Telecommunications Reform in the United States: Promises and Pitfalls[*]

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1. NEED FOR PRO-COMPETITIVE REGULATORY REFORM, AND THE 1996 TELECOMMUNICATIONS ACT

The United States Congress recently enacted sweeping legislation to overhaul the rules governing competition in telecommunications services. The Telecommunications Act of 1996 (see Congressional Record, 1996) is the first major rewrite of the Communications Act of 1934. It also supersedes the 1982 antitrust consent decree that broke up AT&T and barred the seven new regional Bell operating companies ("Bells") from manufacturing equipment and offering long-distance service.

The stakes are high, as telecommunications ("telecom") are a critical element of a modern economy's backbone. The U.S. telecom sector's revenue in 1994 exceeded $200 billion: $150 billion in telephone service, $42 billion in broadcasting, and $28 billion in cable television (Economic Report of the President, 1996, chapter 6). The importance of the regulatory reforms in the 1996 Act as perceived by those in the best position to know--market participants--is reflected in the frenetic lobbying leading up to the Act (especially on its telephone provisions), and in the recent wave of corporate restructuring and shifting alliances reportedly driven by expectations of a new competitive environment.

Regulatory reform enjoys broad support, but there is less agreement about its appropriate pace and nature. The road to reform holds both promises and pitfalls. This paper discusses the underlying economic issues, the progress made by the Act, and the challenges lying ahead as we move from regulated monopoly to competition. Although the U.S. is starting with regulated private monopolies, some of the discussion will be pertinent also for a transition to competition when starting with state monopolies.

1.1 Reassessing Government Intervention in So-Called Natural Monopolies

Much of existing regulation in telecom (and other public utilities like electricity, and oil and gas pipelines) is premised on the belief that certain services such as local telephone and cable service were *natural monopolies*. A natural monopoly exists when it is less costly for a single firm than for several firms to supply any relevant quantity of the product (or products in the case of a multiproduct natural monopoly). Natural monopolies can arise especially in industries characterized by fixed costs that are large relative to the relevant market demand, e.g., the cost of running telephone or video cables to the home, the cost of railroad tracks, or

the cost of electricity transmission lines.

In such circumstances competition simply may not be viable, and an unrestricted monopolist would set an inefficiently high price and therefore inefficiently low output. Even if competition were viable (if rivalry among firms would not be so intense as to reduce price to marginal cost and hence below average cost), competition in a natural-monopoly industry would prevent full exploitation of scale economies. In theory, government intervention could increase efficiency: to fully exploit scale economies the government might allow only one firm to operate, and require it to set a lower price and higher output than would obtain under no intervention.[1]

In practice, intervention has worked less well than hoped. It is by now widely recognized that government control of natural monopolies, through direct ownership (as in Europe) or through regulation of private firms (as in the U.S.), entails major inefficiencies. Incentives for cost reduction and for product innovation have suffered, and the administrative burden of regulation itself has been heavy. The burden consists of direct costs and, more importantly, of losses from rigidity and delay--in changing prices and in making investments. Growing awareness of the costs of monopoly regulation is a key factor accounting for the broad support for regulatory reform in telecom.

A second key factor is the dramatic technological changes in telecom conducive to competition. An industry's "natural monopoly" status can erode over time, due to growth of market demand or, more importantly, due to technological innovation that alters cost conditions. Technological innovation can reduce fixed costs by offering a new way to provide a given service, e.g., wireless technologies may offer a lower cost way than cables to reach a customer's premises. It also can reduce fixed costs by enabling the same facilities to supply additional services at a lower extra cost than if supplying the additional service alone, e.g., by reconfiguring phone or cable lines so each can supply both services.

Technological changes of the latter sort tend to blur industry boundaries, making competition possible between providers of traditionally different services. Such changes also introduce hybrid services that do not fall neatly into any traditional "industry," e.g., video

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[1] With government subsidies to a private or to a government firm, price can be set equal to marginal cost, allowing the first-best output solution; without subsidies, price can be driven to average cost, giving the second-best (Ramsey) solution.

conferencing, multimedia, and data transmission. Attempts to preserve artificial industry definitions in order to maintain regulation under traditional monopoly franchises then become arbitrary, futile, and counterproductive.

For both the above reasons--inefficiencies in government intervention and technological changes favorable to competition--the regulatory regime should not be cast in stone. Policymakers should constantly ask if the industry should continue to be treated as a natural monopoly or if conditions are ripe for replacing monopoly with competition.

