ECONOMIC ISSUES AT THE

FEDERAL COMMUNICATIONS COMMISSION

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ABSTRACT

This article reviews some of the key economic issues that face the Federal Communications Commission. These issues include those that underlie the design of broadband policy, spectrum policy, competition policy, and media ownership policy.

(Keywords: Federal Communications Commission, communications policy, competition, broadband, spectrum, media ownership.)

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The views expressed in this article are those of the authors, and are not necessarily the views of the Federal Communications Commission or any of its Commissioners.

1. Introduction.

The Federal Communications Commission (FCC) has responsibility for overseeing interstate and international communications by radio, television, wire, satellite and cable. Commission policy is developed by various bureaus and offices within the Commission, most of which have their own staff economists. The role of economists at the Commission has increased significantly over the past twenty-five years. Economists now identify important issues for the Commission, help to evaluate these issues at an early stage, and perform analyses that inform final decisions on important policy matters.

Economists are performing these functions with regard to the major policy issues that confront the FCC today. Early in his tenure, Chairman Michael K. Powell identified broadband deployment, competition policy, spectrum allocation, and media ownership rules as four of the major policy issues to be addressed (Powell, 2001). The purpose of this article is to explain the key economic principles and questions that underlie each of these policy issues.

The discussion begins in section 2, where broadband policy issues are explored. The important distinction between broadband deployment and broadband subscription is emphasized, as is the need to account for all possible competing suppliers of broadband Internet access when designing broadband policy. Section 3 considers competition policy more generally. It focuses on the roles of network unbundling and TELRIC pricing in fostering competition among providers of wireline communications services.[1] Section 4 reviews historic Commission policy with regard to spectrum allocation, indicates how this policy has changed in recent years, and suggests how it might change further in the near future. Section 5 reviews the media ownership rules that the Commission has designed to foster competition, diversity, and localism, and explains some of the key challenges that lie ahead as these rules are reassessed. Section 6 concludes this article by describing briefly some additional important issues before the Commission today.

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1. "TELRIC" refers to total element long run incremental cost.

2. Broadband Deployment.

A. Background.

In outlining the primary issues that will guide the Commission's agenda in the coming years, Chairman Powell (2001) noted that "The widespread deployment of broadband infrastructure has become the central communications policy objective today." The Commission defines broadband Internet access as a service that "enables consumers to communicate over the Internet at speeds that are many times faster than the [56 kbps][2] speeds offered through dial-up telephone connections."[3] At present, most subscribers obtain broadband Internet access from wireline telecommunications firms (via DSL)[4] and cable operators (via cable modem). Wireless and satellite operators also provide broadband Internet access.[5]

B. Central Policy Issues.

The *Telecommunications Act of 1996* ("the Act")[6] instructs the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans".[7] Therefore, after defining "advanced telecommunications capability", the Commission's primary tasks are to determine whether this capability is being deployed to all Americans on a reasonable and timely basis, and how it can best encourage the ongoing deployment of this capability.

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2. "kbps" denotes kilobits per second.

3. *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee*. CS Docket No. 00-30, Memorandum Opinion and Order, 16 FCC Rcd 6547, 6572 ¶ 64, 6574-77 ¶¶ 69-73 (2001).

4. "DSL" refers to digital subscriber line.

5. See McKinsey&Company and J.P. Morgan H&Q (2001), for example.

6. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified at 47 U.S.C. §§ 151 *et seq.*)

7. 47 U.S.C. § 706(a).

The Commission has defined "advanced telecommunications capability" as the ability to deliver Internet access at speeds of 200 kbps or more both upstream (from the customer to the provider) and downstream (from the provider to the customer).[8] The Commission has also concluded that, to date, advanced telecommunications capability is being deployed to all Americans on a reasonable and timely basis.[9] Cable modem service is available to more than two-thirds of U.S. households and DSL service is available to more than half.[10] More than 80% of U.S. households have access to either cable modem or DSL service or both today, and nearly 95% are predicted to have access to some form of broadband Internet access by 2005.[11]

The central broadband issue facing the Commission today is what additional policies, if any, should be undertaken to encourage additional, ongoing deployment of broadband infrastructure.

C. Current Proceedings.

To help determine how to best encourage ongoing and even more widespread deployment of broadband infrastructure, the Commission has initiated three important proceedings.

8. *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket 98-146, Report, FCC 02-33, February 6, 2002 ("706 Report").
9. 706 Report.
10. See, for example, Bilotti et al. (2001), McKinsey&Company and J.P. Morgan H&Q (2001), and National Cable & Telecommunications Association (2002).
11. See McKinsey&Company and J.P. Morgan H&Q (2001, pp. 43, 52).

ILEC Dominance Proceeding. The first proceeding addresses the appropriate regulatory treatment of incumbent local exchange carriers ("ILECs") that provide broadband telecommunications services.[12] Currently, ILECs generally are treated as *dominant* carriers. Under the Commission's rules, a dominant carrier -- one that possesses market power -- generally is subject to more extensive tariff filing and cost-justification obligations, and to more stringent pricing restrictions than is a non-dominant carrier. Furthermore, competitive safeguards (e.g., structural or non-structural separation requirements) are often imposed on dominant carriers to limit their ability to discriminate against competitors and to shift costs from non-regulated to regulated services. The Commission has sought comment on: (1) the relevant product and geographic markets for broadband services, which must be defined in order to assess whether a firm possesses market power over certain broadband services; (2) whether ILECs possess individual market power in the relevant product and geographic markets; and (3) what, if any, competitive safeguards are appropriate to limit the ability of ILECs to discriminate against competing providers of broadband services.

