Journal of Economic Perspectives—Volume 11, Number 4—Fall 1997—Pages 93–112

Meddling Through: Regulating Local Telephone Competition in the United States

Robert G. Harris and C. Jeffrey Kraft

During the public discussions leading up to the Telecommunications Act of 1996, telecommunications policy became, for the first time in history, a hot topic at the highest levels of executive and legislative decision making. Policymakers began to view telecommunications as a "strategic" sector, meaning an industry group that exhibits positive externalities with other industries and contributes to social welfare in excess of the private returns enjoyed by the sector's shareholders and direct consumers (Harris, 1991). The act itself was a watershed revision of existing law, the Communications Act of 1934. It had several goals: to maintain and expand universal service; to promote competition and its associated benefits (price reductions, quality improvements, and new service innovation) via entry by local exchange carriers, long-distance companies and cable companies into each others' markets; and to stimulate investment in the "National Information Infrastructure," which the Clinton administration has declared essential to maintaining international competitiveness in the information age. This paper assesses the act's goal of promoting competition in the local telecommunications markets, which include the provision of calls within a given local service area; enhanced features such as touch-tone calling or call forwarding; long-distance access services, which are charged to long-distance companies for using the networks of the local exchange companies; and local toll calls, which are typically short range calls within a metropolitan area. The central theme of this paper—hence the term "meddling"

■ *Robert G. Harris is Professor Emeritus of Business and Public Policy, Haas School of Business Administration, University of California, Berkeley, California and Principal, Law and Economics Consulting Group, Emeryville, California. C. Jeffrey Kraft is Senior Consultant, Law and Economics Consulting Group, Emeryville, California. Their e-mail addresses are ⟨rgharris@haas.berkeley.edu⟩ and ⟨jeff_kraft@lecg.com⟩, respectively.*

in the title—is that Congress, the FCC and state regulators have established an overly regulatory regime for local telecommunications competition in the United States.[1] As a corollary to reducing the amount and degree of regulation, policymakers should immediately correct distortions in local retail rates to prevent further distortions in local telecommunications competition.

We begin by offering some background on the history of local telephone service and regulation in the United States, including the emergence of local exchange competition in the last 15 years. We then describe the political and economic forces which shaped the passage of the Telecommunications Act of 1996 and its implementation by the Federal Communications Commission (FCC) and state regulators. Finally, we will discuss how the evolving telecommunications regulatory regime is likely to influence the structure and results of competition in telecommunications markets in the United States and make some prescriptions for policy reform.

The policy paradigm employed in the United States, which can be described as extensively regulated competition, is very different from policies pursued in other countries. In other articles appearing in this symposium, Leonard Waverman and Esen Sirel assess the policies pursued by European nations, which have typically been more protectionist and slower to pursue market liberalization than the United States, with a few notable exceptions. Pablo Spiller and Carlo Cardilli describe the regulatory policies in four countries which have been at the forefront of aggressively promoting telecommunications competition: Chile, Australia, New Zealand and Guatemala.

History of Local Telephone Regulation in the United States

Local telephone service in the United States has been predominately provided by privately-owned companies. After a period of competing providers in the early twentieth century, Congress passed the Willis-Graham Act in 1921, allowing the vertically integrated Bell system which provided local and "long line" (now called long-distance) telecommunications service to purchase competing local telephone companies. The industry experienced rapid consolidation and by 1930 the Bell system, which was owned by AT&T, had acquired more than 250 independent companies and had a 79 percent share of the local telephone market (Vietor, 1989, p. 34). This system of private ownership contrasts with most other major countries, which had government-owned post, telegraph and telephone companies.

Because local telephone companies in the United States were privately-owned monopolies, the United States developed a system of "rate of return" regulation

[1] For those readers who are unfamiliar with the work of the groundbreaking public administration scholar Charles E. Lindblom, the use of the phrase "meddling through" is a reference to the title of Lindblom's (1959) classic article on the public policy–making process, "The Science of Muddling Through."

with two purposes: to promote large-scale sunk investment in private infrastructure by reducing political, legal, regulatory and competitive risk through an assured rate of return; and to protect ratepayers from prices higher than those required to generate that rate of return. Due to the federal nature of U.S. governmental structure, state public utility and public corporation commissions split regulatory jurisdiction over telecommunications policy with the Federal Radio Commission, later renamed the Federal Communications Commission by the Communications Act of 1934. The public policy–making dilemmas resulting from this regulatory bifurcation are central to the issues faced by state and federal regulators today as they try to usher in a system of workable local exchange competition following passage of the Telecommunications Act of 1996.[2]

In the dual system of federal and state regulatory jurisdiction in the United States, states had authority over the certification of local exchange carriers to determine which company was granted the monopoly franchise for local services in a given geographic area. States also had—and still have—authority over most rates charged to customers for local exchange services. Jurisdiction over long-distance service is split. In most cases, long-distance carriers levy different charges depending on whether a call is interstate or intrastate, with the former regulated by the Federal Communications Commission and the latter regulated by the respective state regulatory and public utilities commissions.

Prior to the passage of the Telecommunications Act of 1996, within the limits of the Communications Act of 1934, the Federal Communications Commission had the authority to preempt state regulations under certain limited conditions. The FCC aggressively used this authority to promote competition in some telecommunications markets; for example, by allowing new entrants into long-distance markets, requiring that local exchange carriers provide equal access to all competing long-distance carriers, and establishing rules for competing local access networks to connect customers directly to long-distance networks. These steps were often taken in opposition to state regulatory policies, at least until recently. At the time of the passage of the 1996 act, many states actually had laws prohibiting competitors from entering local exchange markets and providing switched local exchange service.

