the U.S. Senate would have required systems with 20 or more channels to set aside for lease 10 percent of those channels not mandated by the FCC for other uses. As discussed in Sec. IV, this approach could result simply in the cable operator setting a very high lease charge on those channels, making them attractive only for the most profitable pay services (and letting some channels lie fallow if necessary) in order to protect his revenues from other services.

Thus, under this legislation the operator would face no barrier to pricing his leased channels at very high rates to foreclose their use by any packagers except those of the most profitable services. With other services undisturbed by such a leased access requirement, the legislation might have little overall effect on the way cable systems operate.[9]

ENFORCEMENT

Understandably enough, cable operators oppose the notion of mandatory leased access because it would reduce their revenues—possibly dramatically so if all equivalent full-time channel users—e.g., movie packages, children’s programming, instructional television—paid identical rates. Operators would therefore have incentives to engage in other forms of discrimination in order to offset these losses. We illustrate these effects by considering the provision of ancillary and marketing services.

Carriage of some packages may require the provision of ancillary services such as modification of subscriber converters. In principle, this task could be performed by the packager. But the cost of doing so may be lower if the operator undertakes it along with his other maintenance and servicing responsibilities.[10]

Suppose that the operator wants to carry a service that otherwise would be excluded under a given nondiscriminatory access charge. This situation would occur if his revenues from the access charge exceeded his marginal cost. Consequently, the operator might wish to make a particularly attractive deal with the packager for the provision of the ancillary service.

[9] Subsequently, the bill was revised to delete specific reference to leasing and now requires only that the channels set aside be made available for use by others—presumably, program packages not co-owned with the cable system. Since most cable systems already carry a number of channels filled by independent packagers, the effects of this legislative approach on access are questionable.

[10] Placing the responsibility in the hands of the cable operator is advantageous also in giving the subscriber a central point of contact.
Conversely, consider a service highly profitable to the packager carried at the same access charge. Seeking to capture some of these profits, the operator may charge more than his cost for providing the ancillary services to the packager.

Policing such arrangements to ensure nondiscrimination would not be easy. Among the complications is the fact that the ancillary requirements may be service-specific, exacerbating the difficulty of making cost comparisons across services.

Similar situations would arise in the case of advertising and other marketing activities. Advertising ventures are sometimes jointly funded by cable operators and packagers (e.g., billboard campaigns advertising a particular pay movie package on a particular cable system). The cable operator's desire to add a package otherwise excluded, or to capture some of the profits of services he carries, could affect the nature of these arrangements (either increasing or reducing the share of the costs borne by the operator) and would be difficult for a government agency to police.

Another example arises with advertising slots that are made available on some program packages for use by the operator. In Sec. III, we concentrated on cases where advertising was sold by the packagers. But some arrangements also involve the insertion of advertising by the operator who retains the revenues. Obviously, the value of these advertising slots to the operator affects the overall financial arrangement with the packager. With mandatory nondiscriminatory access, the packager might seek to encourage the carriage of particular services by offering large numbers of these slots to the operator.[11]

[11] Anyone who believes that it would be easy to prevent such evasions of regulations designed to promote nondiscriminatory access should read Federal Communications Commission, Network Inquiry Special Staff, An Analysis of the Network-Affiliate Regulation in Television, November 1980. Despite more than thirty years of enforcing its Chain Broadcasting rules, the FCC remained unable to prevent, and indeed was largely unaware of, practices engaged in by the networks that offset attempts by the FCC to increase access to affiliates' time by nonnetwork program sources.
GOVERNMENT REGULATION OF ACCESS RATES

Although the tasks of designing numerous service classes and enforcing nondiscrimination among them would be difficult, they would not be impossible. Indeed, the telephone industry has a multitude of classifications for various video, voice, and data services defined by user class, location, and time of day. The tariff classifications of railroads are even more elaborate. These tariffs do not, of course, represent those that firms would freely set but are subject to scrutiny by government regulatory agencies.

Government regulation of access rates would help ensure the survival of services otherwise discontinued. For example, under partial separations, a ceiling on access rates for channels that must be set aside for lease, and a prohibition of the use of these channels by pay movie packagers, would help ensure access by services that would not be carried were the operator required to lease his entire capacity at nondiscriminatory but unregulated rates.

However, none of the proposals for mandated leased access discussed in Sec. II advocated detailed government regulation of access charges. This lack of enthusiasm for regulation reflects the concerns that regulation would be costly and time-consuming, while introducing undesirable distortions in business decisionmaking. Moreover, the need for such regulation is debatable because the degree to which cable systems are able to exercise monopoly power remains in doubt. We treat the first of these points here, leaving to subsequent discussion the issue of monopoly power.

