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COMMUNICATIONS AIRWAVES: THE PRIVATE SECTOR OPTION

INTRODUCTION

Communications is a major growth industry in the United States. It is important in terms of its own wealth and job creation and is, as well, the key to the modernization of many other segments of the American economy. Yet, while much of the industry itself is highly competitive and on the cutting edge of innovation, the system of regulation governing the foundation of the industry--the frequency spectrum--dates back to an earlier age and, as such, slows the development of this lead sector.

Nearly all non-federal government airwave transmission in the U.S. is licensed and assigned to operate on particular frequencies and in particular locations by the Federal Communications Commission (FCC). By licensing transmitters, the FCC effectively controls the use of the frequency spectrum. Licensees possess few property or user rights. This means that spectrum users generally lack the incentive to develop and institute new technologies that could expand and improve the productive use of the spectrum.

The FCC is facing increasing pressure to deregulate the frequency spectrum. Deregulation plus the establishment of a spectrum market could yield several improvements:

- o A reduction in burdensome compliance costs.
- o The more rapid growth of an important and valuable industry.
- o The creation of incentives for spectrum users to enhance and expand uses of the spectrum through development of new technology to their own and the consumer's profit.

The frequency spectrum is fundamental to communications development. Establishment of a competitive spectrum would benefit both users and the American consumer. It would foster an environment in which the communications industry could achieve its full economic potential rapidly and efficiently.

WHAT THE FCC DOES

Internationally, frequency spectrum use is determined by International Telecommunications Union (ITU) allocations plus treaty agreements concerning the airwaves with nearby countries. Within the United States, however, the spectrum is allocated among all users, except the federal government, by the FCC. The FCC allocates blocks of frequencies to particular uses and classes of users, and establishes rules on the content of communications within each block allocation. For example, certain frequencies are reserved for television broadcasting; others for FM radio broadcasting. Within an allocation, the FCC then licenses particular users and assigns them frequencies or groups of frequencies, as in the recent case where a number of applicants have applied for the right to provide cellular mobile radio telephone service in New York City, and the FCC must decide which applicant should receive the license. The FCC also sets technical standards, which include rules governing signal strength, form of emission (FM, AM, single side band), and distortion in the signal. Most licenses indicate the area of coverage either by specifying maximum transmitter power and antenna height, or by specifying an area of protection from interference or a minimum distance between two transmitters on the same frequency. And allocations usually specify technical parameters of the transmitted signal, the allowable kinds of uses, and classes of users.

Because most FCC allocations are made nation wide, Commission allocations and rules rarely distinguish between the excess demand for the spectrum in high population density urban centers, or along heavily used terrestrial microwave routes such as between New York, Chicago, and Los Angeles, and the excess supply of spectrum in low population rural areas.

The Commission generally allocates or reallocates frequencies solely on the basis of apparent current demand, without considering possible future alternative spectrum uses. Once frequencies have been allocated, it is difficult, both legally and politically, to change the allocation, even if it is later discovered to have been a faulty decision.

After blocks of frequencies have been allotted to particular types of use and user, in situations in which one assignment does not preclude another in the same location, the Commission assigns specific frequencies on a first-come, first-served basis. In these uncontested cases, whoever gets to the Commission first, and meets the appropriate eligibility requirements, will get a license. This would normally be the procedure, for example, for applicants for an FM radio broadcasting license in rural areas.

In the cases of broadcasting licenses in urban areas, some common carrier point-to-point microwave, mobile radio, multipoint distribution system (MDS) licenses, and most probably in the future case of satellite orbital slots, the number of applicants generally exceeds the number of channels made available by the Commission. In such cases, the Commission usually holds comparative hearings to determine the "best" applicant.

In most of the services regulated by the Private Radio Bureau of the FCC, such as taxicab, highway maintenance, and business radio, the Commission has avoided comparative hearings by not allowing anyone exclusive use of a frequency. In these private radio services, the Commission allows unlimited sharing, giving new applicants use of the spectrum, thereby increasing congestion and interference to existing users. The citizens-band radio service provides the most extreme example of how unlimited sharing and easy entry lead to low quality service with considerable interference on every channel.

