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Managed Competition in U.S. Telecommunications

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JOINT CENTER

In response to growing concerns about understanding the impact of regulation on consumers, business, and government, the American Enterprise Institute and the Brookings Institution have established the new AEI-Brookings Joint Center for Regulatory Studies. The primary purpose of the center is to hold lawmakers and regulators more accountable by providing thoughtful, objective analysis of existing regulatory programs and new regulatory proposals. The Joint Center will build on AEI's and Brookings's impressive body of work over the past three decades that has evaluated the economic impact of regulation and offered constructive suggestions for implementing reforms to enhance productivity and consumer welfare. The views in Joint Center publications are those of the authors and do not necessarily reflect the views of the staff, council of academic advisers, or fellows.

Executive Summary

The 1996 Telecommunications Act represents a major turn in U.S. policy towards "deregulation." Instead of tying price deregulation to the opening of entry in a market that has been regulated for decades, the Act creates a maze of new regulatory responsibilities for the Federal Communications Commission (FCC) and the states. Incumbent local telephone companies, who were being freed from cost-based regulation prior to 1996, are now subject to detailed regulation of their wholesale services. Specifically, they must "unbundle" their network facilities into a large number of components and lease these components or "elements" to entrants at cost. Moreover, the Bell companies are not permitted to compete with long distance companies until they satisfy regulators that they have complied with a large number of interconnection requirements. This complex new regulatory regime has been the source of three years of regulatory battles and legal challenges and has needlessly delayed facilities-based entry into telecommunications. It would be far better if the FCC and the states were to pursue a strategy of full deregulation. The regulators should announce a date sufficiently far in the future at which all rate and entry regulation will cease, much as the Congress did for airlines in 1978. This would place potential competitors and customers on notice that fully flexible rates will be in place on this date and that new opportunities could be available for both. It also would reduce the value of rent seeking before the regulatory commissions and the never-ending cycle of rulemakings and court appeals.

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The last two decades may readily be described as the era of the "triumph of markets." Statist controls on the delivery of everything from basic materials, such as steel, to advanced services, such as telecommunications, are rapidly disappearing. Western Europe and Eastern Europe are converging toward the U.S. model of private markets with limited regulation as the best alternative for delivering important goods and services to their citizens. After the dust settles from the recent spate of currency collapses, Asia may well follow.

Despite these successes, there are a few ominous clouds on the horizon. The trend toward open, competitive markets is in danger of being preempted by legislators and regulators who are now mustering support for the notion that government must guide the evolution to competition to prevent powerful interests -- the erstwhile regulated monopolists -- from derailing the process for their own private gains. These clouds loom most particularly over the electricity and telecommunications sectors, but in this paper I will concentrate most on the dangers that are now apparent in the recent "deregulation" of telecommunications.

Deregulation versus Optimal Regulation: The Results From Other Sectors

The theory of "optimal" regulation has not changed much in the past twenty or thirty years, except for the developments in dealing with asymmetric information and adverse incentive effects.[1] Regulators of railroads, trucking, airlines, telephone services, and pipelines must have been aware of the requisites for efficient resource allocation long before the deregulatory movement began in the 1970s. Few could have believed that blocking new entry in markets that were surely not natural monopolies was consistent with the maximization of economic welfare. Yet, we knew then and surely know now with much greater certainty that regulators' goals were not simply the pursuit of

[1] See, for example, Train (1991). For a useful review of the economics and politics of regulation, see Noll (1989) and Brauetigam (1989). For a review of issues of regulatory design and asymmetric information, see Baron (1989).1

maximum consumer welfare. The theory of regulation, developed by Stigler, Posner, Peltzman,[2] and others surely trumped the theory of "optimal" regulation that is still advanced by well-meaning theorists.

The proof is obviously in the results of the deregulatory exercises of the 1970s and 1980s. In particular, the partial or full deregulation of railroads, trucking, and airlines led to very large economic welfare gains -- gains that continued to grow in the years following deregulation.[3] Most of the gains occurred through changes in the organization of these industries, not simply through an adjustment of prices by the erstwhile regulated firms. In trucking and airlines, in particular, regulatory barriers to entry had led to an inefficient organization of production and the creation of monopoly power. The railroads had been forced to maintain uneconomic services that were subsidized by declining monopoly rents from other services that were imperfectly protected from entry by regulators.