In contrast to this dual jurisdiction over wireline telephone networks, the FCC has had sole jurisdiction over wireless communications; that is, the allocation of radio spectrum for various communications uses. The FCC has used this authority to promote competition in long-distance services; for example, in its series of pre-divestiture decisions in the 1960s and '70s to allow the use of microwave facilities for competitive entry in long-distance markets. In summer 1994, the FCC began to

[2] Electricity regulation, which has a similar jurisdictional bifurcation, is generally lagging a few years behind telecommunications regulation in terms of implementing a more competitive regime and the lessons learned from telecommunications can help make transition to a more competitive environment in the electric industries smoother and more efficient. For a discussion of some of the issues with electricity regulation in this journal, see the article by Paul Joskow in the Summer 1997 issue.

hold auctions to determine who would be licensed to use various portions of the spectrum to provide advanced new wireless communications services such as personal communications services (PCS).[3] The FCC is moving toward allowing market forces more flexibility in determining the exact nature of use for a given block of spectrum. As we shall see, though, there is a marked contrast between the market-reliant policies of the FCC in wireless communications and its intrusive regulatory policies in local telecommunications services.

Along with the pro-competitive regulatory decisions by the Federal Communications Commission mentioned a moment ago, federal antitrust policy has also played a crucial role in promoting competition in telecommunications markets. In the 1970s, the Department of Justice opened an investigation into AT&T's possible failure to comply with terms of an earlier Consent Decree from 1956 and other possible violations of the antitrust laws. As settlement of litigation brought against AT&T in Federal District Court, the Modification of Final Judgment, commonly known as the "MFJ," caused a dramatic restructuring of the telecommunications industry.

Under the MFJ, AT&T was required to divest seven Regional Bell Operating Companies (RBOCs). Each of the seven—Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, Southwestern Bell and U.S. West—owned one or more Bell Operating Companies, each of which served one or more states. Prior to the recent mergers between Southwestern Bell and Pacific Telesis and between Bell Atlantic and NYNEX, each RBOC served approximately 11 to 12 percent of U.S. local telephone subscribers. The remainder are served by more than 1,000 independent local exchange carriers, most of which are very small, serving a few thousand customers.

More specifically, divestiture was accomplished by creating 161 local access and transport areas (LATAs), geographic boundaries which defined the service territories within which the Regional Bell Operating Companies could operate. RBOCs were allowed to carry local calls and short-haul toll calls that originated and terminated within the same LATA, but prohibited from carrying calls across LATAs, including calls across state boundaries or within states. InterLATA calls were handed off to long-distance companies like AT&T, MCI or Sprint.

In addition to the interLATA restriction, the Modification of Final Judgement settlement originally imposed two other restrictions on the lines of business that the Regional Bell Operating Companies could enter; namely, the manufacture of telecommunications equipment and the provisioning of information services (such as electronic directories or voice messaging services). Compliance with the MFJ was monitored and enforced by U.S. District Court Judge Harold Greene, who had authority to grant waivers from the MFJ. In 1991, Judge Greene removed the information services restriction after the RBOC's successful appeal of that restriction to the U.S. Supreme Court.

[3] For discussions of spectrum auctions in this journal, see the articles by John McMillan in the Summer 1994 issue and by R. Preston McAfee and John McMillan in the Winter 1996 issue. See footnote 4 below for a more detailed definition of PCS.

Since the MFJ and divestiture and subsequent decisions by the FCC requiring local exchange carriers to provide equal access to all competitors in long-distance markets, competition in the long-distance market has accelerated. MCI, Sprint and more recently, smaller carriers such as WorldCom and IXC Communications, have developed extensive interLATA networks. The FCC encouraged this competition by requiring that the long-distance companies who owned transmission networks be willing to sell blocks of long-distance service at the same discounted rate to both high volume end-users like large corporations, and to small phone companies that had no facilities of their own, but wanted to resell the long-distance services to an aggregated group of smaller end–users. This rule reduced the ability of long-distance phone companies with their own facilities to price discriminate and allowed new entrants to acquire customer bases prior to making investments in their own networks.

Local telephone markets have been slower to develop competition. Traditionally, local exchange carriers have been subject to rate of return regulation, a policy permitting them to recover and earn a reasonable profit on their net capital investment (that is, their "rate base") and to cover their operating expenses. Rate of return regulation attempted to balance the interests of ratepayers, the firm's shareholders, and society as a whole. For the shareholders, it provided a more certain rate of return. For the ratepayers, it required the utility to return any "excess" earnings. For society, it created a stable political and regulatory climate to encourage investment in building potentially risky (because of massive sunk costs) telecommunications infrastructure. In local telephone markets, rate of return regulation was typically accompanied by granting a monopoly franchise and imposing rules which required local exchange companies to provide service to all customers in the service territory who request it, with very short response times.

As the public policy debate became more informed by principles of economic efficiency in the late 1970s, state and federal regulators began to shift away from rate of return regulation toward price cap or incentive regulation. Price caps typically require regulated companies to reduce prices steadily based on some measurement of average industry productivity growth. However, if the companies can reduce costs more quickly, then they are allowed to retain the additional profits generated from above average reductions. In some rare instances, price cap rules also allow for exogenous adjustments in the price level to reflect certain market changes outside the control of the regulated company. Price caps thus improve technical efficiency by using the profit incentive to encourage regulated firms to produce a given level of output at a lower cost.

In a deliberate attempt to promote universal telecommunications service by keeping prices below cost for rural subscribers, state and federal policymakers have generally required local exchange carriers to provide service at geographically averaged rates, rather than varying rates to reflect the higher costs of serving areas with low population density and/or difficult topography. In addition, the pattern of price regulation typically included cross-subsidies where basic residential local exchange service was provided below cost, while services like business, long-distance

access, local toll, and enhanced features such as call waiting and voicemail were priced above cost. These cross-subsidies were believed to promote subscribership by residential customers. However, they also led to a structure of prices which did not reflect differing costs or demand elasticities. For example, in Minnesota, according to current Public Utilities Commission rules, rates for basic business services must be set at three times the rates for basic residential services, even if the two involve exactly the same costs or if competition for business services is more intense than for residential services (Minnesota Public Utilities Commission, 1987, p. 138).