PROBLEMS WITH THE CURRENT FCC SYSTEM

Many individuals have criticized the existing allocation and assignment techniques and have suggested alternatives.[1] Much of this criticism arises because the FCC's failure to consider economic motives leads to the inefficient use of the spectrum. The profit motive spurs businesses and individuals to seek innovations that will allow them to increase their return for a given expenditure of time and materials. But, in order for user businesses to gain from such innovations, they must have certain economic property rights: the right to control a resource or a service, the right to decide how to use the resource, the right to exclude

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[1] See, for example, Milton Mueller, "Property Rights in Radio Communication: The Key to the Reform of Telecommunications Regulation," Cato Institute Policy Analysis, June 3, 1982; Donald R. Ewing, "Controlled Markets for Spectrum Management," Proceedings of the IEEE, 68 (December 1980), pp. 1536-1542; Mathtech, Inc., and Telecommunications Systems, Economic Techniques for Spectrum Management: Final Report, by Carson Agnew, Donald A. Dunn, Richard G. Gould and Robert D. Stibolt, a study prepared for the National Telecommunications and Information Administration, December 20, 1979; Testimony of Nina W. Cornell and Stephen J. Lukasik before the Senate Subcommittee on Communications, Committee on Commerce, Science and Transportation on S. 611 and S. 622, June 18, 1979; Nina W. Cornell, "Frequency and Orbit," Chapter 13 in Seyom Brown, Nina W. Cornell, Larry L. Fabian and Edith Brown Weiss, Regimes for the Ocean, Outer Space, the Weather (Washington, D.C.: The Brookings Institution, 1977), pp. 176-196; John O. Robinson, An Investigation of Economic Factors in FCC Spectrum Management, FCC Office of Chief Engineer, Spectrum Allocations Staff, Report No. SAS 76-01, August 1, 1976; Harvey J. Levin, The Invisible Resource: Use and Regulations of the Radio Spectrum (Baltimore: The Johns Hopkins Press, 1971); Nicholas Johnson, "Towers of Babel: The Chaos in Radio Spectrum Utilization and Allocation," Law and Contemporary Problems, XXXIV (Summer 1969), pp. 505-534.

others from using it, the right to make a profit from its use and from innovations in the provision of that service, and finally the right to share, lease, or sell that property right to others.[2] Unlike the owners of houses or automobiles, spectrum users do not, for instance, have the right to sell their spectrum use right (i.e., their radio license) without FCC permission. Many users are not allowed to share their license in time, area, or frequency with other users, or to earn a profit from such leases. What incentive, for example, does a land mobile user have to buy equipment that would allow him to carry on twice as many conversations by splitting the channel bandwidth, if he stands to lose, without compensation, the newly created channel to other users?

It is important to understand that an economic property right does not necessarily imply fee-simple legal ownership. Rather, it implies the right to use the spectrum in various ways, including the right to allow or deny others the use of that spectrum, and the right to charge others for its use. If an individual rents an apartment and prevents someone from erecting a tall building that would block out sunlight, or legally emits pollution into a river, he is exercising a property right. However, an individual need not legally own the apartment, the sunlight, or the river in order to exercise that economic property right.[3]

The distinction between legal ownership and an economic property right is significant because Section 301 of the Communications Act of 1934 explicitly states that the federal government may not relinquish ownership of the spectrum:

> It is the purpose of this Act, among other things, to maintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not

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2 On property rights, see especially: Louis De Alessi, "The Economics of Property Rights: A Review of the Evidence," Research in Law and Economics Vol. 2, edited by Richard O. Zerbe, Jr. (Greenwich, Connecticut: JAI Press Inc., 1980), pp. 1-47; Richard A. Posner, Economic Analysis of Law, 2d edition (Boston: Little Brown and Company, 1977), "Property," Chapter 3, pp. 27-64; Jora R. Minasian, "Property Rights in Radiation: An Alternative Approach to Radio Frequency Allocation," Journal of Law and Economics, Vol. XVIII (April 1975), pp. 221-272; Arthur S. DeVany, Ross D. Eckert, Charles D. Meyers, Donald J. O'Hara and Richard C. Scott, "A Property System for Market Allocation in the Electromagnetic Spectrum: A Legal-Economic-Engineering Study," Standard Law Review, Vol 21 (1969), pp. 1499-1561; and Ronald H. Coase, "The Federal Communications Commission," Journal of Law and Economics, Vol. II (October 1969), pp. 21-40.