When deregulation of the transportation sector came, entry barriers were eliminated rather quickly and pricing freedom was granted almost immediately. The industry adjustment to this new order was generally far from orderly. In trucking and airlines, in particular, entrants rushed in and with often disastrous results. Hundreds of new trucking firms were formed only to fail. New airlines, such as Air One, New York Air, and Peoples Express suffered a similar fate. At the same time, established carriers, such as Continental, TWA, National, and Eastern either proceeded through bankruptcy reorganization or quietly disappeared. Others, such as Northwest, flirted with bankruptcy. Established trucking firms lost billions of dollars in the capitalized value of operating certificates -- i.e., grants of monopoly privilege.

While most regulators of these industries must have known that their regimes were not producing optimal industry performance, few would have been able to predict how their industry would be structured or perform once all regulatory barriers and restraints were removed. There is no evidence that I am aware of that shows that the Civil Aeronautics Board foresaw the development of hub-and-spoke route systems.[4] Surely, the Interstate Commerce Commission could not have predicted how the railroads would spin off short lines to small, efficient operators or that the less-

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[2] Stigler (1971); Posner (1974); Peltzman(1976).

[3] Winston (1993 and 1998); Crandall and Ellig (1997).

[4] Morrison and Winston (1986 and 1995).

than-truckload transportation sector would evolve into a set of very large national firms, such as Federal Express, that combine air and trucking into a much more efficient national system.

We now know that the gains from the deregulation of the transportation sector have been enormous, totaling perhaps $50 billion per year in current dollars.[5] Put another way, the reduction of economic welfare due to traditional economic regulation in this sector was huge. Yet the politics of regulation made it difficult to dispatch these regulators to more productive pursuits.[6] The creation and distribution of economic rents through regulation were sufficient to keep the Congress from ending these long-term drags on our economy. A variety of farm programs, the postal monopoly, and anti-dumping laws continue to exist for similar reasons.

The Next Step in Deregulation: Network Industries

I do not wish to dwell on the successes or failures of the past, but rather to contrast the extraordinarily successful deregulatory policies of the past twenty years with the new managed liberalization and deregulation that is enveloping the telecommunications and electricity sectors. Virtually all of the deregulated industries are "network" industries of some variety. Airlines, trucking companies, railroads, and natural gas pipelines are similar in this respect to telecommunications and electricity. But the airlines and trucking companies did not own most of their network infrastructure, even when regulated, and no one would contend that such vertical integration would be efficient or even feasible. As long as the government provided open, equal access to this infrastructure, competition could thrive when regulatory barriers to entry were removed. Railroads were clearly a different story, but over time their network infrastructure conferred much lower monopoly rents because they had to compete with the other transportation sectors.[7]

In electricity and telecommunications, like railroads and pipelines, the carriers own and control the infrastructure subject to a government license to operate. Deregulating them without opening access to this infrastructure could create major problems of natural-monopoly exploitation by the incumbents that would offset the productive and allocative efficiency gains created by

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[5] Winston (1993).

[6] See, for example, Robyn (1987) or Derthick and Quirk (1985).

[7] Winston, et.al. (1990).

releasing the firms from their regulatory yoke. But is this infrastructure the source of natural monopoly? And if so, how long will this monopoly endure in the face of technological change? These are the key questions that are often overlooked as politicians and regulators debate entry and interconnection to the network.

In the discussion that follows, I shall focus almost entirely upon telecommunications because this sector offers the most promising next target for full deregulation even though politicians seem far from admitting it. It may also be the most important sector of the economy -- except for national defense -- still largely under government control.

The Separation of Infrastructure from Service Delivery

One obvious choice for liberalizing a network industry with natural-monopoly infrastructure is simply to separate the infrastructure from the delivery of the service. This is precisely the option chosen by the United Kingdom in privatizing and liberalizing its railroads and now even being considered for the London Underground.[8] The ownership of the track is separate from the ownership and operation of the rolling stock. Competitive service providers lease rights to use the track from the infrastructure company at rates that are controlled by regulators. Some have even proposed a similar separation for U.S. (freight) railroads who are slowly toward a national duopoly. By separating the track from railroad operation, the number of carriers that could compete successfully might expand considerably.