Broadband Classification Proceeding. The second proceeding concerns the appropriate statutory classification of and the best regulatory framework for broadband Internet access services provided by telecommunications carriers. The Act distinguishes between "information services" and "telecommunications services."[13] The latter are subject to the (generally more stringent) provisions of Title II of the Communications Act which govern common carriers,[14] while the former may be subject only to the Commission's general regulatory authority under Title I.[15] The Commission is in

12. *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services,* Notice of Proposed Rulemaking, 01-337, FCC 01-360 (rel. Dec. 20, 2001).

13. An "information service" is "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications." A "telecommunications service" is "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available to the public, regardless of facilities used." 47 U.S.C. §§ 153(20), 153(46).

14. 47 U.S.C. §§ 201 276.

15. 47 U.S.C. §§ 151-161.

the process of determining: (1) whether broadband Internet access services provided by telecommunications carriers should be classified as information services or telecommunications services; (2) the appropriate regulatory framework for these services; and (3) the competitive safeguards that should be imposed on telecommunications carriers that provide broadband Internet access services.

Cable Modem Proceeding. The third proceeding examines the regulations, if any, that should be imposed on the other major providers of broadband Internet access -- the cable operators. The Commission has determined that "cable modem service, as it is currently offered, is properly classified as an interstate information service, not as a cable service, and that there is no separate offering of a telecommunications service."[16] The Commission has solicited comment on the policy implications of this determination. A related focus of this proceeding is on what has become known as the "open access" issue. The central question in this regard is whether cable operators should be required to offer their cable modem customers a choice among information service providers ("ISPs").

D. Central Research Questions.

Chairman Powell has stated that broadband service providers should operate in a "minimally regulated" space. The critical task before the Commission is to specify precisely the minimal regulations needed to ensure that advanced telecommunications capability is available to all Americans "on a reasonable and timely basis". The regulations that will best ensure this outcome may vary by geographic region or customer type. To illustrate, cross-platform competition may be sufficiently intense for residential customers in densely-populated regions that virtually no regulation is needed.[17] In contrast, some regulation may be appropriate in less-densely-populated regions that

16. *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, Declaratory Ruling and Notice of Proposed Rulemaking, GN Docket No. 00-185 and CS Docket No. 02-52, March 15, 2002, ¶ 7.

17. Chairman Powell has emphasized the importance of multiple broadband platforms in limiting the need for burdensome regulation of any particular competitors or platforms.

are served primarily or exclusively by a single broadband platform. Financial incentives to provide service in certain geographic regions may also warrant consideration.

A central issue in the design of broadband policy is whether competitors should be afforded access to the networks of incumbent suppliers. Although such access can promote price and service quality competition once broadband infrastructure is deployed, mandated access on terms that incumbent providers find restrictive can reduce their incentive to deploy broadband infrastructure. This fundamental trade-off also arises in contexts other than broadband, and is discussed further in the next section.

Chairman Powell's stated focus on the widespread *deployment* of broadband infrastructure highlights an important distinction between deployment and subscription. Even if broadband capability is deployed ubiquitously, consumers may choose not to subscribe to broadband Internet access services.[18] High prices, a lack of compelling broadband applications, and/or general satisfaction with traditional dial-up Internet access may limit consumer demand for broadband Internet access. Of course, anticipated consumer demand can affect deployment decisions. Therefore, actions that stimulate consumer demand for broadband services may lead to increased broadband deployment. If the current concerns of movie producers and recording companies regarding piracy of content delivered over the Internet can be alleviated, they may authorize expanded Internet delivery of their content, which, in turn, may stimulate broadband demand and deployment.

3. Competition Policy.

A. Background.

18. Although 90% of U.S. households could subscribe to broadband Internet access, only 12% do (Horrigan, 2002).

The Act fundamentally altered telecommunications regulation in the United States. To promote competition and deregulation in all telecommunications markets, the Act, among other things, required ILECs to open their networks to other carriers, including direct competitors. In particular, the Act required the ILECs to provide to requesting carriers: (1) physical interconnection with their networks; (2) access to key network elements (e.g., loops and switches) on an unbundled basis; (3) physical collocation of the equipment necessary for interconnection or access to network elements; and (4) for resale at wholesale rates any telecommunications service that the incumbent provides at retail to non-carrier customers.[19]

The Commission adopted rules implementing the local competition provisions of the Act in August 1996.[20] Many of these rules have since been challenged in court. In May 2002, the Supreme Court affirmed the methodology that the Commission adopted for pricing network elements.[21] This methodology, known as total element long run incremental cost ("TELRIC") pricing, is a form of long-run average incremental cost pricing of facilities.[22]

B. The Central Policy Issues.

The Act raised several important questions about how best to promote efficient local telecommunications competition, including: (1) what network elements should ILECs be required to make available to competitors? and (2) what prices should be charged for these network elements and for interconnection of networks? How the Commission answers these questions will affect both the pace at which competition develops and the relative mix of alternative entry strategies (full facilities-based entry, entry using unbundled network elements, possibly combined with the entrant's

19. 47 U.S.C. § 251(c).