3 It should be noted that we are not arguing here that there would be anything undesirable in principle with allowing people to own spectrum rights in fee simple. We are only arguing that such fee simple ownership is not necessary to the creation of a property right.

> the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority, and no license shall be construed to create any right, beyond the terms, conditions, and period of the license.[4]

Thus, if the federal government wished to sell the right to use some portion of the spectrum, this provision of the Communications Act would have to be amended by Congress, which would be exceedingly difficult to accomplish.

If users had a clear use right to a certain area, bandwidth, frequency, and time of day, they might find it worthwhile to use lower power transmitters, shorter antennas, or directional antennas, and to sell or rent to someone else the right to use part of their coverage area. Similarly, if users were allowed to time share and frequency share their assigned channel, and had the right to make a profit from sharing, they would have an incentive to split channels and broadcast more information over existing channels.[5] Users also would have a greater incentive to develop new technologies, since they could profit from selling the right to use those new technologies. In those cases where the Commission has given users a band of frequencies and allowed them to develop and retain added channels that became available through new technology, they have developed more efficient methods of time and frequency sharing. Common carrier licensees who use satellites or terrestrial microwave systems, for instance, are continuously finding ways to pack more and more signals into each frequency bandwidth, because they are allowed a great deal of technical flexibility in the use of their radio channels.

In addition, unless an explicit price is attached to the spectrum, there is no objective standard by which the Commission, or indeed any government agency, can choose among competing uses of the spectrum (TV or land mobile; satellite or terrestrial microwave), and competing applicants (police or taxicab radio; commercial or educational TV). The Communications Act directs the Commission to consider the public interest, as well as convenience and necessity, before issuing a license or allowing an existing license to be transferred. Thus, the Commission decides subjectively what is the "best" use of a frequency or which user would "best" meet the public interest. This "wise man" theory of regulation assumes that a government agency is capable of this

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4 47 U.S.C. Sec. 301 (1934).

5 Note: Under existing FCC rules, some users such as FM broadcasting stations may share their frequency and make a profit through use of a subchannel called a subsidiary communications authorization (SCA); other users may time share a frequency but not make a profit (cooperative sharing by land mobile users). In August 1982, the FCC made available 250 new mobile radio channels in the 800 mHz band and allowed users a great deal of technical flexibility including the right to split channels into subchannels.

decision. The desires of individual consumers differ widely, however, and consumers in general are not likely to share the values of a regulatory agency. While a regulatory agency finds it difficult to balance various consumers' wants, the marketplace does it particularly well.

The FCC allocation process is long. There is now a more than thirteen-year delay in making available to consumers most of the channels reallocated from UHF television to land mobile use. When competing applications appear, such as those for cellular mobile radio telephone licenses in the largest cities, there may be additional years of delay in granting licenses. Moreover, the regulatory process is often inflexible and unable to respond quickly to technological change, because the Administrative Procedures Act imposes extensive requirements for due process. If firms in the semiconductor, computer, and calculator industries were thus required to seek a regulatory agency's permission every time they wished to change technologies, their rate of technological innovation would have been far slower. The FCC's traditional regulatory allocation and assignment process creates another bottleneck by allowing existing licensees to block, or at least to slow, the entry by competitors.

While such costs of existing government restrictions on spectrum use have never been estimated, it is likely that society loses billions of dollars a year in reduced productivity as a result of the current system.

MARKETPLACE ALTERNATIVES TO THE CURRENT SYSTEM

The fewer restrictions placed on transactions among producers and consumers, the more likely resources are to move from low-valued to high-valued uses, and the better off society will be. In the case of spectrum use, this concept implies that there should be as few restrictions as possible on utilization and transfers of licenses. Any rule that restricts the transfer of a license from a low-valued to a high-valued use reduces the value of services available to society and thus imposes a cost on society.

Numerous changes in the present spectrum use system have been suggested. Outright fee simple sale or gift of spectrum use rights from the federal government to private parties appears to have little or no support from Congress, the Administration, the FCC, or the communications industry. While less radical than fee simple sale or gift, the deregulatory proposals discussed here give users more choices and emphasize market discipline rather than government regulation.

Several observations are integral to these deregulatory proposals: (a) spectrum users know better than a government agency what is best for themselves; (b) the profit or income-earning motive stimulates people to make more economically efficient

use of any resource including the spectrum and to develop innovations if profitable; (c) the frequency spectrum is a scarce resource that has economic value and should command a positive price; (d) users therefore should have certain explicit (although possibly limited) economic property rights in the spectrum; and (e) users should have maximum flexibility in how they use the spectrum including the right to transfer all or part of those rights to other users.

