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The Uncertain Future of the Telecommunications Industry

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The U.S. telecommunications industry is riding a roller coaster. For most of the 1990s, the industry's future looked very promising. The growth of Internet use, the promise of a broadband network, and a less restrictive regulatory environment that was promised by the Telecommunications Act of 1996 led industry experts to forecast rapidly growing demand for core network services along with high-margin business opportunities in an expanding array of new information services. The industry backed these expectations with massive investments to expand the capacity of both wireless and wire line networks as well as to facilitate the expected boom in high-speed data transmission.

But a funny thing happened on the way to the boom. Demand growth for both standard telephone and broadband services, while strong, did not exhibit the explosion that the industry consensus had anticipated. In wireless telephony, demand grew at a healthy pace, but profits for some wireless carriers were not sufficient to justify the cost of the licenses that the Federal Communications Commission (FCC) had allocated through its auctions. Even in cable television, which was more successful in introducing broadband access than either wire line or wireless telephone companies, competition from two strong satellite broadcasters caused the fraction of households that are served by cable to decline for the first time since the technology was invented fifty years ago. In nearly all of the industry, as capacity expanded more rapidly than demand and competition envisioned began to take hold, prices fell. In an industry in which profitability had been all but guaranteed by regulation for most of the twentieth century, firms began to see red ink. A few major and many minor players fell into bankruptcy.

The growing gap between expectations and reality in industry performance has given rise to new calls to rethink the structure of communications policy. While few have called for outright subsidies, a la Chrysler and Lockheed in eras past, to bail out failing firms, the more common proposal is some form of targeted subsidy of broadband access for households or relief from paying for the auctioned radio telephone licenses. Others focus their complaints on various components of federal and state regulation. Among the favorite targets are: (1) requirements that incumbent local telephone companies lease facilities to their competitors at prices that approximate those that would arise under competition; (2) differences among new wire line, wireless, and long distance carriers concerning policies for setting prices that these companies pay for interconnection with incumbent local access carriers; (3) and the process by which the FCC collects and redistributes the Universal Service Fund for the purpose of subsidizing service to high-cost areas and low-income residential customers. A few simply want the government walk away from the entire mess by deregulating the industry and closing down the FCC.

The ultimate goal of this essay is to offer guidelines for future policy in the industry. But before reaching that point, we first provide a broad-brush assessment of its current condition. In doing so, we do not find conditions to be so bleak as to constitute a crisis, and certainly not to justify scrapping the movement towards more competition and less regulation that has characterized national communications policy for more than three decades. Indeed, the current financial problems of the industry, while real, do not threaten its ability to continue to provide high-quality services at ever-declining prices. Nevertheless, while regulation is not the primary cause of the industry's problems, the post-Act regulatory regime has flaws that ought to be corrected—most notably, interconnection pricing for long-distance carriers and the process for collecting and disbursing the Universal Service Fund.

The State of the Industry

The single most dramatic fact about the telecommunications sector during the past decade was its investment boom in the late 1990s. From 1987 to 1995, as the industry implemented the equal access requirements of the divestiture of AT&T and introduced cellular telephones, annual investment expenditures showed strong, steady growth of about five percent per year. For the first few years after the passage of the 1996 law, the growth rate of investment rose to nearly twenty percent per year, but the real boom occurred between 1998 and 2000, when the annual rate of increase topped thirty percent. By 2000, investment in the industry was more than double investment spending only four years earlier, and was nearly four times average annual spending in the late 1980s. Indeed, in the first “bust” year, 2001, real telecommunications investments still were higher than they had been in any previous year other than 2000, and were more than double the investments made in all years before 1996!

In many respects, these investments were incredibly valuable to American society. These investments brought the Internet to most American homes, allowed about 20 million households to acquire broadband access, enabled the number of wireless telephones to exceed 140 million, and vastly improved the quality of all forms of telecommunications. Nevertheless, these investments were not fully justified by the growth in demand for services, and so produced excess capacity in most of the industry.

Real growth in telecommunications services has actually been quite strong right through the recession of 2000-2001. By 2001, real output of telecommunications services was about forty percent higher than it had been when the investment boom began in 1996. Nevertheless, even growth that pushes ten percent per year can not justify the kind of massive investment boom that

took place in the 1996-2001 period.

In the good old days of regulated monopoly in telecommunications services, such an investment boom probably would not have taken place, but even if it had, the result probably would have been price increases mandated by regulators to help firms recover the cost of overly exuberant expenditures. But if the telecommunications reforms of the 1990s, capped by the 1996 Act, created the environment that gave rise to optimistic expectations about demand growth, they also undermined the industry's regulatory support system that could have paid for it. During the 1990s, U.S. telecommunications policy finally became fully committed to introducing competition throughout the industry, which brought with it added risks of financial failure.