A similar, but less far-reaching solution has been devised for U.S. natural-gas pipelines. At one time pipelines contracted for all of their natural gas from producers and sold it on a delivered basis to commercial users, industrial firms, and retail utilities. After the debacle of the 1970s during which these pipelines purchased gas for forward delivery at prices that were far in excess of the market-clearing prices in subsequent years, the pipelines were forced to provide open access to independent companies who could market their gas directly to customers. Thus, the pipelines opened their infrastructure to competitors, albeit at rates that are still regulated today.[9]

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[8] Batchelor (1998) p. 14.

[9] Costello and Duann (1996)

Telecommunications and electricity "deregulation" have followed a somewhat similar course, but with some important differences. First, everyone recognizes that the generation of electrical energy is far from a natural monopoly except perhaps in remote geographic areas with very limited demand. Modern transmission technologies allow most metropolitan areas to import electricity over considerable distances. Given the minimum efficient scale in fossil-fuel burning plants (or even nuclear plants), no generator could enjoy monopoly power. Transmission and retail distribution of this power is quite another matter. The obvious first step in liberalization is therefore to allow competition among rival generators and to separate the transmission and distribution functions from generation. The stumbling block is equally obvious: How is access to the transmission and distribution network to be governed? Should there be a single "poolco" that accepts bids for electricity, arranges for transmission, and sells the power to downstream customers? If so, who is to control the prices charged for these downstream sales? Or should all downstream users be free to negotiate for the delivery of their own electricity, presumably through a variety of intermediaries?[10]

In telecommunications, there is no "generation." Messages, voice or data, are originated and received by the same widely dispersed parties or network subscribers. The connection of these subscribers to the network involves large fixed costs, but very mild economies of scale. The transmission of their messages (bit streams) from the first collection point -- the network switch -- to the last distribution point -- another switch -- is subject to large scale economies. Nevertheless, the economies of scale in transmission do not appear large enough to preclude competition, given the size of the market. The United States has a variety of such networks; some are regional and a few are national in scope. The natural monopoly in telecommunications -- if there is one -- is in the local distribution of messages to the subscriber. As a result, these local monopolies could conceivably be divorced from the national or regional distribution function. In fact, a few countries have actually attempted such a divorce -- most notably the United States and, to a limited, extent Japan.

The vertical separation of facilities from the delivery of services may be a satisfactory second-best solution to the bottleneck-monopoly problem in industries that have little potential for technological change, such as railroads or pipelines. But in technologically progressive industries, such as telecommunications, such separation creates enormous problems of modifying and expanding the infrastructure to deliver new services or to reflect rapid progress in the technology for

[10] For a useful summary of these issues, see Smith (1996).

delivering existing services. In the U.S., the separation of ownership of the local network from equipment manufacturing and long-distance service delivery led to continual problems of defining the limits of "local" or "long-distance" service and separating research and development from manufacturing.

Interconnection and Regulation in Network Industries

Most of our successful examples of deregulation have involved mundane industries that are not particularly subject to rapid technological change. Railroads, trucks, and airplanes have changed little since the Ford Administration began to press for deregulation 25 years ago. The disincentives to innovation caused by regulation in these sectors were arguably less costly than those currently affecting telecommunications.[11] Equally important, one can hardly be certain that the existing telecommunications network architecture is optimally designed even if it were to reflect only current technology, not the accumulated effects of past investment decisions. Releasing the industry from regulatory controls could well result in a very different configuration of facilities and services.

In every country, telecommunications was once a government-owned or a government-controlled monopoly. The monopolist controlled all aspects of service, including the types of customer equipment that could be used to obtain service. Clearly, any liberalization of this industry requires that entrants be able to interconnect with the incumbent, monopoly carrier or the entrant's subscribers will be unable to communicate with the incumbent's subscribers. But what does "interconnect" mean? This turns out to be the central question in most of the debates raging around current telecom policy.