In the light of these observations, the following proposals are put forward as a means of deregulating spectrum use in a beneficial and efficient manner.

1. Insure that users have a clear and unambiguous property right.

For a user to have an economic incentive to seek more efficient ways to produce services, he must have a clear property right in the use of the spectrum. This does not necessarily imply that a person legally owns a spectrum. He must, however, have a reasonable certainty that for a certain time period his license gives him control of a certain frequency channel (or channels) in a certain location.

Most broadcasters and common carriers already enjoy such a property right in practice, because only an unusual rule violation would warrant the loss of their license. In contrast, many private land mobile radio licensees do not enjoy a property right because there is unlimited loading and sharing for most mobile private radio assignments below 800 MHz. Since existing users can never predict with certainty how many other users are sharing the same frequency, they have little or no incentive to improve the efficiency of their spectrum use.

A useful deregulatory change in the private radio services, such as business and industrial mobile radio, would be to issue exclusive licenses, or to specify maximum loading or sharing levels that could be raised only with the permission of the existing licensees and not unilaterally by the Commission. One proposal for the private radio band is to give certain users an exclusive "band assignment" of a wider than usual bandwidth (for example 500 KHz) and to let such users choose their own technical standards, loading levels, etc.[6] This property rights proposal for private radio users is controversial, however. Many private radio users oppose it, fearing that they will lose accessibility to additional channels.

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6 See Donald A. Dunn and Bruce M. Owen, "Policy Options in Mobile Radio Spectrum Management," a report prepared under a contract with the Federal Communications Commission, September 1978.

Frequency coordination, used by terrestrial point-to-point microwave and satellite-earth stations, represents another kind of property rights system that functions well today. The first licensee in a particular location has the right to refuse or to negotiate the entry of subsequent users into an area if they might interfere with his signal. Thus, the initial licensee has a clear but limited economic property right.

Granting licensees such property rights and allowing them to be bought and sold, leased, and subdivided without government permission would require a change in the Communications Act.

2. Allow users to transfer their licenses to any qualified applicant (abolishing antitrafficking rules).

For users to benefit from a clear property right, they should be allowed to sell that right or license for profit to anyone at any time. Such a concept is being tested with regard to pollution rights.[7]

Broadcasters and common carriers now assume that they can sell their license because the Commission routinely approves most transfers after review. However, users should be able to sell their licenses at any time to any qualified applicant without Commission permission. Current FCC antitrafficking rules prohibit the selling of a license within a period of up to three years after receiving it. But when a license is sold, the buyer and seller gain from the transaction, and society benefits as well, because a resource is transferred from a lower value to a higher value use. Thus, trafficking should be allowed and encouraged rather than discouraged or forbidden.

A second and more controversial proposal is to allow transfers of licenses between qualified applicants without prior Commission review. While Section 310(d) of the Communications Act may seem to disallow such transfers, the Commission could, through a rule-making change, deem that transfers without prior approval are in the public interest. If Section 310(d) is judged to forbid such transfers without prior Commission approval, it would be desirable to repeal 310(d).

As long as the FCC continues to allocate the spectrum, the Commission must have information on spectrum value in alternative uses in order to make efficient allocation and reallocation decisions. Without such information, there is no objective way

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7 See Bruce Yandle, "The Emerging Market in Air Pollution Rights," Regulation, July/August 1978, pp. 21-29; and Hugh H. Macaulay and Bruce Yandle, Environmental Use and the Market (Lexington: Lexington Books, D.C. Heath and Company, 1977). See also Environmental Protection Agency, Office of Planning and Management, Emission Reduction Banking Manual, First Edition, September 1980.

for a government agency to determine, for example, whether the UHF spectrum is more valuable to land mobile users than it is to television broadcasters. However, if the Commission were to auction off the right to use the spectrum to the highest bidder and to allow the winner to resell his license at any time, it would have little need for spectrum value information, since it would have turned the allocation decision over to the private market.