In long-distance service, the defining moment was the settlement of the antitrust case against AT&T, which required that the Bell System separate long distance from local service and that the Regional Bell Operating Companies (RBOCs) provide "equal access" to their local customers for all long-distance carriers. Except for restrictions on entry by RBOCs and regulations dealing with the prices that local telephone companies charge for originating and terminating calls, long-distance service became almost completely unregulated as to both prices and entry shortly after the equal-access requirement was fully implemented. As a result, literally hundreds of companies jumped into long distance, and as of 2002 over 1,000 companies offer some form of long-distance service, not counting the 5,000 plus companies that are primarily in the local access business but also offer some toll services. Most of AT&T's decline in market share was lost to the new long-distance entrants rather than MCI and Sprint, the original challengers to the AT&T monopoly. In addition, beginning in 1999, the restrictions on RBOC participation in long-distance service gradually began to be lifted, and by the end of 2003, RBOCs had been given permission to enter long distance in all but eight states.

The effect of all of this entry was to convert long distance from a near-AT&T monopoly to a reasonably competitive industry. In 2001, the long-distance market shares of the major firms were as follows:

AT&T	37.4
MCI	23.4
Sprint	9.3
RBOCs	6.0
Other LD Carriers	23.8

Source: *Statistics of the Long Distance Telecommunications Industry*,
Federal Communications Commission, May 2003, p.18.

Although complete information for 2002 and 2003 are not yet available, the industry has become still more competitive, as RBOCs have entered in more states and the market share of the leader has continued to decline.

In addition to intense competition among long-distance carriers, competition has arisen from alternatives to long-distance toll calls. The Internet has become a competitive substitute to ordinary long-distance telephony in two ways. The more obvious way is the use of internet connections for actual voice transmission—so-called Voice Over Internet Protocol. The less obvious way is the use of e-mail and instant messaging as a substitute for voice conversations. As a result, residential long-distance toll calls have dropped precipitously, from an average 100 minutes per month in 1997 to an average of 57 minutes per month in 2002.

In wireless telephony, the FCC has not regulated prices, and it has stopped states from regulating them either. After initially allocating only enough spectrum to allow two wireless

companies to operate in any given area, the FCC took steps to make the industry competitive. First, the commission allowed some licensees for other types of mobile communications to use their spectrum for public wireless services. Second, the FCC allocated more spectrum for this technology. By the end of the 1990s, six companies offered service in most of the nation, and many others offered regional service.

More Competition: The Fallout

Competition and price deregulation remove the regulatory floor from service prices in both long distance and wireless. Not surprisingly, in a structurally competitive unregulated environment, excess capacity produces intense price competition. The beneficiaries of this competition are service users; however, investors can see their profits disappear as prices fall, which is what happened extensively in long distance and to a lesser degree in wireless.

Long distance prices have fallen dramatically. The average price per minute for domestic long-distance calls fell in half from 1993 to 2002. Moreover, this understates the fall, since some wireless carriers have begun offering “call anywhere” service for a flat monthly rate and the same usage price that is charged for local calling, thereby removing these calls from the “toll” category. The drop in toll calls and toll prices has been offset in part by revenues from other services, including Internet use and leased lines, but overall the revenues of long-distance carriers are declining. For each of the Big Three, revenues were lower in 2001 than in 1999, and total revenues of all long distance carriers fell ten percent between 2000 and 2001. The major carriers’ quarterly public reports (10-Q’s) filed during 2003 show that their revenues have continued to decline.

The regulatory environment also changed for incumbent local telephone companies – the RBOCs and other incumbent access companies that formerly had been monopolists. These firms

are subject to price regulation, but until the 1990s had been insulated against competition. The 1996 Act formally ended the era of franchised monopoly telephone service by requiring that states let competitors into the market, develop mandatory interconnection rules to facilitate this entry, and allow entrants to lease for resale at reasonable rates the incumbent's so-called "unbundled network elements" (UNEs) to construct a hybrid local network, using some of its own facilities and some of the facilities of its competitors.

These requirements introduced new forms of price regulation. One new regulated price was the fee that one local telephone company would pay to complete calls to customers of its competitor. The other new regulated price was the tariff that an incumbent carrier would charge an entrant to lease UNEs. The 1996 Act did not specify exactly how these prices ought to be calculated, but it did pronounce how *not* to do it: prices must not be based on historical costs, or the traditional method that was used to assure that regulated companies would be able to recover their costs and to earn at least a competitive return on their investments.