An initial problem faced by the rate regulator is determining the basis upon which rates taken together are "reasonable." For capital-intensive industries like telephone and electric power, reasonableness is judged by determining whether total expected revenues minus allowable costs provide a "fair" return on investment. This approach immediately raises questions about how one is to determine whether (a) particular costs are allowable deductions from revenues, (b) particular capital costs are to be included in the investment (or rate) base, and (c) the return on this investment is fair. We shall discuss each of these in turn.
Given time and budget constraints, it is impossible for a regulatory agency to assure that all costs are properly incurred. Therefore, one has reason to be concerned about attempts to circumvent rate regulation by diverting excess profits to accounting costs (e.g., absorbing them by generous staff perquisites) and other behavior that distorts the incentives of firms to operate efficiently. Of particular concern here is the relationship between the cable operator and packagers. We argued in Sec. II that, in the absence of regulation, joint ownership of program packaging and cable systems would not likely pose a problem. Cable operators would have incentives to purchase programs from the least-cost source and to adopt vertical integration only if it were efficient to do so. Under rate regulation, however, an operator might choose to vertically integrate solely in order to be able to transfer profits from the regulated to the unregulated portion of the business, i.e., from the cable system to the program packager.

The problems posed when a firm provides both regulated monopoly services and unregulated competitive services are well illustrated by the recent history of the Bell Telephone System.\[12\] The proposed settlement between AT&T and the Justice Department that would require separation of ownership of AT&T's regulated operating companies and its unregulated equipment manufacturing arm, Western Electric, is a stark reminder of the inability of regulators to oversee satisfactorily the activities of firms that operate simultaneously in regulated and unregulated markets. We conjecture that regulation of rates for access to cable systems similarly would lead to a forced separation between cable systems and program packagers.

Regulators also face severe difficulties in determining which capital expenditures are properly included in the rate base. Generally speaking, an item is included if it is shown to be "used and useful." But determination of whether the item is necessary is a matter of business judgment. Concerns have been expressed that rate-of-return regulated firms may attempt to increase their profits by substituting

investments included in the rate base for other inputs, such as labor. [13] Attempts at second-guessing by the regulators are bound to be costly and time-consuming; these difficulties would be no less relevant to a regulated cable industry.

Determination of the firm's fair rate of return on investment is frequently a long and costly process. Among other things, it requires determination of the firm's cost of capital, which poses difficulties well illustrated by the prolonged rate cases involving AT&T and the FCC. [14] The inevitable delays in regulatory decisionmaking, commonly called "regulatory lag," are troublesome especially in times of inflation. The financial squeeze on electric power utilities, caught between rising costs and delays in obtaining rate increases, is well known.

Fueled by the above factors, pressures have mounted to deregulate industries to the extent feasible. We have already seen deregulation of the airlines, and substantial progress in trucking and rail. There is increasing interest in the notion of separating the monopoly portion of the electric power utilities (the local distribution system) from the potentially competitive portion (the generation portion), with regulation confined to the former.

With current sentiment running toward reducing rather than increasing the regulation of industry--combined with doubts by many about the degree to which cable operators are able to exercise monopoly power--there is little prospect of rate-of-return regulation being imposed on the cable industry in the near future. In any event, were an immediate decision made to adopt mandated leased access with regulated access rates, a number of years would elapse before a full-blown regulatory scheme could be put into operation since no local, state, or federal agency is currently equipped for the job.


ALTERNATIVE POLICY INSTRUMENTS AND THE ROLE OF COMPETITIVE TECHNOLOGIES

In view of the assorted difficulties of mandatory leased access schemes, the final issue we address is whether other policy instruments might at least partially reduce control by the cable operator of the number and content of programs available to subscribers and the prices that are charged.

Two policy instruments would contribute, indirectly, to this objective. Minimum channel requirements and imposition of technical standards, described in Sec. III, may expand the range of offerings by reducing the cost of channel time and encouraging the development of services dependent upon particular technical standards. The range and content of programming would still be under the control of the cable operator, but compliance with these requirements would encourage him to expand the range of services. However, the use of these instruments imposes costs on the cable operator that must be balanced against the benefits to viewers.

In contrast, imposition of franchise fees reduces rather than expands the range of subscriber choice and therefore runs contrary to the objectives of leased access. Whether the loss to viewers is more than offset by benefits to others through increased municipal tax revenues remains an open question.

Other policy instruments, such as lump-sum payments by operators who obtain a franchise, or other requirements that involve up-front costs, do not directly affect access but serve only to increase receipts to the municipality or others at the expense of the cable operator.

The possibility also exists that competition for the franchise, in terms of service offerings and rates, provides many of the benefits that competition among channel lessees would produce.[15] Whether this is true depends in large part on the ability of local governments to enforce the terms of franchise agreements.[16] Recent proposals to


provide security to existing franchise holders at renewal time, whatever their other merits, would weaken the ability of the franchising process to substitute for competition.

Another policy instrument involves reliance on delivery systems that compete with cable. As emphasized in Sec. I, the merits of leased access hinge critically on the degree of monopoly power the operator can exercise. If he is unable to raise prices significantly or to restrict the range of program choice (lest he lose business to competitive delivery modes), no basis exists to advocate leased access or, for that matter, other kinds of cable regulation.