In the simplest sense, interconnection in telecommunications simply means the ability to terminate another carrier's traffic destined for its own subscribers and the ability to obtain similar termination from the other carrier for traffic originated by its own subscribers. Carriers must agree to protocols for accepting and delivering traffic to one another. Such arrangements have existed for decades in the United States because it has had hundreds of geographically-adjacent monopoly carriers. Most of these carriers are rural telephone cooperatives, but every state has a mix of

[11] See Hausman (1997) for the extraordinarily large losses caused by the regulatory delays in allowing new telecommunications services.

“independent” and “Bell” companies providing local service to different communities. These adjacent monopolists have had to interconnect to one another to be able to offer a complete service because commercial and social relations transcend telephone company franchise boundaries. These carriers simply built transmission lines between their switches that delivered intercompany traffic at no charge to either company. Such “bill and keep” arrangements reduced transaction costs and created little friction as long as traffic was reasonably balanced.

If adjacent carriers could deliver traffic to each other seamlessly, they could surely deliver and accept traffic from more distant locations as well. Until the 1970s, however, such traffic was generally handled by only one carrier -- a “long-distance” carrier in U.S. parlance. The local switches that transferred such calls from the national network to each local distribution system (or vice versa) were generally equipped to transfer calls to and from only one long-distance carrier -- in the United States it was generally AT&T. There was no reason to accommodate other carriers because the government or the regulator did not allow additional competing national carriers.

Entry first occurred in the transmission and switching of national (long-distance) calls in the U.S. in the 1970s and in Japan, the United Kingdom, New Zealand, and Australia in the 1980s. This entry was largely unanticipated and, at first, even unwanted by the U.S. regulator, the Federal Communications Commission.[12] Few had realized that the development of microwave technology had made the long-distance business contestable, and even fewer national authorities thought that such technological change warranted a shift from the monopoly provision of all telecom services. The introduction of competition in the transmission and switching of these national calls could have occurred with little controversy had the regulatory authorities not been requiring these calls to be priced to cross-subsidize local connections. In the United States, AT&T reacted with alarm to the development of such competition because it rightly feared that the loss of even a small part of this business would reduce the flow of “contributions to cover losses on its local network, particularly in less-dense, rural areas. It therefore resisted connecting its rivals' calls to its local network.

Eventually, the U.S. regulators found a solution to this problem, but only after AT&T was broken up as the result of its aggressive behavior that was induced by the distorted rate structure. Each local carrier would be required to modify its switches to accept all long-distance carriers' calls on an equal basis and allow customers to originate calls on any competitive carrier with the same

[12] See Crandall (1991) or Brock (1984) for a discussion of this history.

ease of dialing.[13] Local switches had to be modified to accept rival long-distance calls on an equal basis, and an explicit tax had to be levied on all such calls -- called a "carrier access charge" -- to keep the subsidies flowing. "Interconnection" in this case was solved quite neatly by simply mandating equal treatment of all carriers. There have been essentially no problems with this system over the past 15 years in the United States.

This is not to say that some regulation was not necessary. All carriers have an interest in being able to connect with other carriers, but an incumbent monopolist may find that its optimal strategy is to refuse interconnection to new carriers, thereby making it impossible for nascent carriers to survive. Once the entrants succeed in achieving sufficient size, the incentives change and each carrier finds that interconnection is in its own independent interest. Thus, a requirement for reciprocal traffic-termination agreements is probably a necessity for the development of competition. But regulating the rates charged for such arrangements is arguably necessary only for the case of new small-scale entry against an incumbent monopolist.[14]

Telecommunications network technologies have been changing at a very rapid pace. Fiber optic cables have replaced microwave transmission systems. Electronic switches have replaced electromechanical switches, allowing the development of a wide variety of software-delivered services, such as voice mail, call forwarding, and automatic number identification. Packet switching has replaced circuit switching for large data applications, such as the Internet. Despite all of these changes, there have been few problems in accommodating the essential traffic-exchange function that is required for competition in this network industry. Long-distance carriers, local telephone companies, private networks, Internet Service Providers, and international carriers interconnect seamlessly with few major technical problems. Competition flourishes where government lets it, and most disputes center on the prices of regulated services offered by those carriers that are still regulated.

Given this relatively steady and rather tranquil technological evolution, why has the market evolution in the United States and other countries been so racked with controversy? Why have incumbents resisted so strongly and found themselves engulfed in litigation when their counterparts

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[13] In the U.S., this requirement was built into the 1982 court decree settling the federal antitrust suit against AT&T.