Actual and Potential Competitors in Local Telecommunications Services

Perceptions about entry and entrants into local telecommunications services today are strongly colored by the breakdown of AT&T's monopoly in telecommunications equipment manufacturing and long-distance services following the Modification of Final Judgement. Many of the entrants seemed tiny and even fragile at first. One such startup named "Carterphone" was among the first to challenge AT&T's monopoly of the telephone equipment market. Then-small newcomer MCI challenged AT&T's monopoly in long-distance services.

Incumbent local exchange carriers faced very limited competition as little as ten years ago. Infant startups like Metropolitan Fiber Services—now "MFS"—were the first to challenge the monopoly franchise in local access services (connecting the customers to long-distance carriers) when they built competing fiber-optic networks in the high density business corridors of larger cities.

The situation in local exchange services today is completely different. Whereas the initial entrants into equipment, long-distance and access services were extremely small companies just starting up their businesses, the potential entrants into local exchange services now include corporate giants such as AT&T, MCI and other established communications providers such as cable companies. In the language of competitive strategy, entry into telephone equipment, long-distance and local access was largely de novo, while entry into local exchange services will be product line extensions by existing communications companies (Oster, 1990, p. 28; Porter, 1980, pp. 300–323). It is often substantially easier for firms to enter a related line of business by expanding from their current base than for a startup firm to enter a market. In what follows, we identify and explore the roles of actual and potential competitors in local exchange markets, including self-suppliers, private branch exchanges, shared tenant services, competitive access providers (or facilities-based competitive local exchange carriers), long-distance companies, wireless carriers, local service resellers, cable companies and other utilities.

Because user demands are so highly concentrated in telecommunications services, one of the most important forms of competition is "self-supply" or "contract

carriage" set up by large, intensive users like midsize and larger companies and owners of multi-family dwelling units such as high density apartment buildings. These large users can reduce their reliance on the local exchange carrier in one of two ways: by purchasing a private branch exchange or by making direct connections to long-distance companies via satellite or other facilities.

Private branch exchanges are essentially small central office switches. They allow a heavy user to self-supply local exchange service, thus routing calls around a local exchange carrier's network and providing a source of competition for the local exchange carrier's services. This competition takes various forms. First, private branch exchanges greatly reduce the need for access lines to the local exchange carrier because multiple users' calls can be aggregated over a few lines (instead of having one access line per end user), thereby competing directly with a local exchange carrier for access lines. For example, with a private branch exchange, a business customer who originally needed 1000 access lines could, by buying or leasing a private branch exchange, typically reduce the number of access lines to approximately 150. Second, the software that controls private branch exchanges can easily be programmed to route local toll calls normally carried by a local exchange carrier to a competitor's network. Finally, because private branch exchanges can handle local calls to other stations within a building (sometimes called the "intercom" function) and offer many enhanced services such as voicemail, they enable businesses to provide their own services that they might otherwise purchase from a local exchange carrier. In many cases, private branch exchanges are "shared tenant services," allowing a number of smaller businesses or residences in the same building to aggregate their traffic and telecommunications services to obtain enough traffic density to make using a private branch exchange cost-effective.

An alternate form of competition from private networks is satellite-based transactions processing systems using VSAT (Very Small Aperture Terminal) technology. Because they use wireless transmission, these networks serve low density locations in rural areas nearly as efficiently as they serve urban sites. For example, Chevron Corp. uses a VSAT network for communications among retail gas stations and credit card authorization, while Toyota Motor Sales USA uses VSATs for communications among offices and dealers around the country ("Local Oil Companies," 1994). Without VSATs, most of these calls would likely be carried on the publicly switched telephone networks of incumbent local exchange carriers. The number of VSAT systems has increased markedly in recent years, and recent innovations in satellite technology—in the areas of digitalization, data compression, miniaturization and improvements in signal processing capabilities—will generate huge increases in transmission capacity and large decreases in costs and prices.

Privately-owned networks using either private branch exchanges or satellite systems have grown rapidly in recent years and in general, these networks probably added to the efficiency of the telecommunications industry. However, at least in some cases, there is reason to believe that the private networks exist only because of regulations that require local exchange carriers to use non-economic pricing and/or that inhibit new service offerings. In these cases, self-supply through private

networks would not exist in the absence of regulatory distortions and may well be contrary to economic efficiency and other public policy objectives.

A second broad set of competitors for the local exchange companies is coming from competitive access providers or competitive local exchange carriers. Over the last decade, competitive access providers such as MFS, Teleport, MCI Metro, Brooks Fiber, and many others have built their own fiber-optic networks in high-density business corridors. Originally these companies were only permitted by regulators to provide direct access to the networks of the long-distance or interexchange carriers, but following recent state actions and the Telecommunications Act of 1996, they are also allowed to provide full local exchange service (including connecting calls between local customers). Although these providers serve a small share of all customers, they have successfully targeted the most profitable geographic areas and customers and are growing at phenomenal rates. Their initial targets were large cities such as New York, Chicago and Los Angeles. Now, they are expanding into medium-sized cities such as Albuquerque, New Mexico, Des Moines, Iowa, and Fresno, California. Once a competitive access provider has built a core fiber-optic ring in a metropolitan area, the incremental cost of serving additional customers is quite low, relative to the potential gain in revenue. Today, the 22 largest competitive access providers are serving more than 700,000 customer accounts in 32 states and their route miles in service grew by an average of 60 percent in 1995 (Kirchhoff, McInerney and Beattie, 1996, pp. 10–11).

Wall Street is apparently optimistic about the prospects of these new entrants because much of their growth has been financed by a large number of equity and debt flotations. In response to the Telecommunications Act of 1996 and state deregulation, some of the competitive access providers are merging and becoming full-service telecommunications companies, offering long-distance and Internet services and creating greater opportunities for revenue and profit growth. Some providers such as Winstar Communications are also using wireless microwave technologies both to provide direct services to end users and to extend the reach of fiber optic networks owned by other competitive network operators.