Faced with the task of devising a method for setting prices that did not rely upon actual costs, the FCC mandated that states use forward-looking incremental costs—the costs that an efficient firm would experience in adding enough capacity to lease facilities to an entrant. Although this method still leaves much wiggle room in price setting, such as decisions by regulators concerning appropriate depreciation rates and risk-adjusted costs of capital, it dramatically changed the world for incumbents. First, incumbents had to accommodate entrants that resold their facilities. Second, incumbents had to sell to entrants at a price that corresponds to what one would expect in an intensely competitive industry—the incremental cost of the most efficient firms using the best current technology. Third, the success guarantee in traditional price regulation—that prices would be set to allow a firm to recover its reasonably incurred costs—had

disappeared. The new prices could cause a firm to lose money selling to its competitors, and then lose money again because its competitors charged lower retail prices (based on its lower UNE costs) than the incumbent's actual costs for its own services. Of course, the significance of these issues should not be overstated. The FCC's pricing method does not inevitably mean that incumbents will lose money, and the opposition to the plan was motivated at least in part by the more general opposition of incumbents to any requirement to share their facilities. Nevertheless, this pricing approach did radically change the environment of incumbent firms by opening up their markets to greater competition and creating the possibility that they would not be profitable.

In practice, however, the extent of entry into local service was not extensive. In 2003, incumbent local exchange carriers typically had market shares of over 85 percent in retail wire access (and, including resale of loops and UNEs, over 95 percent of customers receive calls over at least some of the incumbent's network). But the nature of the competition is important. Entry was most extensive (and most successful) where the demand for service was greatest and the costs generally were lowest—downtown business districts, large apartment houses, and major business parks in the largest cities. Because local telephone companies typically charged all customers in a given category (residential, small business, large business) more or less the same price for service, they tended to earn more of their profits in areas in which telephone density and the proportion of business users both were high (and so investment per customer was low while revenue per customer was high). Losing even a small proportion of their overall business has a big effect on the bottom line if these customers are the most profitable ones. And, of course, as one would expect, entrants targeted exactly these customers.

The incumbent carriers faced still another competitive threat—this one from wireless. In the 1980s, conventional wisdom held that wireless telephones were an increment to service—a

somewhat expensive method for acquiring the ability to make low-quality telephone calls while driving—but not a competitive substitute for wire line telephone service. By 2000, this view of wireless had to be seriously amended. Digital technology had vastly improved service quality and vastly increased the average cost of capacity in a wireless network. Moreover, intense competition among numerous carriers had led to falling prices, so that the price premium for wireless was shrinking—and had essentially disappeared for some users.

As a result of competition from both wire entrants and wireless, between 1999 and 2000, incumbent local wire access companies suffered something that they had not experienced since the Great Depression: their number of switched access lines actually fell. And, between 2000 and 2001, the total number of switched wire access lines (incumbents plus competitors) also fell. Between 1999 and 2002, incumbent wire access carriers lost over 18 million access lines, competitive wire carriers added over 16 million, and wireless carriers added almost 60 million. In 2003, the FCC took an action that can only intensify the wire/wireless competition when it allowed some wire customers to retain their old telephone number if they switch to wireless.

The last major beneficiary of the old regulated monopoly structure was cable television. For many years cable companies benefited from being the only realistic source of access to a larger number of mass entertainment broadcast channels than was available from local television stations. In principle, cable could have faced competition from other technologies, including enhanced telephone networks, terrestrial multi-channel digital broadcasts, and satellite broadcasting, but for various reasons competition against cable was minimal. Federal, state, and local authorities, mindful of cable's strong market position, each took their turns trying to regulate cable prices, but in the end this regulation proved ineffective, and the industry was essentially deregulated in the 1990s.

In the new century, cable has faced significant competition in two areas: satellites and high-speed internet access. While direct broadcast satellites have offered multi-channel service for three decades, their primary market has been in rural areas and smaller cities where access to over-the-air broadcasting is minimal or nonexistent and population is too dispersed to make cable economically feasible. But advances in technology have vastly increased the capacity and reduced the cost of satellite services, enabling them for the first time to offer subscribers satellite distribution of their local television channels. This development has enabled the two U.S. satellite broadcasters to be effective competitors to cable in large cities. As a result, cable's share of television households has begun to decline—for the first time since the technology was developed in the 1950s.

As yet, competition between satellites and cable has not led to intense price competition. But the economics of the industry strongly favor such a development. While program costs are a substantial portion of the costs of cable and satellite systems, most of the rest of the costs are the capital costs of distribution. Once cable is available in a neighborhood or a satellite is broadcasting to a community, the additional costs of allowing one more household to have access to the system is very small. In this circumstance, firms have a powerful incentive to cut costs if doing so will enable them to increase substantially their share of a local market. If satellites continue to grow rapidly and to cut into cable's business, it is reasonable to expect significant price competition to arise.

The other domain in which cable faces competition is high-speed Internet access. About two-thirds of those who have high-speed access acquire it from their local cable company. Most of the rest obtain it from their incumbent telephone carrier, and a few are connected through competitive wire access entrants or wireless carriers. To date, cable has proved to be the dominant

technology, but this circumstance may not be permanent. Local telephone companies have not been as aggressive in marketing high-speed access because they do not want to accommodate resellers and, more importantly, resent the requirement that they allow customers to have a choice of Internet service providers, rather than being allowed to require that all of their high-speed customers use an ISP that is an affiliate of the telephone company. Wireless high-speed access apparently has not yet advanced sufficiently to provide ubiquitous, high-quality service, and so has been confined largely to niche markets where the other technologies are unavailable or too expensive. Thus far, none of the attempts to enter as either a wireless high-speed Internet access provider or a reseller of telephone-based access has been successful. Most entrants have exited or operate in bankruptcy.