20. *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, 15 FCC Rcd 3696 (1999).

21. *Verizon Communications Inc. v. FCC*, 122 S.Ct. 1646 (2002). This Supreme Court decision reversed an earlier decision by an intermediate appellate court *(Iowa Utilities Bd. v. FCC,* 219 F.3d 744 (8th Cir. 2000)).

22. See Sharkey (1999).

own facilities, or resale of the incumbent's services) that competitors adopt.

C. Current Proceedings and Research Questions.

The Commission has initiated a number of proceedings that address these important questions, including the following.

Triennial Review. In requiring ILECs to make key network elements available to requesting carriers on an unbundled basis, the Act set forth standards that the Commission must apply in determining which network elements should be made available. The Act provides that "the Commission shall consider, at a minimum, whether – (A) access to such network elements as are proprietary in nature is necessary; and (B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier to provide the services that it seeks to offer."[23] The Commission's current implementation of these standards requires ILECs to make available to competitors loops, interoffice transport, operations support systems, and, in most locations, switches.[24]

In December 2001, the Commission issued a Notice of Proposed Rulemaking ("NPRM") initiating its first triennial review of its policies on unbundled network elements.[25] Among other things, the NPRM sought comment on which network elements should be unbundled and on how the unbundling rules could best encourage facilities-based competition. The NPRM also sought comment on whether the Commission should adopt service-specific and location-specific analyses in applying the statutory "impairment" standard of the Act. Research analyzing the business cases associated with alternative entry strategies in various markets could provide useful insights regarding the conditions under which a competitor would be impaired by lack of access to a particular network

23. 47 U.S.C. § 251(d)(2).

24. *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696 (1999).

25. *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers,* Notice of Proposed Rulemaking, CC Docket No. 01-338, FCC 01-361 (rel. Dec. 20, 2001).

element.

Intercarrier Compensation NPRM. In 2001, the Commission began a fundamental re-examination of intercarrier compensation regulations.[26] Currently, interconnection arrangements between carriers are governed by a variety of intercarrier compensation regulations that treat different carriers and different services disparately even when the carriers' cost structures and the services they deliver are similar. Several problems have developed, including regulatory arbitrage, terminating access monopolies, and distortions in the structure and level of end-user charges.[27] The NPRM seeks comment on intercarrier compensation regimes that will best mitigate these problems and create incentives for carriers to deploy facilities efficiently. Presently, the network of the calling party generally pays the network of the called party to transport and terminate a call. However, the NPRM tentatively concludes that a form of bill-and-keep may best ameliorate these problems. Under a bill-and-keep approach, each carrier charges its own customers, not other carriers, for services rendered.[28] The optimal design of an intercarrier compensation regime is a complex problem that merits additional research.

26. *Developing a Unified Intercarrier Compensation Regime*, Notice of Proposed Rulemaking, CC Docket No. 01-92, FCC 01-132 (rel. Apr. 27, 2001).

27. Regulatory arbitrage occurs, for example, when a carrier intentionally attracts customers that receive more calls than they make, in order to collect lucrative payments for terminating calls. Terminating access monopolies arise from the fact that end users generally subscribe to a single local carrier, so that other carriers, seeking to deliver calls to that end user, have no choice but to purchase terminating access from the end user's local carrier. Distortions in rate structures generally occur because most intercarrier compensation schemes assess traffic-sensitive charges (*e.g.*, per-minute rates) on the originating carrier. Since these traffic-sensitive charges represent real incremental expenses for the carrier that must pay them, that carrier is likely to reflect these charges in the per-minute rates charged to end-users, even though the resulting charges may not reflect actual production costs.

28. See Atkinson and Barnekov (2000) and DeGraba (2000).

Competitive Safeguards Proceedings. The FCC has long been concerned that a vertically integrated carrier that controls an essential input and participates in a downstream market might use its power in the input market to discriminate against rivals in the downstream market. Accordingly, over the years, the Commission has adopted a variety of competitive safeguards that are intended to prevent, or facilitate the detection of, such discrimination. The Commission has three open proceedings to analyze competitive safeguards. In two proceedings, the Commission seeks to determine whether it should adopt performance measurements and standards for evaluating the performance of incumbent LECs in providing unbundled network elements and interstate special access services.[29] In the third proceeding, the Commission proposes to streamline certain competitive safeguards that apply to the provision of interstate, interexchange services by ILECs other than the Regional Bell Operating companies, and seeks comment on alternative safeguards.[30] Although competitive safeguards have been imposed by numerous regulators for many years, few rigorous economic analyses of the merits of alternative safeguards have been undertaken. There has also been relatively little analysis of the principles that should guide deregulation, including the conditions under which, and the order in which, a regulator should lift existing regulations. These issues merit additional study.