The long-distance telephone companies are yet another potential source of competition for local exchange carriers. AT&T, MCI and Sprint each have their own entry strategies for competing in local exchange markets. AT&T eventually plans to build local wireless loops to connect end users directly with AT&T's switches over the airwaves, while using their existing facilities and switches to provide local call origination service to their highest volume business customers. MCI is constructing competitive wireline networks in the largest, most dense urban areas through its subsidiary, MCImetro. Both AT&T and MCI are also planning to resell the services of incumbent local exchange carriers. Sprint already owns several small incumbent local exchange carriers and is involved in an alliance with large cable companies to build wireless networks and potentially upgrade cable networks in ways that will provide competing local exchange service.

AT&T and MCI had promised to enter local exchange markets vigorously following the passage of the 1996 Telecommunications Act, but at least as of this

writing, they have not done so. MCI recently announced that they could lose as much as $800 million in 1997 on their local telephone business due to higher than anticipated costs of entering the local market (MCI Press Release, July 1997). AT&T and MCI both claim the reason for their delay in entry has been that incumbent local exchange carriers have been employing anticompetitive tactics to forestall their entry. However, their lack of penetration in local exchange markets also serves to delay the entry of the Regional Bell Operating Companies into long-distance markets. Under the Telecommunications Act, the RBOCs are only allowed into long-distance markets when they have convinced the FCC (which is required to give heavy weight to the advice of the Department of Justice) that the local exchange market served by the Bell company in question is open to competition. As we will explain in the next section, one of the most important aspects of the Telecommunications Act is its influence on the timing of cross-entry by various classes of communications companies, RBOCs, long-distance companies, and cable companies into each others' markets.

Wireless telephony providers like cellular, PCS or personal communications services, special mobile radio services and others are increasingly competing with wireline local exchange services.[4] Wireless telephony began as a mobile complement to wireline networks. Originally, the FCC granted cellular licenses to two companies in each major geographic area. One license was given to the incumbent local exchange carrier and the other was distributed to the winner of a lottery. However, in recent years the FCC has held and continues to plan numerous spectrum auctions for providing wireless communications services. Most importantly, the FCC has auctioned off six different licenses in major geographic markets to provide PCS. These auctions will increase the number of wireless telephony competitors in most markets to six or more: two cellular, at least four PCS, and potentially one or more special mobile radio service license holders.

The FCC has authorized wireless license holders to use their spectrum allocations to compete directly with traditional wireline telephony providers instead of merely focusing on the mobile telephony market. As mentioned earlier, AT&T is testing a proprietary technology for providing cost-effective and high quality local telephone service over wireless networks (AT&T Press Release, February 1997). Because wireless networks are potentially more cost-effective than equivalent wireline networks, this represents an important form of local exchange competition.

Cable television companies, with their nearly ubiquitous networks passing more than 90 percent of the residences nationwide, were widely perceived as ready to enter local telecommunications markets. Their failure to upgrade their networks

[4] PCS networks are digital wireless networks which can provide mobile telephony services which are similar to cellular service, but with potentially more advanced features such as high speed data transmission. PCS networks are similar to cellular networks, but are constructed with geographically smaller but more numerous cell sites. Special mobile radio services were originally taxi and delivery vehicle dispatch services, but have been upgraded to provide advanced wireless telephony services to a wider market.

and enter local exchange markets on a widespread scale, following passage of the Telecommunications Act, has been a disappointment to policymakers. In fact, most cable companies have dramatically curtailed their telephony upgrade plans and most have only participated in cable-telephony on a limited or trial basis. They appear more concerned with upgrading their video distribution networks to compete with direct broadcast satellite services or to provide high speed Internet access via cable modems than they are with entering local telephone markets. Many industry analysts believe cable companies were deterred from making investments in upgrading their networks to carry voice telephony by requirements and terms established by the FCC for incumbent local exchange carriers to grant resellers access to their networks. Because, as we explain below, the FCC granted resellers access to incumbents' networks on highly favorable terms, facilities-based competitors such as cable companies may have been deterred from investing in network upgrades for telephony. However, cable companies do represent important potential competitors in local exchange markets.

Another class of competitors are local service resellers who are likely to occupy specialist or niche market positions. Companies like Excel Communications or Working Assets currently resell long-distance service and are likely to do so for local exchange services as well.

A final set of possible competitors for the local exchange carriers are the gas and electric utilities. These firms already have thousands of miles of fiber optic cable in place to meet their own communications needs, along with access to public rights of way and their own local distribution networks. Many of them could readily compete with local exchange carriers by expanding into the wholesale and retail markets; indeed, many utilities are now leasing conduit and excess fiber capacity to competitive local exchange companies. In fact, the long-distance company Sprint started off in 1973 as the microwave communications subsidiary of Southern Pacific Railroad, SP Communications ("Antitrust Suit," 1978). Its microwave network was initially positioned along railroad track rights-of-way. As the network grew, it became economic to provide private line and interexchange services to high volume businesses and, eventually, to residential customers (Norris, 1980).

The Telecommunications Act of 1996

The Telecommunications Act of 1996, passed after years of haggling and delay, represents the first overhaul of federal communications legislation since 1934. The act was designed to promote competition across communications markets, thus leading to lower prices, higher quality, and innovative new service offerings. It was also intended to encourage investments in privately-owned communications infrastructure, and to ameliorate concerns over market power by allowing cross-entry where it had been formerly prohibited.

One of the critical dynamics in the communications marketplace at the time of the passage of the act was the emerging desire on the part of service providers

to sell, and customers to purchase, bundled packages of communications services, colloquially known as "one-stop shopping." Entry by providers into related markets by extending their existing product lines is a form of vertical integration. Many of the existing physical, human and other assets deployed in one market (such as local exchange service) could be deployed to offer related services (such long-distance, video distribution, or Internet access services) and integrated service packages. In terms of economic efficiency, the ability to utilize vertically related assets and bundle services together, providing one-stop shopping and a single point of contact for customers—including a single bill—could lead to economies of scope. This marketplace demand for one-stop shopping, as well as the new federal law, encouraged cross-entry by incumbent local exchange carriers, long-distance companies, cable companies, and other telecommunications providers into each others' markets.