[14] There is a growing literature on these issues. See for example, Laffont, Rey, and Tirole (1998a and 1998b). For a useful recent contribution that is not as sanguine as the views expressed herein, see Brennan (1997).

in trucking, airlines, and other industries (not natural gas) succumbed to competition with much less controversy and litigation? The answers are relatively straightforward.

Liberalization without Deregulation: The Perpetuation of Cross Subsidies

The first reason why telecommunications is different is that regulators have traditionally allowed rates to deviate substantially from efficient levels with national and international calls cross-subsidizing local connections.[15] With these rates in place, incumbents naturally respond very aggressively to the loss of market share in national or international calls. Since these incumbents are typically vertically integrated, providing all telecommunications services, their local network connections are essential for originating and terminating the new rivals' calls. In the United States, AT&T was so resistant to offering interconnection to its first long-distance rival that it brought a federal antitrust suit upon itself.

As mentioned above, the cross-subsidies can be maintained in the face of entry through a tax on national and international calls that is collected by the local companies as a carrier access charge. But once this charge becomes explicit, it becomes politically vulnerable, and it provides the new carriers with the incentive to look for other ways to connect its calls.

The United States is now in the process of attempting to introduce competition into all telecom markets while maintaining the subsidies for local residential connections, particularly in the more rural areas of the country. The 1996 Telecommunications Act orders the FCC to develop a system of explicit subsidies for such connections and to collect the subsidy monies through an explicit charge on all telecommunications carriers.[16] Unfortunately, the Commission cannot possibly measure with precision the degree to which each subscriber must be subsidized, given its geographical location. Therefore, if retail rates continue to be regulated and explicit subsidies are established for various classes of customers, the incentives for competitive entry will necessarily be quite distorted.

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[15] For evidence on the U.S. and Canada, see Crandall and Waverman (1996).

[16] The FCC has jurisdiction only over an artificially-determined 25 percent of the non-traffic sensitive costs of local service; the states have jurisdiction over the remainder. The FCC cannot force the states to convert <u>their</u> portion of the "universal-service" subsidy to a transferrable, cost-based tax on telecom services similar to that being erected in the federal jurisdiction.

Interestingly, these cross-subsidies seem much less important in the U.S. electricity sector. Subsidies to rural cooperatives have generally been in the form of explicit capital subsidies, but they are embedded in the rate structure. Therefore, electricity deregulation is likely to have much less effect on the structure of relative electricity prices.

Vertical Integration of the Incumbent

The U.S. experience of being the first to introduce competition into a telecom market bedeviled by distorted regulated rates created a hostile environment for interconnection with a vertically-integrated incumbent that has poisoned regulatory and legislative debates for the past 15 years. A federal antitrust suit succeeded in vertically divesting AT&T's operating companies from its other operations, thereby creating a widespread view that attempts at vertical foreclosure would be so pervasive that no local monopolist should be allowed to offer vertically-related services in competition with other sellers of such services. The theory that the local monopolist would engage in overt and subtle forms of vertical foreclosure that could not be detected or prevented by regulators has become so well accepted that even today, fifteen years after the AT&T divestiture and three years after the 1996 Telecommunications Act, no former Bell operating company is allowed to offer more than a modicum of long-distance services.[17] This quarantine is unique among developed countries to the United States and, even then, only to U.S. wire-based telecommunications services.

No other developed country has chosen to vertically fragment its telecommunications sector in the manner of the U.S.[18] The United Kingdom, Canada, and New Zealand have allowed competitive entry into long-distance services for a number of years, but Bell Canada, British Telecom, and New Zealand Telephone remain vertically integrated. Most European countries are in the process of privatizing their national telecommunications companies, but none is breaking them up into vertically-separated companies. For the most part, this vertical integration continues without controversy because local/long-distance interconnection is so straightforward and easily regulated.

[17] See Bernheim and Willig (1996) for a thorough discussion of these possibilities.

[18] Japan has broken NTT into separate local operating companies and a long-distance company, but all are within the same holding company.