Virginia Arbitration Proceeding. Where a requesting carrier and an ILEC cannot agree on the terms of an interconnection agreement, the Act specifies that the state regulators, and not the FCC, should set the actual terms and conditions, including prices, for interconnection and unbundled network elements. If the state regulator decides not to act, however, the parties may appeal to the

29. *Performance Measurements and Standards for Unbundled Network Elements and Interconnection*, Notice of Proposed Rulemaking, CC Docket No. 01-318, FCC 01-331 (rel. Nov. 19, 2001); *Performance Measurements and Standards for Interstate Special Access Services*, Notice of Proposed Rulemaking, CC. Docket No. 01-321, FCC 01-339 (rel. Nov. 19, 2001).

30. *2000 Biennial Regulatory Review*, Notice of Proposed Rulemaking, CC Docket No. 00-175, FCC 01-261 (rel. Sept. 14, 2001).

FCC, which must then mediate or arbitrate the interconnection dispute.[31]

In 2001, the FCC was asked to arbitrate an interconnection dispute between Verizon Virginia on the one hand and AT&T and WorldCom on the other. This arbitration proceeding is likely to prove significant, because it is the first time that the Commission will decide an interconnection dispute and set the rates, terms, and conditions for interconnection. Important research questions remain regarding both the Commission's general TELRIC principles and the application of these general principles in particular pricing disputes.[32]

4. Spectrum.

A. Background.

The electromagnetic spectrum has been regulated by the Federal Government since 1927.[33] Regulatory responsibility is currently divided between the FCC and the National Telecommunications Information Administration (NTIA).[34] The FCC regulates both private sector use of the spectrum and use by state and local governments. The FCC has exclusive jurisdiction over approximately 37 percent of the most valuable spectrum (in the 300 MHz to 3,000 MHz range).[35] The NTIA manages federal government use of the spectrum and has exclusive jurisdiction over about 22 percent of the most valuable spectrum. The FCC and the NTIA share jurisdiction over about 36 percent of this spectrum. The remainder of this spectrum is allocated primarily for unlicenced devices, under either FCC jurisdiction or shared jurisdiction.

Historically, the government has allocated spectrum to specific uses (e.g., broadcast television or cellular telephony) and assigned the spectrum to specific users. Spectrum rights have been assigned

31. 47 U.S.C. § 252 (b)(1) & (e)(5).

32. Hausman (1999), Kahn et al. (1999), and Mandy (2002), among others, provide critiques of the TELRIC pricing methodology.

33. The Radio Act of 1927 established the Federal Radio Agency (FRA). The Communications Act of 1934 established the Federal Communications Commission to replace the FRA. See Hazlett (1998).

34. NTIA is part of the U.S. Department of Commerce.

35. See Kwerel and Williams (2002) for a detailed discussion of the division of spectrum in the 300 – 3,000

on both exclusive and non-exclusive bases. A licensee with exclusive rights has the right to use a specific frequency block of the spectrum in a specific geographic area, and generally can exclude all others from using the assigned spectrum in this area. Multiple exclusive licenses can be awarded for the same geographic area, provided each licensee operates on a different frequency. The spectrum used to deliver television, radio, cellular, and PCS services has been assigned via exclusive licenses. When non-exclusive rights are assigned, multiple parties have access to the same frequency in a geographic area. Non-exclusive rights have been assigned for use by cordless phones, garage door openers, 802.11 wireless networks, CB radio, and taxi dispatch, for example.

The FCC has made some progress replacing the administrative allocation of spectrum with market activity that is subject only to the regulation of interference among spectrum users. However, only about 7 percent of the spectrum in the 300 MHz to 3,000 MHz range currently has the flexible, exclusive, and freely transferable rights that are needed for the efficient operation of markets. This spectrum includes 50 MHz allocated to cellular operators and 90 MHz allocated to PCS operators.[36]

The FCC has made more progress employing market mechanisms to assign spectrum licenses. In 1993, Congress authorized the FCC to auction licenses for spectrum whose principle use was to deliver services terrestrially to paying subscribers (not to deliver "free" broadcasting, public safety, or non-commercial services or to deliver any services via satellite). In July of 1994, the FCC held its first auction for ten narrowband PCS licenses, using a novel simultaneous ascending bid auction mechanism.[37] To date, auctions have raised over 14 billion dollars. In addition to generating revenue for the U.S. Treasury,[38] auctions typically assign licenses to the parties that value them the most and

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MHz range. ("MHz" is the abbreviation for "megahertz".)

36. It also includes 15 MHz allocated to SMR and used largely by Nextel to provide a cellular-like mobile telephony service with dispatch features. Another 30 MHz of PCS spectrum should be available for flexible use once a final decision is reached regarding ownership of the licenses originally awarded to Nextwave. *(NextWave v. FCC*, 254 F.3d 130 (D.C. Cir. 2001), cert. granted, __ U.S.__, 70 U.S.L.W. 3317, 70 U.S.L.W. 3545, 70 U.S.L.W. 3551 (U.S. March 4, 2002)(Nos. 01-653, 01-657).)