The centerpiece of the Telecommunications Act of 1996 was a series of grand compromises, or quid pro quos, among the three major classes of telecommunications providers—incumbent local exchange carriers, long-distance providers, and cable companies—any one of whom could have effectively prevented the legislation from being passed. The most important balancing act occurred between the Regional Bell Operating Companies and the long-distance companies. Long-distance companies were concerned that incumbent RBOCs could enter long-distance markets more rapidly than long-distance companies could enter local exchange markets, which could give RBOCs a competitive advantage in the provision of one-stop shopping or bundled telecommunications service. Thus, the long-distance companies, led by AT&T and MCI, argued successfully for detailed requirements that the RBOCs needed to meet for opening up competition in their local telephone markets before RBOCs were permitted to enter long-distance markets, including requirements for extensive unbundling and resale of local services (explained below). By making the RBOCs' abilities to provide integrated local and long-distance services contingent on opening up their local telephone markets, policymakers hoped to give the RBOCs an incentive to facilitate the transition to a more competitive local exchange environment. However, this incentive applied only to the RBOCs which were operating under the line of business restrictions in the Modified Final Judgement, and not to other incumbent local exchange carriers such as GTE, SNET or Frontier, who were already free to provide long-distance service if they so desired.

In another compromise, once cable companies faced "effective competition" in a given geographic area, the Telecommunications Act allows them to be freed from price regulation (which had been re-imposed by the Cable Television Act of 1992). In exchange for these provisions allowing for the eventual removal of price regulation, cable companies agreed to allow incumbent local exchange carriers to enter video service distribution markets. Thus, entry into video distribution by a local telephone company in competition with a cable company allows that cable company to free itself of rate regulation. Conversely, the act contemplates entry by cable companies into local exchange services, which might ultimately eliminate the need to regulate the incumbent local exchange carriers. Unfortunately, the act is

silent on this point: unlike the automatic elimination of rate regulation when cable companies face effective competition, there is no corresponding automatic provision for deregulating incumbent local exchange carriers, which is left largely up to state lawmakers and regulators.

Instead, the Telecommunications Act of 1996 contemplates and purports to promote three main types of local exchange competition: 1) purely facilities-based competition, which would require interconnection and number portability from the incumbent local exchange carrier; 2) partial facilities-based competition in which, for example, a new entrant might use the incumbent's lines to connect to its own central office switches; and 3) resale, in which an entrant buys a bundle of services from the incumbent and resells it. Under the Telecommunications Act, all incumbent local exchange carriers are required to provide nondiscriminatory interconnection; for example, this means that they are required to connect calls to their subscribers which originated on competing networks. The incumbents were also required to unbundle (or disintegrate) their networks at all technically feasible points—including a separation of signaling, operator services, back office computer and order processing systems, transport, switching and local loops—and to sell the resulting interconnection services or network elements separately at cost-based rates. Additionally, the act requires incumbents to sell their bundled retail services to resellers at discounted wholesale rates determined by the incumbents' retail prices minus the costs avoided by selling on a wholesale, instead of retail, basis. Notice that the act used a different pricing scheme for unbundled network elements (bottom-up cost-based rates) and bundled services for resale (top-down avoided cost-based discounts off retail prices).

The 1996 act also expressed a preference for incumbent local exchange carriers and new entrants to come to privately negotiated interconnection agreements with prices and terms to be settled by the two parties and approved by state public utility commissions. If negotiations failed, the act set specific timelines for state-supervised arbitration and state utility commission approval of the arbitrated agreements.

In implementing the local competition and interconnection provisions of the Telecommunications Act of 1996, the FCC issued pervasive regulations covering a myriad of details in August 1996 (FCC Order, August 1996). Several of these rules have been controversial, and deserve particular attention: 1) the cost standard used for setting prices for incumbents' unbundled network elements; 2) rules permitting new entrants to rebundle completely network elements purchased from the incumbent; and 3) the "most favored nation" or so-called "pick and chose" provision.

The FCC ruled that incumbents' prices for unbundled network elements must be set based on a cost methodology called "total element long run incremental cost" or TELRIC. The TELRIC approach calls for estimating the cost of reconstructing an entire, hypothetical network using the best available forward-looking technology. TELRIC holds constant only the company's existing switch locations and thus, effectively allows all capital expenses to be treated as variable costs. Then, only costs which are incremental, or causally attributable, to the network element

in question are included in the TELRIC of that element—that is, only those costs which would not be incurred if the company stopped producing the particular element. The TELRIC methodology also requires the use of forward-looking cost of capital and depreciation expenses, to ensure capital recovery. Finally, TELRIC allowed for a reasonable markup to cover the firms' common costs of operation which are not causally attributable to any single network element (FCC Order, August 1996, paragraphs 672–702).

This methodology is an attempt to assure that the economies of scope, scale and density enjoyed by an incumbent with a ubiquitous network are factored into the cost calculations used to set prices for unbundled network elements. TELRIC is also intended to mimic the pricing which would result if a number of local exchange carriers, each with their own ubiquitous networks, were competing in wholesale markets to sell unbundled network elements to retail service providers. In other words, TELRIC-based pricing is intended to ensure that incumbent local exchange carriers do not charge new entrants monopoly prices for using the incumbents' facilities. Although TELRIC is a hypothetical calculation, under the FCC's rules, incumbent local exchange carriers were not permitted to recover any of their actually incurred costs of providing unbundled elements to their competitors, should they exceed the costs estimated by TELRIC.