Convergence

At the time the 1996 law was passed, one of the hopes for the future of the communications sector was that the various technologies would converge. According to this view, broadcasts, telephone calls, and Internet data streams are all just bits. Cable, wire line telephone, satellite and terrestrial wireless—and even over-the-air broadcasting in a digital environment—all basically do the same thing, which is move around bits. Hence, digital technology driven by microprocessors will cause each of these technologies to expand the domain of its services until all offer the full range of services. Cable and satellites will offer telephone service and two-way high-speed point-to-point data services, wire and wireless telephones will begin to offer multi-channel broadcasting, and digital broadcasters will offer two-way services such as telephony.

Convergence, of course, means more competition in all markets, and the story of the development of the industry since 1990 is most definitely one of growing competition. But thus

far, convergence has not proceeded very far, and is not the primary source of competition. The competition in telephony is primarily from traditional two-way technologies, wire line, and wireless telephones. While cable is the main player in high-speed, two-way communication (an example of convergence), cable companies have not really tried to compete head on with telephone companies for ordinary access service. Likewise, telephone companies and wireless carriers have not been aggressive in entering multi-channel broadcast distribution. Satellite broadcasters attempted to provide hybrid high-speed access (incoming high speed from the satellite, outgoing low speed over resale of telephone lines), but have largely abandoned the field. And off-air broadcasters have not exactly rushed to implementing digital television, let alone piggybacking two-way services onto their broadcasts.

Thus, to the extent that convergence is a valid concept technically and economically, it has not really happened. If true convergence does emerge, the effect will be to introduce more competition into the areas where to date it has been most limited: ordinary residential telephone service, multi-channel broadband distribution, and high-speed Internet access.

Policy Issues

The poor financial performance of the telecom industry since 2000 has led to a variety of policy proposals. We first deal with two suggestions that we believe are largely misguided: subsidies to bail out failing firms and a lax merger policy. We then turn to aspects of regulatory policy that contribute to the financial problems of the industry and that also reduce its efficiency, and so ought to be changed.

Subsidies: The most important policy question that could be inferred from the preceding discussion is whether the telecommunications sector, or any important part of it, is on the verge of

collapse. Here it is useful to make distinctions among unprofitable operations, Chapter 11 bankruptcy, and dissolution. All three are of concern to stockholders and employees of a company. But each has different implications for society—and for policy.

Because the telecommunications industry developed significant excess capacity, many firms are likely to be unprofitable. The penalty for over-investment is that revenues are insufficient to recover capital costs, including a normal return on investment. This penalty is likely to be larger in a competitive industry. Excess capacity, then, can prevent a firm from building adequate depreciation reserves to replace current investment, paying the interest on its debt, and offering dividends that give shareholders the return on investment that they expect. The effect of unprofitability is likely to be curtailed investment from all three sources of funds (retained earnings, debt, new stock issues); however, with excess capacity this result is not necessarily bad for the company's customers. In fact, in this circumstance, investment ought to be curtailed.

In some cases, firms become so unprofitable that they enter bankruptcy. Bankruptcy arises when the firm cannot generate enough cash to pay all of its obligations, and its creditors regard its prospects as sufficiently dim that they do not expect ever to be fully compensated. Under Chapter 11, which is where we can find most of the large, bankrupt telecommunications firms, companies continue to operate. Indeed, Chapter 11 firms typically generate more revenues than their operating costs, but not enough to pay off all of the debt, so bondholders take losses and shareholders get wiped out. But consumers continue to be served.

The third path, dissolution, arises when the firm is dismembered. Its assets are sold one by one to the highest bidder, and the funds are used to pay off creditors – typically at the rate of a few cents on the dollar. Like other major industries, telecommunications delivers many benefits to its users, and its value to society exceeds the revenues that it collects. If a large fraction of the firms

in the industry somehow were to disappear, stockholders and employees would suffer—and so would their customers. But the important question is whether there is any serious chance that the services provided by the industry will be so curtailed or degraded that users will suffer significant harm.