3. Limit or prevent the use of petitions to deny.

Under the Communications Act of 1934, petitions to deny may be filed in response to initial license applications, license renewals, and license transfers. Most unregulated business activities are not subject to similar challenges. Because it is desirable to speed up the process, to lower the cost to applicants, and to allow the free transfer of licenses, anything that inhibits the process is generally not in the public interest. Most petitions to deny are filed by competing broadcasting stations or common carriers, who wish to prevent the entry of new firms and services, or by organizations such as "public interest" communications groups, who want either a free benefit from the service or some special but unprofitable service provided for them.[8] Most petitions do not reflect the desires of consumers. A particularly anticompetitive class of petitions to deny are based upon arguments of the Carroll Doctrine of economic injury to existing firms.[9] Although the Commission dismisses or denies many of these petitions, it would be desirable to go even further and to repeal Section 309(d)(i) and the Carroll Doctrine.

4. Allow, but do not require, users to share their assignments in time, space, and frequency and allow them to subdivide and combine discrete channels or frequencies.

The FCC allows stations to broadcast either a second subchannel signal or in stereo, and it is considering allowing stations more freedom in transmitting additional subchannel signals. If interference is not caused by others outside the assigned channel or area, an FM station should be allowed to broadcast as many sub-

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[8] In the latter case, the petitioning organization often wants some service to be provided free or at least below cost and to be subsidized from some other profit-making service. Such internal cross subsidies always lead to inefficient use of economic resources.

[9] The Carroll Doctrine states in part that:

> "When an existing licensee offers to prove that the economic effect of another station would be detrimental to the public interest, the Commission should afford an opportunity for presentation of such proof and, if the evidence is substantial (i.e., if the protestant does not fail entirely to meet his burden), should make a finding or findings." Carroll Broadcasting Co. v. FCC, 258 F. 2d 440, (D.C. Cir. 1958).

channel signals as it wishes within its assigned channel and to sell or lease the subchannel to anyone it chooses. Similarly, if a television station can include other signals or data in its assigned bandwidth, it should be allowed, but not required, to do so.

Time sharing would allow a station to share its channel or its transmitter during a portion of the day with another user, who could transmit another kind of signal. Recently the Commission allowed Western Union to time share with the Public Broadcasting Stations the satellite-earth stations that Western Union had supplied for those stations.

Area sharing would permit existing stations to reduce their power or use directional antennas so that other stations could be built between them, provided the new stations did not cause unacceptable interference to other users.

These proposals are similar to allowing unregulated and unrestricted resale and shared use of wireline common carrier services. The Commission has found that such resale and sharing benefits consumers, thanks to lower prices and new or better services. Many competitive long distance common carriers, such as MCI and Southern Pacific, allow users to share telephone lines and resell certain telephone services they have leased from other companies.

In addition to dividing up frequencies, areas, and time, licensees could be allowed to combine them. For example, if three mobile radio users had exclusive use of adjacent channels in a particular city, they could share all three frequencies and develop their own trunked system. The recent FCC decision releasing 250 land mobile channels would allow such combinations.

Within the constraints of their license rights, licensees would have much more freedom in using the channel, were these changes adopted. Their only obligation might be to notify the Commission of their activities. And further, these changes are clearly within the Commission's authority under the 1934 Act.

5. Allow users maximum technical flexibility by repealing most technical requirements.

The Commission sets numerous technical requirements concerning bandwidth, harmonic frequency suppression, transmitter power, and antenna height, which aim to prevent interference. The Commission also mandates many other technical standards that are not directly related to preventing interference. When users have exclusive use of channels or voluntarily allow others to share, they should choose their own standards (for example, FM or AM or single side band or digital modulation). In the recent decision releasing 250 land mobile channels, the FCC allowed users considerable technical flexibility. Nationwide consistency may not be desirable because mandated standards always impose costs on some

users. Standards appropriate in urban areas are likely to be much too stringent in rural areas. Voluntary standards also allow users much more flexibility than do mandatory ones.

6. Repeal the artificial regulatory distinctions between common carrier, broadcasting, and private radio use including restrictions on types of services, kinds of users, and the right to earn a profit.

It would be sensible to repeal the distinctions between different kinds of licensees, especially those that provide similar services and are close economic substitutes. For example, television broadcasting, Multipoint Distribution Service (MDS), Instructional Television Fixed Service (ITFS), TV translators, and CATV are all substitutes for each other in providing video entertainment, but each is subject to different regulations,[10] many of which appear to be intended to limit competition between the services rather than to help consumers.