37. See McAfee and McMillan (1996), for example, for reviews of the FCC spectrum auctions.

38. See Kwerel and Rosston (2000).

minimize wasteful private expenditures lobbying for licenses (rent-seeking).[39]

B. Policy Issues and Research Directions.

Creating Markets for Spectrum

FCC Chairman Powell (2001) has noted that "It is important that the Commission move from its traditional spectrum management paradigm of "command and control" to a paradigm of market-oriented allocation policy to provide more flexible allocations that allow multiple uses so that spectrum can be put to its highest and best use." The central issue in spectrum policy is how best to make that transition.

A policy that simply permits flexible use of assigned spectrum is unlikely to ensure a rapid and efficient restructuring of spectrum ownership and use for at least three reasons. First, the policy would not ensure that all licensed spectrum is available simultaneously for purchase. Consequently, prospective licensees could face considerable difficulty in identifying and acquiring the combinations of spectrum licenses that best serves their needs. Second, the policy would not make available for flexible use the spectrum still held by the FCC and NTIA. Only if this unassigned spectrum is licensed can it be combined efficiently with spectrum that is already in use.

39. Prior to 1994, the FCC used comparative hearings or lotteries to award spectrum licenses. Comparative hearings evaluated license applications based on such criteria as the number of customers that would benefit from the proposed use of the spectrum and the reliability of the service to be offered. The evaluation of license applications using these criteria often were fraught with disagreement and controversy. The associated hearings and court challenges often took several years, and the process proved costly for both participants and the government. In 1982, Congress authorized the FCC to use lotteries to select among qualified applicants for spectrum licenses. In 1984, the FCC began using lotteries to award spectrum licenses to provide cellular telephony services. Soon thereafter, application "mills" arose that sold complete applications for about $650 per cellular market. These mills led to the filing of nearly half a million lottery applications for cellular licenses. Hazlett and Michaels (1993) estimate that the cellular lotteries generated between $500 million and $1 billion in wasteful rent-seeking.

Third, the policy would not reconfigure existing spectrum rights into tradable property rights. In many bands, spectrum use is subject to a detailed set of technical specifications on transmitters (e.g., frequency, bandwidth, power, modulation type, and location) that cannot be changed without government approval. To provide licensees with technical and service flexibility, these "input" specifications need to be redefined in terms of "output" requirements, such as power limits at the boundaries between spectrum blocks and geographic areas. Subject to these output limits, each licensee would be free to offer a variety of services and deploy transmitters and system architectures of various designs within its licensed spectrum block and area.[40]

To overcome these problems, Kwerel and Williams (2002) propose a single large-scale two-sided auction for all exclusively allocated spectrum. Spectrum that is already assigned and spectrum that is not yet assigned would be made available in this auction. All spectrum licenses put up for bid in the auction would be authorized for flexible spectrum use. An auction of this type that makes all relevant spectrum licenses available for sale or purchase simultaneously can facilitate the efficient combination and use of the spectrum.[41] The precise details of the implementation of such an auction merit further study

Mobile Telephony Guidelines

40. Although the conversion of input limits to output limits is necessary for flexibility, it may not be practical for licenses covering only a small amount of spectrum, e.g., point-to-point microwave licenses.

41. Kwerel and Williams (2002) also suggest that current spectrum licensees be denied flexible use of their spectrum for a period of time if they do not place their spectrum licenses up for sale in the large-scale two-sided auction. This suggestion is designed to overcome agency problems within firms, whereby a spectrum license manager may prefer that his/her firm retain its current spectrum licenses (and thus the manager's job), even though the licenses could be sold for far more than they are worth to the firm. However, a firm can always secure flexible rights and retain its current licenses simply by submitting the highest bid on its licenses, thereby buying the licenses from itself in the auction.

The portion of the spectrum that presently is used primarily for mobile telephony (i.e., PCS and cellular telephone services) historically has been governed by a "spectrum cap".[42] The spectrum cap limited to approximately one quarter the fraction of this spectrum that could be licensed to a single firm in each relevant market. The spectrum cap served two useful purposes. First, it ensured that no firm could monopolize an essential input (spectrum). Second, it provided certainty to firms that participated in auctions of spectrum licenses, allowing them to determine before they bid whether they would be permitted to retain any spectrum licenses that they won in the auctions.

Despite these attributes of the spectrum cap, the cap had an important shortcoming: it did not explicitly consider factors other than the amount of spectrum licensed to each firm, even factors that could well affect whether a proposed license transfer served the public interest.[43] Such factors include the number of firms competing in the relevant market, the nature and intensity of their competition, barriers to entry faced by new competitors, and customer demand for mobile telephony services relative to the available (spectrum) capacity.

Recognizing this shortcoming, the Commission decided to eliminate the spectrum cap as of January 1, 2003.[44] FCC staff are developing guidelines that may be employed in place of the cap. The guidelines explain the framework that will underlie the staff's case-by-case review of proposed spectrum license transfers. The optimal formulation of guidelines of this sort remains an important issue for future research, as does the more general issue of when regulators should rely on case-by-case reviews of proposed transactions rather than bright line rules (like the spectrum cap).

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42. *Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services*, Third Report and Order, 9 FCC Rcd 7988 (1994).