In telecommunications, dissolution is rare, but even when it does occur, the assets are sold to another telecommunications firm. There are two reasons for this outcome. First, a large fraction of the costs of a telecommunications firm are capital costs, which are not ongoing cash expenses that need to be paid to keep the network operating. Typically, even bankrupt firms have high cash flows from operations. For example, in the last quarter of its operations before bankruptcy, WorldCom reported (probably optimistically) revenues of over \$8 billion, but its “line costs”—the costs of operations—were only \$3.5 billion, and its (probably bloated) sales and administrative costs were another \$2.5 billion. Thus, its reported cash flow from operations was about \$2 billion. Perhaps this amount is an overstatement, but the magnitude of the overstatement of revenues was not so large as to make this positive cash flow disappear. However, even the \$2 billion cash flow almost disappears if one adds to expenses depreciation, interest, and taxes, which explains why, after correcting for its overstatement of revenues, the company was not profitable and entered bankruptcy.

Thus, a long-distance carrier that goes bankrupt has a network of fiber-optic cables and switches of some value to someone. If the firm enters bankruptcy, the best use of that network is almost certainly going to be to continue to provide telecommunications services. If the bankruptcy court allows the firm to avoid paying its creditors, a sea of red ink is replaced by a healthy cash flow. Hence, the firm is likely to continue to operate under Chapter 11, or to be dissolved in a manner in which other carriers acquire parts of the network for their own use.

Of course, not all firms are bankrupt. MCI's condition represents the companies that found themselves in deepest trouble after over-investing and then attempting to disguise their financial problems by inventing accounting schemes that had the effect of overstating revenues, at least for awhile. Thus, we do not find plausible the doomsday scenario that millions of customers will wake up one day to find that they no longer have telephone service, let alone no way to acquire any service that they want quickly at a reasonable price.

If the major players in the industry are likely to continue to operate, the next policy question is whether the period of compensating low investment that naturally follows a period of excess capacity will so retard technological advance that the rest of society—business and consumers who use the telecommunications systems—will be significantly harmed. If this were the case, one might argue that government might want to pay some fraction of the costs of investing in new technology before companies will be able to afford to do so.

We find this scenario implausible. The investments made during the boom were to facilitate very high quality services—digital personal communications services, wireless data services, and broadband services. The capacity already is in place to provide substantially enhanced services compared to those that most Americans currently are willing to pay for. In any event, we are dubious that any subsidy scheme that would survive the highly charged political environment in which telecommunications policy is made would be cost-effective in facilitating the deployment of technology that might not otherwise emerge.

Telecom Mergers: Another action to deal with the financial woes of the industry that has begun to be discussed is to encourage mergers among telecom companies. Two agencies will decide independently whether such combinations will be allowed: the Antitrust Division of the Department of Justice (DOJ), which applies traditional economic analysis to determine whether

prices are likely to go up after the merger, and the FCC, which reviews telecom mergers to determine whether they are “in the public interest” – a broader test than the one traditionally employed by the antitrust authorities. These agencies already have allowed the eight largest local access carriers – the seven original RBOCs plus General Telephone – to shrink to four, and soon may face proposals from RBOCs to acquire one of the Big Three long-distance carriers and from two of the six national wireless carriers to merge.

Recognizing that all merger proposals must be judged on a case-by-case basis, it is nonetheless useful to set forth the general principles that should be applied to decide how different types might or should be treated. One possible set of mergers is between current long-distance providers. Only a short time ago, Worldcom and Sprint wanted to merge, but DOJ stepped in to stop them. Today, Worldcom is now MCI and is much weaker financially (in the wake of large losses and a \$9 billion accounting scandal), while Sprint remains financially troubled, as it has been for over a decade. AT&T also is experiencing financial pressures, although it remains the healthiest of the Big Three. If two of the Big Three sought to merge, should the authorities allow that to happen?

Judging from the market share data displayed earlier, such a merger leads to a much more concentrated long-distance industry. Nevertheless, in the future, we can imagine circumstances in which a merger between two of the largest LD carriers would not be a concern. A growing share of retail long-distance service is sold by local-access carriers, both wire line and wireless, much of which is resale of capacity that is leased from the Big Three carriers. Thus, at present a merger among two of the Big Three carries the threat of substantially reducing wholesale competition, and thereby the present opportunity that others are exploiting to sell retail long-distance service at a competitively attractive price against the retail units of their wholesale suppliers. As the long-

distance retail shares of local access firms increase, however, they may extend their own facilities and thereby account for a greater share of both wholesale and retail sales and capacity. If this transpires, the DOJ and FCC would cease to have a valid basis for opposing a merger between major long-distance carriers.

A second type of merger would be among one or more of the remaining RBOCs (two of which – SBC and Verizon – are themselves the result of past mergers). Clearly, such a combination would be highly controversial as it would bring the nation closer to putting the old AT&T Humpty Dumpty together again. Nevertheless, the antitrust authorities face a difficult challenge in mounting a successful legal challenge to RBOC marriages purely on the basis of the effects of merger on the local access markets. In both local and retail long-distance services, the RBOCs have chosen not to compete with each other. Instead, each operates primarily in its historical geographic home territory. A merger putting two of them together, therefore, would be treated, in part, as a conglomerate combination, and the courts have refused to block such transactions solely on the basis of antitrust law.