Another useful change would be to allow licensees who are primarily classified for one kind of service to provide other types on the same channel. For instance, broadcasting stations could be allowed to provide one-way paging on their subchannel. National Public Radio has recently formed a firm to offer one-way paging on its noncommercial FM broadcasting stations. Private radio users could also be allowed to provide common carrier services on their channel. Other combinations undoubtedly would emerge if the deregulating change took place.

7. Avoid the use of comparative hearings and instead award licenses using auctions, lotteries, or a first-come, first-served basis.

Many users consider certain alternatives superior to the traditional process of comparative hearings. These hearings are slow and costly, and service to the public is damaged by such legal delays. Moreover, comparative hearings do not necessarily favor the most efficient license applicants and services. At least three alternatives have been proposed: auctions, lotteries, and first-come, first-served.

Auctions have several advantages: the license goes to the user who values it most and is prepared to pay accordingly. Auctions substitute market decisions for decisions by a regulatory

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[10] A recent Commission staff report argues that all video services beyond conventional VHF and UHF television are substitutes and are in the same economic market. See FCC, Office of Plans and Policy, Staff Report on: Policies for Regulation of Direct Broadcast Satellites by Florence O. Setzer, Bruce A. Franca, and Nina W. Cornell, September 1980, pp. 11-32. See also the Report and Order on Direct Broadcast Satellites in Docket No. 80-603, FCC 82-285, released July 14, 1982.

agency. The selling price provides a clear indication of the value of the spectrum to a user, and enables the government to profit by relinquishing the spectrum resource to private parties[11].

Lotteries, too, are faster and less costly than comparative hearings. Public Law No. 97-53, signed by President Reagan in August 1981, authorized the FCC to use lotteries to choose among competing applicants, but in January 1982, the Commission declined to authorize a lottery under the statute because it felt the law to be unworkable. Since there is no guarantee that the winner of a lottery would be the one to whom the license is most valuable, it is highly desirable that such winners have the right to sell the license immediately. Thus, the effective use of lotteries requires that antitrafficking rules be repealed.

If resale were allowed, the ultimate licensee would usually be the same in either a lottery or an auction. But in a lottery the winner keeps the economic profit from the value of the spectrum, whereas in an auction it goes to the government. Because a license can be worth millions of dollars, and since there may be many applicants, the possibility of fraud clearly exists. Therefore, a lottery, in particular, needs effective monitoring.

Another alternative to the comparative hearing procedure is a first-come, first-served process, which has been used in the past for satellite license applications. The procedure limits the number of entrants, and therefore reduces the possibility of mutually exclusive applications. It may operate in two ways: entry requirements may be so restrictive that only a few applicants are eligible; or there can be a time limit for applications, so that only a few will be able to complete the application within the period allowed.

Either of these procedures limits by design the level of entry and competition. Thus, a potential applicant who might make the most valuable use of the license could be excluded.

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11 See John O. Robinson, "Assignment of Radio Channels in the Multipoint Distributing Service by Auction," in Herbert S. Dordick, ed., Proceedings of the Sixth Annual Telecommunications Policy Research Conference (Lexington: Lexington Books, D.C. Heath, Inc., 1979), pp. 379-391; Charles L. Jackson, "The Orbit-Spectrum Resource: Market Allocation of International Property," Telecommunications Policy, September 1978, pp. 179-190. Auctions have been used by the federal goverment to distribute many kinds of mineral resources. See, for example, U.S. Department of the Interior, Federal Coal Management Program, Bureau of Land Management, U.S. Geological Survey, Office of Policy Analysis, Final Report and Recommendations for the Secretary on Fair Market Value and Minimum Acceptable Bids for Federal Coal Leases, December 1979; U.S. Senate, Committee on Interior and Insular Affairs, Report to the Federal Trade Commission on Federal Energy Land Policy: Efficiency, Revenue and Competition, prepared by the Bureaus of Competition and Economics, 94th Congress, 2nd Session, Serial 94-28 (Washington, D.C.: Government Printing Office, 1976).

Once again, it is important to both procedures that "winners" have the right of resale and of sharing, if there is to be any chance that the ultimate licensee will be the one who values the spectrum the most.

From the point of view of economic efficiency, auctions and lotteries with resale are clearly preferable procedures, because they most readily allow the license to go to the applicant who values it most, whereas limited time procedures and eligibility limits, especially if resale is limited, may prevent spectrum use by the one to whom it is most valuable.