The FCC also allowed new entrants to recombine the incumbents' unbundled network elements, effectively recreating the incumbents' retail service, but avoiding the pricing mechanism specified by the act for resold services (that is, retail price less avoided cost). This means new entrants have two different pricing schemes under which they can buy incumbents' services for resale, which in turn opens up opportunities for rate arbitrage that could undermine incumbents' abilities to sustain state-mandated cross-subsidizes in their rate structures. Further, the FCC established "proxy" or default prices for state arbitrators and regulatory commissions to use in setting "interim" prices for incumbents' network elements and wholesale services for resale. These proxies were intended to allow those state public utility commissions which did not have enough time to conduct extensive cost investigations to set reasonable prices for unbundled network elements and wholesale services (FCC Order, August 1996, paragraphs 328–341, 767–815).

Under the "most favored nation" provision of the Telecommunications Act (which was named based on its similarity to language in international trade agreements), incumbent local exchange carriers were required by the FCC to offer each term or clause of any interconnection agreement approved by a state public utilities commission to any party who requested it. Thus, any individual pricing clause in an interconnection agreement could not be tied to other contract clauses (FCC Order, August 1996, paragraph 40). Incumbent local exchange carriers argued instead that the act's most favored nation clause was intended to ensure that all interconnection contracts, taken as a whole, were offered on a non-discriminatory basis to any party who requested the contract.

Many state public utility commissions objected to the FCC's rule-making, claiming it went beyond the jurisdiction granted the FCC under the Telecommu-

nications Act. Additionally, the Regional Bell Operating Companies and other incumbent local exchange carriers such as GTE objected to the FCC's TELRIC guidelines, pricing rules, and most favored nation requirements. A combination of state public utility commissions and incumbent local exchange carriers appealed the order to the 8th U.S. Circuit Court of Appeals. The court temporarily stayed the controversial sections of the FCC Order and on July 18, 1997, the court determined that the FCC had overstepped its jurisdictional authority by insisting that states apply specific pricing methodologies (that is, the mandatory TELRIC-based pricing was struck down) and by establishing the interim proxy prices. The court declined to rule on the substance of incumbent local exchange carriers' claims that the FCC's TELRIC pricing methodology was confiscatory. Additionally, the court ruled that the FCC's interpretation of the Telecommunications Act's "most favored nation" provision was incorrect. New entrants can purchase services from an incumbent using any preexisting agreement, but they can not pick and chose the most favorable terms from separate agreements. The court also ruled that incumbents must allow new entrants to reconnect unbundled network elements, but the incumbent is not required to perform the reconnecting (Hansen, U.S. Court of Appeals, 1997, sections 8, 21, 22, 33). This decision was really only the initial skirmish in what promises to be a long, torturous series of legal battles between the FCC, the states, new entrants and incumbents. In another example, SBC (formerly Southwestern Bell) has filed a lawsuit challenging the constitutionality of another key provision of the Telecommunications Act of 1996; namely, the imposition of long distance restrictions on just seven of the more than 1000 incumbent local exchange carriers — that is, the RBOCs.

Despite the fact that the FCC's mandatory TELRIC-based pricing rules were overturned, many states have used and will probably continue to use TELRIC-based pricing methodologies. As would be expected, the incumbent local exchange carriers have used TELRIC models to argue for prices that are relatively high, at least compared to the proxy prices proposed by the FCC or the rates that have typically been set by state public utility commissions. Meanwhile, potential entrants to local exchange markets have been arguing for lower prices by sponsoring their own TELRIC models. For example, AT&T and MCI have proposed setting prices based on cost estimates that assume very low "forward-looking" network construction costs, and also very low "backward-looking" and regulatory prescribed cost of capital and depreciation rates which fail to take into account the greater risks and faster technological obsolescence associated with the increased competition which will result from the Telecommunications Act and its subsequent state implementation. Additionally, TELRIC estimates typically assume that local exchange networks can be instantaneously and entirely reconstructed with the best-available forward-looking technology. Clearly, these assumptions fail to mimic the actual functioning of competitive markets, which is the explicit intention of TELRIC. If state regulators base prices for unbundled network elements on models which estimate uneconomically low costs, new entrants' "build or buy" decisions will be distorted and the construc-

tion of economically efficient competing network facilities will be deterred. Instead, new entrants will rely on reselling the network elements of the incumbents. Thus, to promote efficient, facilities-based competition, prices should be based on realistic cost estimates and take account of the costs actually incurred in providing service.

The Shape of Evolving Telecommunications Competition

The good news about competition for communications services in general and local exchange services in particular is that the ongoing technological forces are so strong that competition will arrive, pushing prices toward economic cost, promoting innovation, delivering new services to customers, radically changing network designs and architectures, and breaking open existing monopolies. Over the long run, this will happen more or less regardless of what actions regulators take. However, in the short- and medium-run, public policy decisions can dramatically affect the way in which local exchange competition develops. Some of these policy decisions have already been discussed, like the pervasive unbundling requirements set by a combination of the new Telecommunications Act and the FCC interpretations that have followed.

The act's requirement that incumbents' networks be unbundled at all technically feasible points is excessive and not economically justifiable. According to established antitrust law and economics, the only valid reason for requiring unbundling is if a good or service is an "essential" facility; that is, it is central and necessary to the production process in a downstream market (meaning that without access to the facility, production is impossible), it is a monopoly or bottleneck, and it is not economically replicable by competitors. A classic example of an essential facility is the only railroad bridge connecting two towns separated by a river. In this meaning of the term, the ability to terminate calls on a competing carrier's network is an essential facility.[5] In addition to call termination, many analysts have also argued that local loops are essential facilities because of the substantial economies of scale, scope and density associated with these assets.[6] Although we disagree with this position, there is clearly room for fair-minded differences of opinion on this topic. However, the Telecommunications Act of 1996 went much further, requiring incumbents to unbundle assets which are clearly not essential in the sense defined here, such as end office and tandem switching, local transport, operator services and directory assistance. New entrants have built and are continuing to build these types of facilities.

[5] The current "bottleneck" in local exchange networks results from the fact that each telephone number is served, at any given time, by only one carrier's end-office switch and competing carriers can not access that number without interconnecting their networks with the serving carrier's network.