Nevertheless, further mergers among RBOCs face an additional antitrust problem. In interstate long-distance service, the RBOCs are resellers of wholesale capacity from the facilities-based long-distance carriers. Readers will note the irony that the RBOCs in long distance are analogous to hybrid local wire line entrants who partly build their own facilities but partly rely on resale of UNEs. One basis for contesting further RBOC mergers is that they would create monopsony power (market power concentrated among a single buyer) for the merged entity in leasing capacity in wholesale long-distance markets.

Another potential reaction to further RBOC mergers is that the FCC could invoke a “public interest” challenge. Given the current composition of the Commission, this is not likely,

but regardless of the composition of the FCC, we do not see a compelling argument beyond the objections that flow naturally from antitrust policy.

Because the current FCC regularly finds itself in conflict with Congress, a third possibility is that Congress will intervene to prevent further concentration among the RBOCs. Most likely, in the current environment such an intervention would be only a symbolic gesture, facing certain veto by President Bush; however, even if this were not the case, congressional intervention that is targeted at a particular merger or even mergers in a particular industry is almost always a bad idea. If Congress can identify a general principle that, in considering RBOC mergers, either the FCC, the antitrust authorities or the courts are overlooking, the better strategy is to legislate the general principle. Once a legislative proposal focuses on a specific merger, it invokes the charged special-interest politics of that particular circumstance, which can cause the principle to be lost in the battle for a competitive edge in the specific industry. Thus, we believe that an amendment to either antitrust or communications law that focuses on RBOC mergers would be a bad idea.

Another category of telecom merger would entail an RBOC buying a major long-distance provider. In fact, just such a merger – between SBC and AT&T – reportedly was in the works in the late 1990s, when then FCC Chairman Reed Hundt pronounced it as “unthinkable.” When Hundt issued this opinion, the FCC had not given any RBOC the legal authority to offer long-distance service. Thus, an acquisition then of a long-distance company by an RBOC would have been considered as a “conglomerate” merger that was unlikely to be challenged by the antitrust authorities, but would have been inconsistent with FCC policy and so denied on the “public interest” ground.

What made such a combination then unthinkable to Hundt probably was more than the fact that the RBOCs were not yet licensed to provide long-distance service. Hundt probably

expected that the vertical restrictions against the RBOCs soon would be lifted, which already had been permitted in the 1996 Act and in fact began to occur in 1999. A merger between an RBOC and a national long-distance carrier would remove that RBOC as a potential competitor in long distance and would recreate the incentives for a vertically integrated regulated monopolist to favor its affiliate, which gave rise to the AT&T divestiture.

An RBOC takeover of a company like AT&T, Sprint or MCI today would raise the same concerns. In part, it would be treated as a horizontal combination since RBOCs are now in the long-distance business; however, because the RBOCs still have relatively small shares of long-distance service even in their own local service territories, the acquisition of a national long-distance carrier by an RBOC appears to be less troublesome than a merger among two of the Big Three. But these shares are growing, and projecting RBOC growth in long distance forward a few years indicates that long distance soon could be so competitive that no firm plausibly will have market power. But in this case, within a region a merger between an RBOC and one of the Big Three could reduce the market from four plus a fringe to three plus a fringe.

In addition, at present an RBOC-Big Three merger is more problematic because of its “vertical” implications. Because long-distance calls must be routed through local service territories, the two sets of companies stand in a vertical relationship to one another. The antitrust problem arises because the RBOCs still have dominant market positions in their service territories. That being the case, RBOCs purchased still have an incentive to favor their affiliates in terms of quality of connections and in other respects. In theory, this kind of behavior can be stopped by “equal access” conditions that can be (and frequently are) attached to mergers where this is a problem. But if the past is prologue to the future, policing equal access requirements is, at best, an intensely regulatory activity that is unlikely to be very effective (witness the problems in

implementing UNEs). Consequently, until local access becomes more competitive (most likely due to falling costs and increased competition in wireless), we believe that antitrust and regulatory authorities should be very skeptical about a proposed RBOC marriage with a long-distance provider.

The final area in which merger proposals are likely is wireless, where the less-than-spectacular profitability of the six major carriers already has led some financial analysts to conclude that mergers leading to a three-firm industry would be a good idea. We see no good reason to follow this path.

Wireless carriers have positive operating margins, but their financial returns are less than these firms expected when they successfully bid for their spectrum rights. At present, the industry is competitive, but firms have a positive cash flow that recovers their fixed capital investments. The financial analysts who advocate mergers do so because they want to reduce competition in order to make the remaining firms more profitable, and thereby to cause their stock prices to increase. From the standpoint of economic efficiency and consumer welfare, this argument is not a valid basis for concentrating the industry. Instead, further concentration is defensible only if it would enable existing firms to achieve efficiencies without causing price increase that would harm consumers.