In fact, the United Kingdom does not even require equal access, and New Zealand has no regulation at all.[19]

Perhaps more telling is the fact that in the U.S. the divested Bell local companies are denied the ability to offer national or international calling services from their wireline facilities, but each is allowed to compete in wireless services and to allow all types of calls through cellular or PCS handsets. These Bell-owned wireless services have competed with non-Bell wireless services for more than 15 years without any hint of vertical foreclosure despite the fact that most wireless calls in the Bell companies' territories require termination on the Bell-owned local wireline network. The Bell's cellular operations were never able to obtain significantly more than 50 percent of the market in the first 12 years of an FCC-decreed duopoly. Nor have the local-exchange companies been accused of attempting to thwart the recent entry of two, three, or more new PCS carriers despite the fact that each needs to interconnect with the local operating companies, including the Bell companies, in order to offer service.

Furthermore, the Bell companies have been allowed to offer information services for most of the past decade without any controversy over their use of their networks for unfair competitive advantage. I am unaware that they are very important players in this market, much less the dominant force that one might expect if vertical integration created opportunities for excluding rivals.

Finally, we have years of experience with other U.S. vertically-integrated, regulated local telecommunications carriers. Sprint, GTE, SNET, and Frontier have offered local and long-distance services over their local networks with little attendant controversy, and in some cases, for years. Were they able to effect subtle discrimination against their long-distance competitors, the results would be easily detected by now -- in the form of outsized market shares. Such evidence simply does not exist, undoubtedly because such exclusionary conduct is difficult to shield from public scrutiny.

In short, the problems of vertical integration in telecommunications derived in no small part from the distorted pricing structure that regulators allowed to develop. There is much less reason to worry about vertical foreclosure as long as interconnection with the vertically-integrated incumbent involves the simple exchange of traffic. It is only when "interconnection" takes on a far different meaning that major problems occur.

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[19] It is often argued that New Zealand has erred badly because of its abandonment of all regulation, but it is surely too early to tell. It is quite true, however, that in New Zealand regulatory controversy was simply replaced by litigation over interconnection conditions.

"Interconnection" as Managed Competition

The 1996 Telecommunications Act ushered in a new era of telecom policy in the United States that mobilized teams of economists and lawyers into constant battle over a new baroque and rather bizarre notion of interconnection.[20] Following on an earlier, failed notion of Open Network Architecture that had been tried by the FCC, the Congress enacted a set of requirements for local carriers that were ostensibly designed to overcome first-mover and natural-monopoly advantages of the incumbent local carriers. Unfortunately, they overreached and created a regulatory monstrosity.

Entry into U.S. long-distance services began twenty years ago. By 1996, the U.S. long distance sector had become substantially more competitive than it was when the Bell companies were divested from AT&T. In large part, this was due to the imposition of equal access for all national carriers -- not to the divestiture itself. Local telephony was still a monopoly, however, because state regulators had succeeded in restricting entry into most local and intrastate markets.

In 1996, Congress accepted the theory that entry into all telecommunications was desirable, but that such entry into local access-exchange markets had to be promoted through the forced resale of incumbents' local networks -- in whole or in part, at the choosing of the entrant. As a result, the 1996 Act requires the unbundling of networks at any "technically feasible point"[21] -- which could mean everywhere and anywhere a prospective entrant desires. The prices of these unbundled "elements" must be based on costs that are "determined without regard to a rate-of-return or other cost-based proceeding" and "may include a reasonable profit."[22] In addition, an entrant may simply resell an incumbent's entire service by obtaining it at the retail price of the service less "marketing, billing, collection and other costs that will be avoided by the (incumbent) local exchange carrier."[23]

There are so many problems with this approach, that it is difficult to compress them into a single paper. First, the entire approach casts the Commission back into the business of cost-based regulation, but this time with a vengeance. In the past, it simply required regulated firms to stay

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[20] See Huber, Kellogg, and Thorne (1996) for a thorough description of this legislation.

[21] *Telecommunications Act of 1996* § 251 (c) (3).

[22] *Telecommunications Act of 1996* § 252 (d) (1).