43. In order to approve a proposed transfer of a spectrum license from one firm to another, the Commission must find that the transfer serves the "public interest, convenience, and necessity" (47 U.S.C. § 310(d)). The Commission's public interest review of license transfers encompasses many elements, including the likely effects of the transfer on competition, innovation, service quality, national security, and universal service.

44. *2000 Biennial Regulatory Review, Spectrum Aggregations Limits For Commercial Mobile Radio Services*, Report and Order, FCC 01-328, (December 18, 2001).

Digital Television Transition

A transition from analog to digital television (DTV) is underway in the United States. Because digital transmission uses less spectrum than analog transmission, the transition will free 108 MHz of spectrum for other uses without reducing the number of broadcast television stations. To ensure that all viewers can receive all broadcast programming during the transition, regardless of whether they have a digital or analog receiver, each television broadcaster has been awarded an additional DTV channel. The two channels permit the simultaneous broadcast of analog and digital signals. Once the transition is complete, each licensee will return one of its channels to the FCC, and use the remaining channel to broadcast a digital signal.

To ensure a successful DTV transition, several independent sectors will need to coordinate their activities.[45] Manufacturers will need to produce DTV receivers, television station licensees will need to build and operate DTV stations, and content providers and packagers will need to offer DTV programming that motivates consumers to purchase DTV receivers. Furthermore, since a large majority of viewers receive their broadcast television service via cable television and Direct Broadcast Satellite (DBS) service, it is crucial to ensure that digital cable television systems and DBS systems be compatible with DTV receivers.[46]

The target date for completion of the transition is December 31, 2006. However, the law allows licensees to request extensions of their analog authority beyond that date if fewer than 85 percent of television households in their market have equipment that can receive local DTV signals. Based on current adoption rates, it appears inevitable that analog service will persist beyond 2006. To hasten

45. The last major television technology transition was from black-and-white to color in the 1950's. During this transition, a single firm, RCA, was a major player in several key sectors: television receiver production, television programming (via the NBC network), and television transmitter production. RCA was able to internalize many of the coordination costs associated with this earlier transition.

46. Another important transition issue — copy protection or digital rights management — is generally outside the purview of the FCC. Content providers are reluctant to make available the high value content that will likely fuel DTV receiver purchases in the absence of digital rights management technology that can limit unauthorized copying and Internet redistribution of copied content.

the transition, FCC Chairman Powell has challenged the relevant industry sectors to take certain voluntary actions to speed the DTV transition.

The Powell plan incorporates five major features. (1) By the start of the 2002 - 2003 season, the four largest commercial television networks, along with premium cable channels HBO and Showtime, will provide high definition or other "value-added DTV programming" during at least 50 percent of their prime-time schedule. (2) By January 1, 2003 (or as soon thereafter as they commence broadcasting), stations in the top 100 markets that are affiliated with one of these four broadcast networks will obtain and install equipment necessary to deliver network DTV content (including any HDTV provided) without degradation. (3) Cable operators with substantial capacity (750 MHz or more) will offer to carry, at no cost, the signals of up to five broadcast or other services that provide value-added digital programming. (4) Cable operators will make available to subscribers a set-top box that supports HDTV programming display and includes digital connectors for use in connecting the set-top box to a DTV receiver or display device. (5) Equipment manufacturers will include over-the-air DTV tuners in an increasing share of new television receivers. The schedule calls for DTV tuners to be included first in the receivers with the largest screens, but envisions their inclusion by December 31, 2006 in all new receivers with screens that are 13 inches or larger.

Even before the transition is complete, it will be possible to provide services using some the spectrum to be recovered (i.e., the spectrum employed currently by television channels 52 - 69). This early use is possible because some of this spectrum (particularly channels 60-69) is currently not being used in some areas of the country.[47]

5. Media Ownership.

47. The FCC established a mechanism to encourage voluntary band-clearing. The mechanism permitted new licensees to compensate incumbent broadcasters for giving up the spectrum they use for analog broadcasting and making an early transition to digital broadcasting. The *Auction Reform Act of 2002* (Pub. L. No. 107-195, 116 Stat. 715) restricts the applicability of this mechanism, but the optimal design of band-clearing mechanisms remains an important area for future research. For FCC decisions and documents relating to the DTV transition in general and band-clearing in particular, see *www.fcc.gov/dtv*.

A. Background.

Mass media markets have changed substantially since the FCC began imposing media ownership rules in the 1940's. The past fifty years have brought both an explosion in the availability of traditional broadcast media and a dramatic proliferation of non-broadcast media, such as cable television and Direct Broadcast Satellite (DBS) service. In light of these changes, Chairman Powell has declared that "[t]he time has come to re-examine and rebuild the factual foundations that support a contemporary regulatory regime for media", while recognizing that "[t]he traditional goals of diversity and competition remain vital" (Powell, 2001).[48]

B. Central Policy Issues.

Commission media ownership rules have long had two primary policy objectives: to promote competition and to foster diversity. Competition and diversity are sometimes referred to, respectively, as economic competition and competition in the marketplace of ideas. Localism, ensuring that broadcast stations provide programming that is targeted at local populations, is a related goal. Pursuant to statute, the Commission has attempted to foster localism primarily by allocating broadcast channels widely, attempting to ensure that even small cities and towns have at least one local channel.