[6] For example, Canadian regulators concluded that loops in small towns and rural areas are essential facilities, but that urban local loops are not (CRTC, May 1997).

The extreme unbundling requirements in the Telecommunications Act, combined with the FCC's rules, promote resale of incumbents' services and network elements at the expense of delaying or deterring facilities-based entry—particularly in residential and small business markets. For example, new entrants can avoid making risky sunk investments in network infrastructure by reselling the wholesale services (priced at a discount off retail rates) or rebundled network elements (priced at TELRIC or some other cost-based standard set by state regulators) of incumbents. To the extent that prices for these wholesale services and unbundled network elements are set at uneconomically low rates by state arbitrators and public utilities commissions, resale becomes an even more favorable method for entry. In this way, policymakers have biased the "build or buy" decisions of potential entrants, potentially deterring technically efficient construction of facilities and delaying the development of facilities-based competition, especially for small business and residential customers outside urban business corridors. As mentioned earlier, we believe the failure of cable companies to enter the local telephony market on a widespread basis is due in large part to the FCC's local competition and interconnection rules, the low cost estimates for leasing incumbents' local network being set by state regulators, and the uncertainty surrounding the whole regulatory process due to legal challenges. Also, the use of wireless loop networks to connect stationary as opposed to mobile subscribers to local exchange networks—a promising and potentially cost-effective technology—may be slowed by the uneconomically low loop prices being set by state arbitrators and regulatory commissions. Ultimately, the cost of deterring investment in new facilities is that the advent of innovative new technologies is delayed.

Of course, these policies do benefit those competitors such as AT&T, MCI, and others who are basing their initial entry strategy on reselling the services provided by incumbent local exchange carriers. Harry S. Bennett, vice president of AT&T's Local Services Division, explained AT&T's local exchange market entry plans: "We want to use other people's assets and capital everywhere we can . . ." (Arnst, 1996). By favoring the long-distance companies who have a resale strategy in local exchange markets, the FCC rules may be attracting foreign investment from companies who want to capitalize on regulatory policies in the United States. The acquisition of MCI by British Telecom appears to be an example of this effect.

The negative effects of the FCC's unbundling policies are exacerbated by states' unwillingness to allow "rate rebalancing," eliminating the cross-subsidies that have long been common in the industry by ensuring that retail rates are based on cost. Typically, basic residential local exchange rates are priced below cost, but advanced services such as ISDN lines, or central office services such as call waiting, voice mail, and caller ID, are priced above cost. Of course, this pricing structure artificially inhibits demand for new technologies among sophisticated users of telecommunications services in the mass or residential market, and thus discourages rapid development of such services. Large business customers can and do build private networks to avoid paying the subsidies.

Perhaps the most vivid example of the allocative inefficiency caused by these

cross-subsidies is the development of Internet voice telephone calls, which arose in response to uneconomic price structures set by regulatory policy. With current technology telephone calls over the Internet are inconvenient—they require both parties to have their computers turned on and to be using compatible software—and they have a very low quality of voice transmission. However, they do allow two users to make a long-distance voice telephone call for the price of a local call to access the Internet. How could this happen? FCC regulators gave certain enhanced service providers, such as Internet access providers, a "temporary" exemption from paying the access charges that long-distance companies are charged by local exchange carriers to complete their calls. These access charges had been deliberately set above cost to subsidize the fixed cost of the local distribution network, in an attempt to promote basic residential telephone subscribership. Internet telephony would never have developed if these access charges were priced in an economically rational way.

The Telecommunications Act of 1996 served to reinforce many of these problems, as well as creating some new ones. The rhetoric surrounding the passage of the act led consumers to believe that the prices of telephone services would decrease in the short run. Additionally, the act reaffirmed the principle of geographically averaged rates—which essentially meant reinforcing the existing perception that rural consumers should not be responsible for the costs they cause by living in rural areas.[7] In reality, competition does not necessarily lead to absolute decreases in all prices; instead, it pushes prices toward cost. In the long run, competition may lead to price decreases or to increases in quality, depending on a number of other factors.

The dual federal/state structure of U.S. telecommunications regulation has led the FCC and state regulators, with the new powers granted under the Telecommunications Act of 1996, to undertake dramatic regulatory reform by establishing wholesale pricing rules for incumbents' local exchange services without having the political will and/or the legal authority to correct fundamental distortions in retail prices for incumbent local exchange carriers. Thus, the local telephone market is in a muddle. State regulators are perpetuating various internal cross-subsidies—from certain business to residential, urban to rural, and high use to low use customers. New entrants are able to lease facilities from incumbents at unrealistically low estimates of cost in wholesale markets, but incumbents are forced to price those very same facilities with non-cost based markups when selling them to retail or end user business customers. Additionally, local exchange carriers continue to face various carrier-of-last resort and ready-to-serve obligations which restrict their market

[7] From the Telecommunications Act of 1996 (Section 254, (a) (3)), "Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas."

entry and exit possibilities. Incumbents are also often required to obtain prior approval from state and federal regulators before they can offer and price new services, which provides opportunities for competitors to use the regulatory process to delay incumbents' new service offerings. Under the present asymmetric regulatory conditions, with this myriad of rules imposed on incumbents, the competitive process is in danger of being strongly biased in favor of new entrants.

Where do we go from here? As a general rule, regulators should meddle less and rely more on market forces, even when those forces are not fully developed, in allocating resources and setting prices. The existence of market imperfections, in and of itself, does not offer sufficient justification for a high degree of intrusive regulations. Regulators should remember that competitive forces work powerfully and for the benefit of consumers, even in markets that are far from perfectly competitive. Moreover, regulation clearly imposes administrative and lost efficiency costs on society, particularly when it is of the extensive nature being pursued by the FCC under the Telecommunications Act of 1996. In creating an improved climate for competition, it is important to remove those regulations which have an asymmetric impact on one class or mode of competitors. This has been demonstrated in the deregulation of surface freight transportation markets, where railroads are no longer burdened with an excessively regulated, imbalanced rate structure and are increasingly competitive with other forms of transportation, and also in the deregulation of financial services markets, where banks and other firms are increasingly allowed to offer a fuller range of services if they desire.