[23] *Telecommunications Act of 1996* § 252 (d) (3).

within a maximum regulated return. Later, when competition first reared its head, the Commission tried to rule on the regulated firms' cost studies, but it generally concluded that these cost studies were inadequate.[24] Now, the Commission and, presumably, the states are forced to determine the cost of each "element" of a network without knowing just what constitutes efficient network design in the first place. Moreover, the Commission and the states must supervise the determination of "avoided" costs of retailing, which are largely joint and common costs of maintaining marketing and billing systems. Economists know how controversial and essentially insoluble these problems have been in the past.[25]

Second, even if the Commission could divine the costs of each network element, there is no clear guidance from Congress as to how these costs are to be measured. Flipping a coin is certainly in the set of alternatives to a "rate-of-return or cost-based proceedings." The Commission has chosen to use forward-looking costs for at least two reasons: (1) they reflect the cost of building a network today (an awesome task that purportedly cannot be undertaken by entrants) and (2) they can at least be approximated by assembling an engineering-economic model, a task that has occupied the Commission staff for at least two years. This decision by the FCC has been the most controversial aspect of the controversial process of implementing the 1996 Act, provoking the incumbents and several states to challenge the FCC's authority to take over the rate-setting process, an appeal that has recently been rejected by the Supreme Court.[26] Constitutional takings are likely to follow.

Third, it is obvious that by creating such ample opportunities for entrants to use incumbents' network facilities, the Act discourages investment in new facilities. But if "deregulation" and liberalization are to accomplish their principal purpose, they must encourage the construction of new facilities -- by entrants and incumbents alike -- that are designed to serve today's market with today's and tomorrow's technology. The major benefits of deregulation would be lost if the exercise were simply to collapse into a sharing of facilities built while the numbing effects of regulation were in place. Leasing yesterday's technology to today's rivals at tomorrow's cost may sound good in the

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[24] After the introduction of private microwave in the late 1950s, AT&T attempted to erect a highly-discriminatory tariff structure for private line services. For more than 15 years, it debated with the FCC over the adequacy of the cost justification of these tariffs, but the matter was never resolved. See Walter G. Bolter (1978).

[25] Bolter (1978).

[26] *AT&T Corp. v. Iowa Utilities Board* No. 97-286.

political arena, but it makes little economic sense and surely provides no incentives for investment for either the lessor or the lessee.

Fourth, the decision to unbundle everything and to require its leasing at cost-based rates is wildly excessive. Requiring that incumbents grant access to their "bottleneck" facilities might make sense for at least a period of time, but there is no need to require access to those facilities that could (and should) be replicated in some form by entrants. To do so invites endless regulatory disputes and creates major barriers to investment in upgrading existing network facilities. If an incumbent carrier has begun to lease access to its switching, transport, and network-control facilities, it risks regulatory intervention or perhaps even an antitrust action if it attempts to modify this network architecture to reflect new technologies or the demand for new services. For example, what happens when a competitor who is leasing access to the incumbent's circuit switches is notified that the circuit switches are being removed because the incumbent, like AT&T (which is unregulated) is replacing its circuit-switched network with a more efficient packet-switched network? Does the incumbent have to maintain obsolete technology that is priced at forward-looking incremental cost? This surely is not "forward-looking" regulation.

Fifth, there is no date-certain deregulation of all of these resale, unbundling, and pricing rules. The FCC is authorized to forbear where <u>it</u> thinks that competition is adequate to replace regulation, but it has little incentive to do so. Indeed, by building enormous, complicated cost models that apply to every aspect of incumbents' operations, the Commission has already set in motion a chain of events that will keep it occupied for years, if not for decades. Every complicated 600-page ruling is appealed to the courts, requiring two to three years of litigation. Given the complex, controversial nature of its rules, the Commission inevitably is faced with a remand that requires some changes, which themselves will be appealed to the courts. By that time, new issues will have arisen. For instance, by simply unbundling existing facilities, the Commission provided an opening to those who would like to lease only a <u>portion</u> of a network element, such as only a given range of frequencies over the copper subscriber line or "loop." Once the Commission decides on this "spectrum unbundling" proposal and suffers through the ensuing litigation, it will be faced with trying to allocate the cost of the loop across frequencies! Should the cost be linear in MHZ used, or is the forward-looking cost of providing high frequencies more than the forward-looking cost of the lower frequencies? Alternatively, should the costs be allocated in inverse relationship to the derived price elasticity of demand of the spectrum in various uses? Or, better yet, perhaps these wholesale

prices should be set on the basis of the efficient-component pricing rule. As long as full unbundling is not subject to sunset, it will give rise to repeated attempts to expand on it and to complicate it in ways that we cannot even envision today. After all, there is no limit to the ideas that I may have for using your property at prices that are as low as those I could obtain by building the facilities myself.