While we have not undertaken the kind of detailed analysis of the likely consequences of a merger among wireless carriers, nothing about the economics of wireless telephony justifies treating it materially differently than other industries. At present, concentration in wireless is at the upper bound of the range in which reasonably competitive behavior can be expected, and only a merger between the two smallest firms would keep it within this range. In addition, because most of the six national firms have some significant remaining areas where they lack coverage, a

merger between any two would reduce competition in some areas by more than is implied by a reduction of six to five among national carriers. Nevertheless, for these national carriers, acquisitions of regional carriers that enable them to complete their national coverage would not be likely to raise serious anticompetitive concerns.

Beyond this type of acquisition, significant efficiency advantages from merger are surely debatable. Wireless telephony does not have significant technical economies of scale. The large fees paid for wireless licenses constitute a kind of financial economy of scale, but for purposes of merger analysis this sunk cost should be ignored. Like many industries, the primary real source of scale economies, if any exist, is likely to be in marketing costs. Even here, judging from expenditures on marketing in the more concentrated long-distance market, mergers might not reduce aggregate advertising, but instead simply shift the locus of competition more towards marketing and away from pricing. Thus, we believe that the DOJ and FCC should adopt a skeptical stance towards mergers among the six national carriers, and surely should not condone mergers solely because they would increase profits in the industry.

Aside from subsidies and mergers, there are three very real problems that require policymakers' attention in the near future.

UNE Pricing and Interconnection: The most important unresolved policy problem is that the pricing rules for UNEs and interconnection for competing networks that were required to implement the 1996 Act remain incompletely developed. The reason is litigation – every FCC decision to implement the Act has been contested to the hilt. Obviously, firms are not going to go all out to develop new competitive telecommunications services if they do not know what the regulatory requirements are going to be. Although the FCC finally, seven years after passage, obtained Supreme Court approval of its incremental pricing approach to UNEs, the details remain

contested and unsettled.

Future reformers should derive an important lesson from the UNE experience. In the U.S. legal environment, substantial pro-competitive reforms that require regulatory supervision of pricing in a competitive or potentially competitive market are very difficult to implement, and probably should be avoided. Superficially, the problem that the FCC has faced in implementing UNEs is that some major players in the industry, especially incumbent wire line access companies, have resisted the move to greater competition and have sought to extend the market power they currently enjoy into other services. Of course, to expect any profit-oriented business to behave otherwise is unrealistic; however, in reality, the problem with UNEs is far deeper.

For the valid reason of protecting investors against indirect expropriation of their property through regulation, the U.S. legal system gives firms many opportunities to demand independent judicial review of regulatory decisions. These reviews inevitably cause delays in implementing highly contentious regulations that allocate market advantage among major players. As a result, in an industry like telecommunications, where technology and the composition of demand are rapidly changing in unpredictable ways, effective regulatory rules simply cannot be adopted and implemented as fast as market developments require. Thus, while the UNE concept was theoretically brilliant, it has proved impossible to implement and so has been a practical failure.

Our reading of the failure of UNEs to generate very much competition in wire line access after eight years of trying is that the UNE policy will never work as a permanent feature of the telecommunications system. Because UNE price regulation is so complex and contentious, a permanent commitment to UNEs will lead to enduring distortions in the provision of local service. Thus, we propose putting a time limit – say three years from the date that incumbents agree to the FCC's system for defining and pricing UNEs (and stop fighting it in court) – on the ability of

competitors to obtain UNEs.

Our proposal amounts to abandoning the hope of using UNEs to isolate the natural monopoly elements, if any, in the local access network on the grounds that the costs of trying to do so exceed the potential benefits. If local wire line access companies are likely to retain a monopoly in important components of the local network, the potential gains from creating a permanent industry of resellers will be limited to the relative small proportion of the local access business that is related to marketing and billing, which is unlikely to be worth the hassle of attempting to continue to regulate the interface between local access monopolies and resellers. If the local loop contains natural monopoly components, the best policy is to focus regulation on eliminating roadblocks to wireless as an effective competitor to wire lines and resisting attempts by the current wireless providers to merge, and thereby dull competition. At a minimum, antitrust and regulatory authorities must be on their toes to minimize the abuse of market power that arises from this natural monopoly. By abandoning permanent UNEs, we seek to make more rapid progress in achieving the other objective: to facilitate entry into facilities-based competition. Stabilizing the definitions and price regulations associated with UNEs will reduce the regulation-induced uncertainties that are associated with entry into local access, and thereby give competition in these markets a better (if temporary) chance to succeed.

With nearly eight years having passed since the '96 Telecom Act was signed into law, it is useful to consider how long policy makers want to wait for landline competition in local telecom service to really take root. In the intervening years, the rapid growth of wireless has emerged as the most important competitor to local landline service. With the wireless customer base continuing to grow at nearly double-digit rates, the experiment in landline competition to the incumbents' local telecom monopolies may soon be rendered moot. It is therefore now time to

give current and would-be landline facilities-based competitors the extra nudge of stable regulation combined with a time limit for UNEs.