Leased access was advocated in the early 1970s in response to widespread concern that cable operators would have a stranglehold on broadband services. The "wire" into the home was viewed as providing such a plethora of services that no other mode could compete. Since then, we have seen the development of a large number of new technologies that compete with cable at least for some services. Table 5.1 lists alternatives for burglar alarm services, electronic newspapers/video text, and pay-television programming.

In addition to alternatives listed in Table 5.1, competitive pressures may mount from broadcasting services because of the possible development of low-powered broadcasting stations under a plan recently approved by the FCC.[17] However, one cannot determine the degree of market power in the hands of cable operators simply by enumerating all possible alternatives. Some are in their infancy. Direct broadcast satellite systems, recently authorized by the FCC, remain in their planning stages. One can only conjecture about their eventual success in a highly competitive environment. Multipoint distribution systems (MDS) using multiple channels for delivering pay services have recently been proposed before the FCC for use in a number of metropolitan areas. An experimental eight-channel system has been authorized by the

Commission for use in Salt Lake City.[18] Similarly, subscription television (STV) stations are commencing operation in potentially lucrative markets.[19] But as shown in Table 5.2, subscriber penetration by MDS and STV is low relative to that of cable. As in the case of direct broadcast satellites, the degree to which these techniques will see widespread use remains an open question.

Perhaps the soundest alternative to mandating leased access is simply to permit competitive alternatives to develop as dictated by market forces. To do so, however, requires that all technologies be placed on a regulatory parity. As a consequence of historical accident and other factors, these technologies are subject to different regulatory regimes that may distort consumer choices. For example, since cable systems require use of city streets, most pay municipal franchise fees. In contrast, MDS operators pay no such fees since they do not face this requirement; at the same time, they have rights to use scarce radio spectrum space for which they pay no charge. Cable systems are frequently required to build minimum channel capacities, to dedicate channels for particular uses, and to discharge other responsibilities, while alternative technologies face no such burden; at the same time, cable makes use of broadcast signals under a compulsory license arrangement where payments may fall below those in a system of full copyright liability. Finally, many of the new technologies are still limited by FCC restrictions, e.g., only limited spectrum space is presently available to MDS operators.


Table 5.1

ALTERNATIVE LOCAL DISTRIBUTION SYSTEMS
FOR THREE KEY APPLICATIONS

<table>
<thead>
<tr>
<th>Burglar Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leased telephone private lines</td>
</tr>
<tr>
<td>Standard dial-up telephone lines</td>
</tr>
<tr>
<td>Master antenna systems</td>
</tr>
<tr>
<td>Private radio systems</td>
</tr>
<tr>
<td>Campus and industrial park cable systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electronic Newspapers/Videotex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switched telephone service</td>
</tr>
<tr>
<td>Multipoint distribution service</td>
</tr>
<tr>
<td>Television teletext signal</td>
</tr>
<tr>
<td>FM subcarrier</td>
</tr>
<tr>
<td>Master antenna television</td>
</tr>
<tr>
<td>Direct satellite services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pay Video Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leased point-to multipoint telephone service</td>
</tr>
<tr>
<td>Multipoint distribution service</td>
</tr>
<tr>
<td>Direct broadcast satellites</td>
</tr>
<tr>
<td>Pay television broadcasting</td>
</tr>
<tr>
<td>Master antenna television</td>
</tr>
<tr>
<td>Videotape/video cassettes</td>
</tr>
</tbody>
</table>

Table 5.2
RELATIVE PENETRATION OF COMPETING TECHNOLOGIES,
DECEMBER 1981

<table>
<thead>
<tr>
<th>Technology</th>
<th>Number of Subscribers (Millions)</th>
<th>Potential Number of Subscribers (Millions)</th>
<th>Percentage Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable</td>
<td>27.4</td>
<td>81.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>34.0</td>
</tr>
<tr>
<td>Subscription television</td>
<td>1.5</td>
<td>32.8</td>
<td>4.6</td>
</tr>
<tr>
<td>Multipoint distribution</td>
<td>0.5</td>
<td>16.6</td>
<td>3.0</td>
</tr>
</tbody>
</table>


<sup>a</sup>Number of television households.

CONCLUDING REMARKS

Much of the enthusiasm for the development of large-capacity cable systems has stemmed from their ability to cater to small audiences as a counterbalance to the emphasis on mass-audience programming by commercial broadcasters. Mandatory leased access would probably lead to the demise of the very services that now attract small numbers of viewers. This problem could be mitigated by regulation of access charges. But regulation also poses difficult problems.

Moreover, competition from other technologies, not anticipated when mandated access was first proposed in the early 1970s, may serve even better the objectives that the policy is designed to promote. Having said this, however, we emphasize that if competition from these other sources fails to materialize and cable dominates the video marketplace as some have feared, then mandatory leased access, despite its shortcomings, might be an attractive policy instrument.