Competition may be desirable even in industries that remain textbook natural monopolies if economies of scale are modest, because the "static" losses from having more than one firm can be outweighed by the many dynamic benefits from replacing regulation with competition--reduced internal slack, greater innovation, greater responsiveness to customer demands, and avoidance of regulatory costs. Moreover, the textbook "natural monopoly" rarely applies, because firms typically offer differentiated products rather than perfect substitutes, and the variety gains that competition may provide can outweigh the static losses from failing to exploit fully economies of scale. (This is the fundamental criticism of Chamberlain's famous proposition that monopolistic competition is wasteful because it leads to "excess capacity.") The important point is that competition need not be perfect in order to be superior to regulated monopoly.

Nowhere is a reexamination of regulatory policy more appropriate than in telecom, with its dizzying pace of technological change. There is so much uncertainty about the shape of future communications networks and sufficient promise of successful competition that the best course is to give market forces freer rein. Policymakers should not prejudge the outcome by assuming, for example, that local phone and cable services are natural monopolies best provided by regulated franchise monopolists.[2] Rather, regulatory regimes

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[2] Several technologies may in the future offer economical alternatives to today's local telephone network. Cable companies are experimenting with upgrading their lines to deliver telephone service. Wireless technologies now used mainly for mobile communications might be used for ordinary telephone service as well if costs fall sufficiently. Fiberoptic lines, now used mainly by companies that specialize in providing access to long-distance carriers, could be extended to homes and businesses. Mobile telephone service from planned low-orbit satellites could eventually provide also basic local service. Similarly, large-scale competition to cable companies in delivering video services may come from various sources such as satellites, wireless land-based technologies, or telephone companies upgrading their

should adapt flexibly to changing conditions, to help shrink the boundaries of the regulated sector and rely more on competition.

1.2 Challenges to Regulatory Reform

There is broad agreement that moving to competition is desirable and that it requires relaxing government barriers to entry, as well as redundant restrictions on the range of services firms may provide. Substantial disagreement remains, however, over the proper transition process to competition and the role for government once that transition is complete. There has been much rhetoric in the U.S casting the debate as "regulation versus deregulation." This characterization is misleading. Certainly the "need for caution" can be misused as an excuse for delay and the status quo--delay that should be resisted strongly in industries where structural conditions clearly make competition viable and where only legal barriers stifle the rapid growth of competition. However, many traditional natural monopolies do not neatly fit this characterization, and pose difficult challenges for good regulatory reform. Immediate hands-off deregulation of such industries often is not the best approach.

Even if legal barriers are removed, entry into traditionally regulated industries will take time and, at least initially, the incumbent monopolist will retain significant market power. Premature deregulation without competitive safeguards can allow the exercise of market power until competition arrives. It also could delay the arrival of competition.

Deregulating a monopolist's prices before competition has emerged (e.g., in cable TV) could lead to price increases that create the standard monopoly inefficiency. Perhaps more importantly, it could unleash a political backlash against deregulation broadly, threatening the political consensus for a move to competition.

There also is a government role in protecting competition. As explained later in the paper, allowing a firm to enter related markets while it remains price-regulated in its monopoly market could enable it to circumvent regulation by (a) cross-subsidizing its unregulated operations and, more importantly, (b) discriminating against competitors in unregulated markets in the access terms it grants to its monopolized bottleneck facility (e.g., elements of a local telephone network). Such behavior leads to higher prices in the regulated

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networks.

markets (if cross-subsidies occur), and inefficient distortion of competition in the potentially competitive markets, harming both rivals and consumers. Competition also can be stifled if mergers are permitted between monopolists who are likely future competitors, e.g., between local telephone and local cable companies.

Finally, some worry that even successful competition will raise some prices and threaten "universal service"--widespread availability of affordable telecom services. They see a government role in guaranteeing universal service.

Disagreement in the U.S. over the proper role of government in telecom policy reflects differences over important underlying questions:

How rapidly will competition develop? This affects for example one's attitudes towards the appropriate timetable for decontrolling cable rates.

How much competition is needed to discipline prices? Is threat of entry enough, as in the theory of contestable markets, or do we need strong actual competition, as stressed by critics of contestability (e.g., Schwartz, 1986a)? This affects, for example, the prospects for replacing regulation with competition in local telephone service.