The central, broad policy issue facing the Commission is how best to ensure that U.S. media markets bring the benefits of competition, diversity, and localism to American viewers and listeners. In the case of economic competition, the output and performance of the media sector are relatively straightforward to define and measure. Media outlets such as television, cable, and DBS compete to deliver video programming to viewers and to provide "audience availabilities" to advertisers. In the case of competition in the marketplace of ideas, however, output and performance are more difficult

48. The Commission is not conducting its review of media ownership rules in a vacuum. The 1996 Telecommunications Act modified the Commission's radio ownership rules and instructed the Commission to review all of its media ownership rules biennially. Additionally, over the past few years, the federal courts have directed the Commission to review three of its media ownership rules and to repeal one of them.

to conceptualize and measure. "Diversity" usually is understood to encompass diversity of viewpoint, i.e., ready public access to a wide range of political viewpoints, information, and opinions on public issues. But precise measures of the level of viewpoint diversity are elusive, and important questions regarding the extent to which different media are substitutes in providing viewpoint diversity remain to be answered.

C. The Key Media Ownership Rules.

Local Market Ownership Rules. The local television ownership rule provides that a single company may own two television stations in the same market, provided that the (predicted Grade B) signal strength contours of the stations do not overlap, or that at most one of the two stations is among the top four in audience ratings and eight or more independently-owned television stations will remain in the market post-merger.[49] The D.C. Circuit Court recently remanded this rule to the Commission, finding that the "eight voices" test was not adequately justified.[50]

Commission rules also limit common ownership of radio and television stations in the same market. To illustrate, a company may own one commercial television station and up to seven commercial radio stations in an area, as long as at least 20 independent media "voices" would remain in the area post-merger.[51] Independent voices include independently-owned full power television stations, independently-owned radio stations, daily newspapers of general circulation, and cable television (which counts for one voice, provided cable is generally available).[52] The Court's concern about the "eight voices" test in the local television rule stemmed in part from the fact that the test

49. For this rule, the geographic market is the Neilsen Designated Market Area ("DMA").

50. *Sinclair Broadcast Group v. FCC*, 284 F.3d 148 (D.C. Cir. 2002).

51. A company that owns two commercial television stations may own up to six commercial radio stations if 20 independent media voices remain post-merger. If between 10 and 19 independent media voices remain post-merger, the maximum permitted holding is one television station and four radio stations. Regardless of the number of post-merger independent voices, a company may own one commercial television station and one commercial radio station.

52. All of these voices must be available in the same area. The criteria for defining the relevant area include newspaper and cable availability in the DMA of the relevant television station(s), signal strength overlap of television stations, and other considerations relating to radio stations.

counted only television stations, while the radio-television rule counts additional voices.

The Commission is presently reviewing its newspaper-broadcast cross-ownership rule, which prohibits common ownership of a television or radio station and a daily newspaper of general circulation in the same market.[53] There is no "number of voices" test in the newspaper-broadcast cross-ownership rule.

The Commission's television station-cable system cross-ownership ban was recently vacated by the D.C. Circuit Court.[54] This rule effectively prohibited common ownership of a television station and a cable system if the station's (predicted Grade B) signal strength contour overlapped the cable service area.

The Commission also limits the number of radio stations that a single firm can own in a local market. The limits vary with the total number of stations in the market. In markets with 45 or more total radio stations, for example, a single firm can own as many as eight stations.[55]

National Ownership Rules. The Commission's national television ownership rule was modified by the 1996 Telecommunications Act, and the D.C. Circuit Court has remanded the rule to the Commission for review.[56] The rule provides that no company can own television stations that reach more than 35 percent of U.S. television households. Subject to this constraint, there is no limit on the number of television stations that a company may own.

The 1992 Cable Act directed the Commission to limit the number of cable subscribers that a single cable multiple system operator (MSO) could reach. The objective was to encourage effective competition in multichannel video programming distribution (MVPD) and ensure the unimpeded

53. The concept of market here is based on the signal strength contour of the broadcast station encompassing the community in which the newspaper is published.

54. *Fox Television Stations, Inc. v. FCC* , 280 F.3d 1027 (D.C. Cir. 2002).

55. The rule's market definition relies on predicted signal strength contour overlap. This definition procedure is currently under review. See *In the Matter of Definition of Radio Markets*, Notice of Proposed Rulemaking, MM Docket No. 00-244, 15 FCC Rcd. 25077 (2000).