In the telecommunications industry, it is extremely important that the retail rates charged by incumbent local exchange carriers, which are controlled by state regulators who are under enormous political pressure to keep residential rates low and geographically averaged, be rebalanced to reflect costs. After all, efficient pricing schemes only work when close substitutes and complements are priced at economically rational rates. Otherwise, Congress and the FCC are attempting to force competition onto a system where the state-regulated retail rates are not economically rational, a combination of circumstances that is unlikely to promote economically efficient competition, infrastructure investment or innovation. Put another way, the process of deregulation in the United States has set up a classic example of the theory of the second-best. Local retail rates have, through political intervention, been held at rates which differ dramatically from incremental cost. However, policymakers are requiring wholesale rates for these very same services to be priced at cost in an attempt to achieve efficiency gains from competition. The efficiency gains will not be realized unless retail prices are reformed, preferably prior to the introduction of competition. If state regulators are politically incapable of rebalancing rates, Congress should condition state access to federal funds which support universal telecommunications service on a rebalancing of local retail rates.

In further reform of telecommunications policies to promote efficiency, innovation and investment, the United States would do well to consider the policies of Canada, which has recently developed a solid model for reducing regulation and promoting competition in local telephone markets. In recent years, Canadian reg-

ulators rebalanced local telephone rates—meaning that they dramatically increased basic residential rates to reflect cost—without substantial decreases in subscribership (Telecommunications Reports, June 1997). Then in May 1997, the Canadian Radio-Television and Telecommunications Commission (CRTC), the Canadian equivalent of the FCC, decided against mandatory discounts for resellers of incumbents' services and to require only essential facilities, defined under an antitrust-type standard, to be unbundled (CRTC, May 1997, paragraphs 237–256, 74). In practical terms these rules result in much more limited unbundling in Canada than the United States and are therefore likely to promote greater facilities-based competition in Canada.[8] Unless the United States modifies its telecommunications policies to likewise promote investment in competing networks and facilities, U.S. consumers will not enjoy the full fruits of competition any time soon.

[8] The CRTC required incumbent local exchange companies to unbundle access to telephone numbers, directory listings, all local loops for five years, low density rural loops permanently and transport for five years. However, the CRTC ruled that urban loops, local and tandem switching, transport, rights of way, signaling networks, directory assistance databases, and directory assistance services are not essential facilities (CRTC, May 1997, paragraphs 66 – 117). In contrast, America's FCC required incumbent local exchange companies to unbundle all of these functionalities.

References

"Antitrust Suit," *Washington Post,* March 28, 1978, p. D9.

Arnst, Catherine, "Ready, Set, Devour?," *Business Week,* July 8, 1996,(From Nexis).

AT&T News Release, "AT&T's Breakthrough Wireless Technology New Alternative for Local Service," February 25, 1997.

Canadian Radio-Television and Telecommunications Commission, Telecom Decision CRTC 97–8, Local Competition, Ottawa, Canada, May 1, 1997.

Federal Communications Commission, *First Report and Order, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* (CC Docket No. 96–98) and *Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers* (CC Docket No. 95–185), Washington, D.C., Released: August 8, 1996.

Hansen, David, Circuit Judge, *On Petitions for Review of an Order of the Federal Communications Commission,* United States Court of Appeals for the Eighth Circuit, St. Louis, July 18, 1997.

Harris, Robert, "Telecommunications Services as a Strategic Industry: Implications for United States Public Policy." In Crew, Michael A., ed., *Competition and the Regulation of Utilities.* New York: Kluwer Academic Publishers, 1991.

Joskow, Paul L., "Restructuring, Competition, and Regulatory Reform in the U.S. Electricity Sector," *Journal of Economic Perspectives,* Summer 1997, *11*:3, 119–38.

Kirchhoff, Herb, Peggy McInerney, and Pat Beattie, *Inside the Competitive Local Exchange.* Alexandria, Virginia: Telecom Publishing Group, Second Edition, 1996.

Lindblom, Charles E., "The Science of Muddling Through," *Public Administration Review,* Spring 1959, *19*:2, 79–88.

"Local Oil Companies Gaze Skyward to Boost Corporate Communications," *Los Angeles Business Journal,* August 15, 1994 (From Nexis).

MCI Press Release, *MCI Calls For Regulatory Action to Bring the Benefits of Competition to Local Phone Customers,* Impact on MCI Financials, Washington, D.C. July 10, 1997.

McAfee, R. Preston, and John McMillan, "Analyzing the Airwaves Auction," *Journal of Economic Perspectives,* Winter 1996, *10*:1, 159–79.

McMillan, John, "Selling Spectrum Rights,"

Journal of Economic Perspectives, Summer 1994, *8*:3, 145–62.

Minnesota Public Utilities Commission, *Order After Redeliberation*, Docket No. P-421/GR-83-600, April 3, 1987.

Norris, Floyd, *Associated Press*, February 27, 1980 (From Nexis).

Oster, Sharon, *Modern Competitive Analysis*. New York; London: Oxford University Press, 1990.

Porter, Michael, *Competitive Strategy*. New York: The Free Press, 1980.

Telecommunications Act of 1996, amending the Communications Act of 1934 (47 U.S.C. 151 et seq.).

Telecommunications Reports, "News Highlights: At Global Conference, World Embraces Challenge of Liberalization, WTO Pact," June 23, 1997, (From NewsNet Online).

Vietor, Richard H.K., "AT&T and the Public Good: Regulation and Competition in Telecommunications, 1910–1987." In Bradley, Stephen, and Jerry Hausman, eds., *Future Competition in Telecommunications*. New York: Harvard Business School Press, 1989.