What if any are the monopoly bottlenecks, for example, the entire local telephone network or only the local loop? This affects whether structural separation between local and long-distance telephone service is appropriate.

How effective is regulation? This colors attitudes towards continued regulation of cable rates. It also shapes attitudes towards the feasibility of preventing the Bells from discriminating against long-distance rivals in access to local networks if the Bells are allowed into long distance (assuming that a significant monopoly bottleneck remains in local-telephone service to make such discrimination a serious concern).

How much of a need is there for a "referee" during the transition? Should Bells seeking to enter long distance be required only to meet a competitive checklist "guaranteeing" competitors' equal access to their local networks, or must regulators remain heavily involved to ensure the checklist's implementation?

- Would many low-income consumers drop their telephone subscriptions if local rates and fixed charges rose somewhat but long-distance rates fell substantially, as is likely if current cross-subsidies from long-distance to basic local service are reduced? This affects the perceived need for a government role to promote universal service.

These are not easy questions, and they leave substantial scope for legitimate differences of opinion. This paper offers my perspectives on these issues and on the 1996 Act. Section 2 discusses the removal of artificial governmental restrictions to competition. Section 3 discusses the continuing role for government in several areas, while Section 4 discusses its role in promoting competition in the huge telephone industry. Section 5 addresses an important consideration in moving towards more competition in the telephone industry, namely, removing cross-subsidies while preserving universal service. Section 6 concludes with a brief assessment of progress to date and of what lies ahead.

2. INCREASING THE RELIANCE ON COMPETITION AND MARKETS

2.1 Relaxing Legal Entry Barriers

For many years local telephone and cable companies were protected from competition by what was believed to be natural monopoly technology, *and* by a patchwork of legal barriers: state laws prohibited competition for local telephone companies, municipalities could grant monopoly cable franchises, and federal law prevented telephone companies from offering cable service. It is time to remove these legal entry barriers, and test whether these markets indeed are natural monopolies.

A key pro-competitive aspect of the 1996 Act is to strip away much of the authority of States and local governments to impose legal or other barriers, such as discriminatory access to rights-of-way, that may hinder competition in *telephone and other telecom services*.[3] Given the size of the local telephone market, which in 1994 had revenues of about $100 billion, opening it to competition is quite important. Some States already took steps in this direction, but the Act sets a clear nationwide standard and orders immediate removal of most barriers in all States. The Act tries to put real teeth into its requirements by authorizing the FCC to preempt State and local government barriers to competition. As I

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[3] The 1996 Act states: "No State or local statute or regulation, or ... legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." The Act defines "telecommunications" as "transmission between and among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." At a minimum, this definition includes phone service.

discuss in Section 5, the Act arguably does not go far enough; in the name of protecting universal service it leaves States some rights impose "competitively neutral" requirements on entrants which nevertheless could inefficiently impede entry, such as requiring entrants to serve the exact same region as an incumbent. But the Act certainly takes an important step.

The Act also aims to increase competition in *cable television*. It eases restrictions on the ability of telephone companies to offer video programming, and weakens the barriers posed by local cable franchising requirements. As regards the former, the 1984 Cable Act had codified a 1970 FCC rule prohibiting local telephone companies from offering in their service areas video programming directly to subscribers.[4] Court decisions in the last few years have found this prohibition unconstitutional, but the 1996 Act clarifies matters by unequivocally repealing the cable-telephone cross-ownership restrictions.

The 1996 Act also weakens the barriers to cable competition posed by the franchising authority of local governments. Although the 1992 Cable Act prohibited the award of exclusive (i.e., monopoly) cable franchises, enforcement of this prohibition can be problematic: the Cable Act lets plaintiffs seek redress through the courts, but this process can be slow and unreliable. The 1996 Act allows a common carrier (an entity--such as a phone company--that offers service to the public on a nondiscriminatory basis) to provide any of the following while exempt from local franchise regulations: (a) video programming using wireless technologies (a common carrier or any other entity then requires only a radio license); (b) transmission of video programming on a common carrier basis (under Title II of the Communications Act); or (c) video programming as an "open video system." (The Act also allows (d) provision of video programming as a cable system under Title VI of the Communications Act, but that is subject to local franchising.)

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[4] The original rationale was to protect cable companies from alleged unfair competition from phone companies (that controlled certain key facilities such as poles and conduits). Many observers, however, believe that protecting the cable companies was no longer a serious problem by the mid-1980s, once cable companies had wired most of the country. A possibly unintended effect was also to prevent cable companies from offering phone service. To offer phone service the cable company would have to become a common carrier, and the 1984 Cable Act prohibited provision of cable service by phone companies or any other common carrier.