56. *Fox Television Stations, Inc. v. FCC* , 280 F.3d 1027 (D.C. Cir. 2002).

flow of video programming from the video programmer to the consumer.[57] Unlike the local ownership rules, which are aimed primarily at the market structure of local distribution, this rule appears to be motivated by concerns that the programming acquisition market not be subject to monopsony power on the part of cable MSOs. The current rule limits an MSO to no more than 30 percent of total nationwide MVPD subscribers, where the total includes cable, DBS, and other multi-channel platforms. In 2001, the D.C. Circuit Court remanded the rule for further consideration, and the Commission is currently reassessing the rule.[58]

D. Key Media Research Questions.

In order to evaluate fully the merits and impact of media ownership rules, several questions must be answered, including the following: How is the amount of diversity that the media deliver best measured? To what extent is one medium (e.g., radio or the Internet) a good substitute for another (e.g., broadcast television) both from the perspective of advertisers and in delivering diversity to citizens?[59] Do limits on the number of viewers that a television station can reach nationally promote competition or diversity in relevant local markets? Answers to these and related questions are critical in determining appropriate regulatory policy and in assessing whether there is any meaningful relation between market structure and the amount of diversity delivered in the market.[60]

Given the difficulty in measuring a desired output (viewpoint diversity), Commission rules have focused on a key input (independent ownership). The correlation between independent ownership

57. See *Implementation of Section 11 of the Cable Television Consumer Protection and Competition Act of 1992*, Further Notice of Proposed Rulemaking, CS Docket No. 98-82, 16 FCC Rcd. 17312 (2001).

58. *Time Warner Entertainment Co. v. FCC,* 240 F.3d 1126 (D.C. Cir. 2001).

59. See Ekelund et al. (1999) and Silk et al. (2001), for example, for recent studies of inter-media substitution.

60. Standard conclusions regarding market structure and performance may not hold in media markets because video programming has public good characteristics. It is non-rivaled in consumption and, in the case of broadcast programming, it is non-excludable. These features and other considerations, such as product differentiation and diverse viewer preferences, imply that a purely competitive market structure may not maximize consumer welfare. See, for example, Owen and Wildman (1992).

and viewpoint diversity merits further testing.[61] In addition, the costs imposed by restrictions on intra- and cross-ownership of media (including foregone economies of scale and scope) deserve careful study. The benefits and costs of alternative (or complementary) means to promote viewpoint diversity also warrant careful analysis. Relevant alternatives might include, for example, an obligation to devote a specified portion of media capacity to deliver educational material or public interest messages.[62]

6. Conclusions.

This article has reviewed four of the major policy issues that face the FCC today: broadband deployment, competition policy, spectrum allocation, and media ownership rules. While of crucial importance, these issues are by no means the only ones facing the Commission. In concluding, two additional important issues are described briefly.

The first issue is homeland security. The tragic events of September 11, 2001 made apparent the importance of ensuring the safety and security of the nation's communications infrastructure and enhancing the nation's ability to conduct essential communication during national emergencies. The Commission is working to further these key elements of homeland security policy in several ways. For instance, in part through its leadership role in the National Reliability and Interoperability Council and the Media Security and Reliability Council,[63] the Commission is helping to develop a coordinated industry response to any major damage that the communications infrastructure might suffer in the future. The Commission is also helping to determine how best to provide key government agencies with required priority access to wireless communications services during

61. Pritchard (2001) finds that television stations with the same owner provide different political viewpoints.

62. Cable franchise authorities can require cable operators to set aside channels for public, educational, and governmental use. Moreover, cable operators are required to offer commercial leased access channels to entities that are not affiliated with the cable operator. The number of such channels varies with the capacity of the cable system. See 57 U.S.C. §§ 531, 532.

63. For details, see *http://www.nric.org* and *http://www.mediasecurity.org*.

national emergencies. In addition, the Commission continues to push for the rapid implementation of E911 services on all wireless telephones.

The second additional set of issues facing the FCC pertain to individual merger proposals. The two most prominent ones at the time of this writing are the proposed acquisition of DirecTV by EchoStar and the proposed acquisition of AT&T Broadband by Comcast. FCC approval of these mergers is required because they involve the transfer of operating licenses issued by the Commission. DirecTV and EchoStar are the two major providers of Direct Broadcast Satellite (DBS) video service in the United States. The two firms argue that their union would permit them to employ their spectrum more efficiently and compete more effectively against cable operators. Opponents of the merger point out that many U.S. households are not served by any cable operator, and so the union would constitute a merger to monopoly for these households. DirecTV and EchoStar have promised that if their merger is approved, they will set the same price for their programming services in all jurisdictions throughout the nation, so that even households that are not served by cable operators will benefit from the competition between DBS and cable operators in other geographic regions. Models of competition in which one firm sets a uniform national price for its service while facing different levels of competition and different competitors in various parts of the nation merit additional investigation.

AT&T Broadband and Comcast are, respectively, the first and third largest cable operators in the United States. Because the two firms operate in different geographic regions, their merger would not increase horizontal concentration in local geographic markets. However, the merger would allow AT&T Comcast to serve nearly thirty percent of MVPD subscribers nationwide. As suggested in section 5, this aggregation of viewers could, in principle, endow AT&T Comcast with considerable leverage in its bargaining with programming networks. However, the economic literature does not provide unambiguous guidance regarding the effects of buyer concentration on the outcomes of

bargaining between buyers (e.g., cable operators) and sellers (e.g., programming networks).[64] Future research into these subtle but important bargaining issues could be of substantial value to the Commission as it considers both the merits of particular mergers of cable operators and the design of appropriate general limits on the number of subscribers that individual cable operators can serve.

64. See, for example, Chipty (1995), Chipty and Snyder (1999), and Raskovich (2001). The FCC has commissioned experimental studies of bargaining interactions in an attempt to derive additional insight on this important issue. See Bykowsky et al. (2002).

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