8. Institute spectrum fees.

In 1978, the FCC instituted a Notice of Inquiry on spectrum fees.[12] One way to make users more aware of the value of the spectrum is to institute such fees based on "the fair market value" of the spectrum and its use. Since the institution of spectrum fees would require the Commission to set these fees by a formula that took into account class of licensee, location, bandwidth, and area of coverage, it would be extremely difficult to calculate the appropriate level of fees. Further, it is doubtful that any formula could adequately duplicate the competitive operations of the market.

Many legal challenges could be expected if an attempt were made to institute such fees. Indeed, all the comments filed by Commission licensees in response to the spectrum fee proposal were in opposition; only a few without licenses supported the idea. It is also doubtful whether the Independent Offices Appropriations Act of 1982, 31 U.S.C. 393a., allows the Commission to collect spectrum fees that would far exceed the Commission's operating budget.

In an auction, on the other hand, users decide how much they wish to bid, instead of the government's setting fees by administrative fiat. So it would be more difficult for a losing applicant to win a court appeal in an auction than it would be for a group of applicants in a case of "unreasonable" spectrum fees. But since it remains questionable whether the Communication Act of 1934 allows auctions, new legislation could be needed to institute them.

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12 Notice of Inquiry in the Matter of Fee Refunds and Future FCC Fees, Gen. Docket No. 78-316, 69 F.C.C. 2d 741 (1978). The Commission has been refunding fees if previously collected. See First Report and Order in Gen. Docket 78-316, 71 FCC 2d 171 (1969); and Second Report and Order in Gen. Docket 78-316, adopted April 11, 1980, released August 29, 1980, FCC 80-495.

The FCC has the legal authority to make many of the deregulatory changes mentioned above, but some proposals would require changes in the Communications Act of 1934. Many existing licensees feel, moreover, that deregulation of the market would harm their competitive position, and they have raised numerous objections.

ARGUMENTS AGAINST SPECTRUM DEREGULATION

Some have argued that large or wealthy firms would monopolize the spectrum if market mechanisms were to replace the Commission's administrative allocation and assignment process. However, wealthy individuals and large firms have not obtained all the land, houses, buildings, automobiles, or trucks in this country. This is so for two reasons: first, the cost of such monopoly acquisition is prohibitive. Second, even if some firms or individuals possessed the necessary wealth, it would hardly be a profitable strategy since it would be an open invitation to government controls. It should also be remembered that under the existing administratively controlled spectrum, wealthy individuals and large corporations already have access to most of the valuable television broadcasting and common carrier frequencies.

A second argument is that some desirable users, such as police and fire departments or educational institutions, would be unable to obtain the spectrum they needed. There is, however, no reason why these users should not pay for a spectrum, just as they hire employees or buy equipment. And even if it were considered in the public interest to reserve a place on the spectrum for public safety use, possibly through the right of eminent domain, the use of market mechanisms for the remainder of the spectrum would not have to be constrained.

Another objection to spectrum markets concerns the significant legal and technical problems in establishing and enforcing spectrum use rights. The strength of radio waves at a receiver varies over time, making the signal strength of radio communications unpredictable. Regardless of the problem associated with specifying the coverage of a radio signal, broadcasting station spectrum rights do exist based on transmitter power and antenna height and direction. Many broadcasting licenses are traded each year with Commission permission. And common carriers are allowed to sell radio systems and licenses under existing rules, also with Commission approval. Though spectrum rights are traded now on a limited basis, undoubtedly there would be a number of technical and legal complications needing resolution in a deregulated market, but similar problems have been solved in the past.

Some critics have argued further that the private market cannot assess correctly the benefits and costs of various choices in spectrum use. They maintain, for example, that users are able to impose interference costs on others without being forced to pay for the cost of that interference. Similarly, it is said that the public receive benefits from the existence of the spectrum which they do not and should not pay for explicitly and directly.

It is argued, in other words, that the spectrum, at least in part, is a "public good."

While, some public good and externality features are associated with the spectrum, a private market would probably accommodate them better than government regulation. Since neither ever works perfectly or is costfree, a relevant comparison between actual markets and actual government regulation must include the imperfections of each.