Interconnection charges: Another major policy problem is the persistence of usage-based origination and termination charges for long-distance carriers. In the first six months of 2003, AT&T's 10-Q report shows that AT&T paid \$5.4 billion in access and other connection charges out of its \$17.8 billion in revenues – amounting to 30 percent of costs, and larger than the \$4.0 billion that AT&T spent in actually producing its services and products. These charges are ludicrously high. Presumably the cost of the local connections at each end of a call cannot possibly be more than the costs of transporting the call across the nation and then billing for it. These charges distort the decision between toll calls and other means of electronic communication.

In fact, there are over 100 different configurations of origination and termination charges (depending on whether the calls originate or terminate with a long-distance provider, a local landline incumbent, a competitive entrant in local wire access, or a wireless provider). A key distinction in the charging system is that while some kind of interconnection charges are levied if a call originates or terminates with a wire line provider, there are no such charges on calls routed both ways through wireless carriers. These distinctions are not just inequitable; they also are horrendously inefficient. The present pattern of interconnection charges distort relative prices of telecommunications services and hence the way that customers use the network, and impose substantial costs of monitoring exactly how a call is placed in order to calculate the right charge.

It is time to remove these distinctions among types of providers. The best solution is to implement the “bill and keep” system for all telecom companies, which means eliminating interconnection charges between carriers altogether. This would also eliminate the transactions costs of regulating, collecting and disbursing these charges. Second best is a uniform charge for all

interconnections, regardless of the identities of the carriers. Either would be a vast improvement over the present system.

Universal Service Fees: Advancing “universal service” has long been a goal of telecom policy, for reasons of both efficiency (the more users who are hooked to the network the more valuable services are for everyone) and equity (some users are located in low density areas where it may cost more to provide service). Toward this end, state regulators historically have jiggered telephone rates so that business users subsidize residential users – a scheme that is now unraveling due to advance of competition (which is making it impossible to sustain the higher, subsidizing rates).

The '96 Telecoms Act expanded the scope and size of the “Universal Service Fund” (USF) that pays telecommunications charges to low-income households, customers in high-cost areas, schools, libraries, hospitals and other public facilities. The fund is supported so far by a percentage surcharge – now 9.5% -- on interstate calls.

The USF as currently designed is highly inefficient. Economists definitively have shown that USF subsidies are poorly targeted. Relatively little of the fund is spent on low-income households or even communities with a large number of poor residents, and much of the subsidy goes to high-income communities with low population density, such as wealthy suburbs with large minimum lot size restrictions or ski resorts. Indeed, much of the subsidy goes to the same people from whom the tax is collected. Yet despite its gross inefficiency, the USF is politically popular because it has an array of constituencies that either receive a net subsidy or, like local governments, thus far have failed to understand that they are largely taxing themselves in order to pay themselves.

If the USF cannot be killed, the question is how to reduce its inefficiency. The present

USF has two major problems: the expenses of the fund continue to grow, while interstate calling revenues shrink (largely because of plummeting prices). The interstate revenue base has been falling even though some portion of wireless revenues (a minimum of 28%) is included in the assessable base. The mismatch between revenues and expenditures will only worsen as the price of long-distance calling continues to fall towards zero. The inevitable result of these two trends is that if the fund is to continue in its present form, the percentage surcharge must rise into double digits – and *that* is both an economic and a political problem.

One solution is to shrink the scope of the program, which would lead to a politically charged, though entertaining, game of musical chairs among the various groups that are now receiving subsidies. If shrinkage proves politically intractable, a second option is to expand the assessable revenue base by applying the same percentage surcharge against local as well as long distance calls. This would allow the percentage charge to be cut substantially and make the USF tax less distorting; however, all taxes on usage cause utilization of the network (which is now close to costless) to be suppressed, and so still leaves considerable distortion.

We favor a third option: make the surcharge a fixed dollar tax on each phone number, whether wireless or landline. This approach minimizes the distorting effect of the USF on prices and utilization of services. This form of charge also makes the tax more transparent, so that at least some people who now see the program only as a benefit may begin to see it instead as a massive revenue recycling program that is costly to implement but that has a relatively small net redistributive effect. Hopefully greater transparency will increase the political feasibility of shrinking the program and making it more targeted.

Conclusion

If there is one certainty in these uncertain times for telecom, it is that this sector will continue to experience difficult change. Disruptive change is a necessary consequence of rapid technological innovation and the removal of decades-long regulatory restrictions. In the process, we safely predict that even more telecom providers will face financial turmoil, and some even bankruptcy. But these firms have assets that will be redeployed by other providers, existing and new. Consumers will win from this turmoil, although how much will depend on the policy choices that are made in at least the three realms discussed here.