Sixth, little thought has been given to the pricing of network elements to reflect risk taking. Surely, the lease price should reflect the length of term of the contract. If an entrant is to gain access to the facility at forward-looking cost, including the incumbent's cost of capital, he should have to lease the facility for its entire expected life. If the lease can be terminated at the whim of the lessee, the price should be much higher.[27]

Finally, all requirements for access to bottleneck facilities should be conditioned on a determination that the bottleneck still exists. Given the rapid rate at which costs of alternative paths to the subscriber are falling -- coaxial cable (cable television), terrestrial wireless, stationary satellites, and low-orbiting satellites -- how long can a piece of copper be a "bottleneck?" Unfortunately, the ability of entrants simply to lease copper loops rather than developing new technologies on these alternative media serves to perpetuate the bottleneck. It is always better in the political arena to argue that you are an unfortunate hostage to the powerful existing players than to take the risk of deploying capital and trying to innovate around them.

"Deregulation" Should Mean Deregulation[28]

Our experience with earlier deregulatory exercises tells us that the benefits of such exercises derive from unfettered markets finding better, lower-cost ways to deliver services.[29] Deregulation in these sectors typically involved the substitution of market forces for government controls on prices and outputs. In telecommunications, and potentially in electricity, there is little "deregulation."

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[27] Jerry Hausman has raised this point in proceedings before the FCC involving its interconnection regulations. See Federal Communications Commission (1996).

[28] The spirit of this section is much better captured by Kahn (1998), who is critical of telecommunications "deregulation" for a number of reasons that I do not address in this paper. See also a recent contribution by Sidak and Spulber (1998).

[29] See, in particular, Winston (1993 and 1998).

Instead, managed competition is replacing managed monopoly under the assumption that government can manage the transition better than market forces could.

Unfortunately, this managed competition is based in large part on assuming that sharing the infrastructure built under all of the distorted incentives created by regulation will somehow lead to efficient competition. Telecommunications regulators are busily building models of the cost of simply replicating these facilities at today's costs. They have no idea of the ideal architecture nor of the services that might be offered if the regulatory shackles were unleashed from the incumbents and if entrants actually committed capital to their enterprise. True deregulation would require that all prices and service levels be determined by market forces, not a regulatory embrace (or suffocation) of the existing infrastructure.

Clearly, regulators are horrified by the possibility that the monopolies they nurtured and protected for years would now be permitted to set prices without any regulatory constraint whatsoever. In part, this fear is justified because surely some rates that have been kept below long-run incremental cost by regulation would rise, perhaps sharply. In addition, some rates might rise sharply simply because competitors would not yet be present to respond, while still other services might not be subject to efficient competition. But there is a way to pursue full deregulation while minimizing such disruptions. It is not simply to tax all services and to deliver the proceeds to the erstwhile objects of the regulators' affection.[30] Rather, it is to announce a date sufficiently far in the future at which regulation will cease, much as the Congress did for airlines in 1978. This places potential competitors and customers on notice that fully flexible rates will be in place on this date and that new opportunities could be available for both. It also would reduce the present value of rent seeking before the regulatory commissions.

Were the Congress to set all telecommunications rates free in, say, three years, one might expect a great deal of investment activity in those technologies that are promising sources of contestability for the incumbents' services. I would expect very rapid build-out of wireless facilities and a major merger movement to coalesce this sector into four or five large, national players. Similarly, I would expect cable television companies to accelerate their modernization plans to be ready to capitalize on the opportunities created by rising residential rates three years hence. Finally, I would expect major changes in the incumbent LECs' strategies from one based in part on fending

[30] This is the policy envisioned in *Telecommunications Act of 1996* § 254, which remains a "vision."

off regulation to one intently focused on fending off new entrants. After that, no one knows how the sector will evolve. If we couldn't predict the effect of deregulation on trucking or airlines, why should we expect to have even a hint at how telecommunications will develop when it is free from regulation?

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