Yet another argument would have it that government agencies are better able to estimate the social benefits, costs, and uses of the spectrum than are private parties. In fact, government agencies often lack the information needed to measure social benefits and costs; and even if they had the relevant information, they would be unlikely to evaluate consumers' wants correctly. Moreover, government regulation often imposes large costs, making it far less efficient than the private market.[13]

Another objection put forward is the claim that spectrum deregulation would harm certain user groups. But a spectrum market would place reliance on individual choice, agreements, and contracts, rather than on the Commission's administrative processes. Under Commission regulation, certain broadcasting companies have

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[13] See, for example, Robert F. Lanzillotti, Economic Effects of Government-Mandated Costs (Gainesville: University Presses of Florida, 1978); Arthur Anderson and Company, Cost of Government Regulation Study for the Business Roundtable, March 1979; Murray L. Weidenbaum, Government-Mandated Price Increases: A Neglected Aspect of Inflation (Washington, D.C.: American Enterprise Institute, 1975); and James Miller III and Bruce Yandle, eds., Benefit-Cost Analyses of Social Regulation: Case Studies from the Council on Wage and Price Stability (Washington, D.C.: American Enterprise Institute, 1979). Many government regulations are intended to help some groups at the expense of others, although the true effects on the winners and losers are often hidden by language about protecting consumers from danger or harm. See, for example, Bruce M. Owen and Ronald Braeutigam, The Regulation Game: Strategic Use of the Administrative Process (Cambridge, Massachusetts: Ballinger Publishing Company, 1978); Paul L. Joskow and Roger G. Noll, "Regulation in Theory and Practice: An Overview," Social Science Working Paper No. 213 (California Institute of Technology, Division of the Humanities and Social Sciences, May 1978); Sam Peltzman, "Toward a More General Theory of Regulation," Journal of Law and Economic 19 (August 1979), pp. 211-240; Richard A. Posner, "Theories of Economic Regulation," Bell Journal of Economics and Management Science 5 (Autumn 1974), pp. 335-358; Roger G. Noll, "The Behavior of Regulatory Agencies," Review of Social Economy 29 (March 1971), pp. 15-19; Richard A. Posner, "Taxation by Regulation," The Bell Journal of Economics and Managment Science 2 (Spring 1971), pp. 22-50; and George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics and Management Science 2 (Spring 1971), pp. 3-21.

not received access to the spectrum, or have received less of the spectrum than they wished. A competitive spectrum market would improve the position of such firms. Similarly, those that wished to develop new technologies, share their spectrum, or trade a higher price for less interference and congestion would gain considerably from deregulation.

ITU allocations and international treaties do restrict some uses of the spectrum. Nevertheless, many of the spectrum market options mentioned above are quite possible under the current ITU rules and treaties. Because most of the frequency spectrum allows only line-of-sight transmission, only border countries are affected, in general, by U.S. spectrum use decisions. As long as U.S. spectrum users abided by international regulations, a change in the U.S. user selection procedure would have no impact on other countries.

Finally, some critics of deregulation argue that it would restrict administrative discretion. If it is believed that government agencies' decisions better reflect the desires of society than do those of the marketplace, it is quite logical to oppose anything that would limit agency discretion. But the record of government agencies' sensitivity to society's wishes is hardly worthy of praise. Reliance on markets is preferable precisely because it does not rely on administrative discretion.

CONCLUSION

Suggestions for spectrum deregulation and the creation of a spectrum market have arisen from both within and outside the Federal Communications Commission. Many of the proposals complement each other. The most desirable would:

- give all users a clear property right;
- allow freer transfer of licenses;
- limit the use of Petitions to Deny;
- allow sharing and resale; and
- allow more flexibility in permissible kinds of communications.

Important but highly controversial proposals include:

- the use of auctions, lotteries, or a first-come, first-served process, instead of comparative hearings, to assign spectrum; and
- the repeal of most of the remaining distinctions between broadcasting stations, common carriers, and private radio systems.

Of all the proposals suggested, instituting spectrum fees at the moment appears to be the least workable and to offer the lowest potential payoff to society.

Each of these proposals, with the exception of spectrum fees, would shift reliance to market forces and away from government regulation. Consumers would gain from such changes by faster service, more rapid innovation, and a greater array of service options. In short, the establishment of a genuine spectrum market would provide the consumer with services from the communications industry similar to those he has come to expect routinely in other unregulated industries.

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