The open video system is a newly created regulatory category, which entails certain additional obligations compared to a regular cable system, but in return qualifies for streamlined regulation.[5] Importantly, the Act delegates certification of open video systems to the FCC and requires the FCC to process applications and resolve disputes expeditiously. Thus, open video systems may offer an important entry mode for telephone companies to compete with cable. Recognition that this entry mode is available may also sway local authorities to relax their franchise restrictions for regular cable systems.

As regards *broadcasting*, the 1996 Act removes the limit on the number of radio stations that a single entity may own nationally, and relaxes the ownership limits in local markets (based on local concentration). It also ends the limits on the number of television stations that a single entity may own nationally, and allows such an entity to reach 35% of the nation's TV audience, up from 25% today. These relaxed limits could help broadcasters realize greater economies of scale, while competitive concerns with, say, mergers could still be addressed on a case-by-case basis. But the Act retains the ban on cross-ownership of broadcasting and newspapers, a ban which may be desirable for reasons discussed in Section 3.

Finally, the Act eases restrictions imposed by the 1982 AT&T decree on the ability of the seven Bells to manufacture equipment and to provide long-distance telephone service. However, as explained in Section 4, those restrictions should not be portrayed as "artificial entry barriers" and relaxing them must be accompanied by competitive safeguards, along the lines provided in the Act.

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[5] Operating as a common carrier, option (b), entails substantial regulatory obligations. A cable system, option (d), enjoys more flexibility, for example, as a private system it is not required to carry all others' programming on a nondiscriminatory basis. But it is subject to local franchise requirements (and rate regulation). An open video system, option (c), must offer nondiscriminatory access at "just and reasonable" terms to unaffiliated programmers and (when there is excess demand for channel capacity) may select the programming on no more than one third of channel capacity (substantially less than can a cable system), leaving the rest for independents. In exchange, it is exempt from regulation under Title II (governing common carriers) and from local franchising requirements, and qualifies for lighter regulation under Title VI.

2.2 Liberalizing Restrictions on Foreign Investment

It is important to remove barriers not only to domestic entry but also to foreign entry. U.S. law limits foreign ownership of a radio license; that is, a license to provide any radio-based services such as wireless communications as a common carrier, or radio and television broadcasts. Other countries have cited this restriction, at times overstating their impact, as a reason to deny U.S. companies access to their telecom markets. However, through a combination of administrative rulemaking by the FCC and legislative changes in the 1996 Act, the U.S. is now able to lift these restrictions.[6]

Taking advantage of this ability, the U.S. made a comprehensive offer at the World Trade Organization (WTO) negotiations on basic telecom services to open its markets to foreign trade and investment. The offer covers all telecom services (including voice, video, data), delivered through any technology (wireline, terrestrial- or space-based wireless), using facilities owned by the provider or leased from others (as with resale), and including international, long-distance and local service. (The ability to include local telephone markets was enhanced by the 1996 Act's preemption of State entry barriers.) The U.S. offer is

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[6] Section 310(b)(3) of the 1934 Communications Act limits foreign *direct* ownership interest in a radio license to 20%. Section 310(b)(4) limits *indirect* ownership to 25% but delegates discretion to the FCC to raise this limit up to 100%. As a practical matter, indirect ownership is a good substitute, as it entails a simple transaction establishing a holding company. What the FCC could not waive were other limitations in Section 310(b) on the number of foreign officers and directors in companies that directly or indirectly hold radio licenses. An obscure provision in the 1996 Act (tucked in a section called "Elimination of unnecessary Commission (FCC) regulations and functions...") ends these limitations.

Meanwhile, in November 1995 the FCC issued rules on authorizing entry by foreign telecom carriers into U.S. markets, setting out conditions under which it would waive the 25% indirect ownership limit for radio licenses, and limits on investments in wireline facilities governed by section 214 of the same Communications Act. The rules apply to foreign carriers that possess market power (in practice, most foreign carriers); the FCC adopts a permissive policy towards investments by carriers that lack market power. In essence, the FCC will consider whether U.S. telecom carriers have effective opportunities to compete in the foreign applicant's home market. The new rules provide a clearer and more explicit entry standard to replace the FCC's previous case-by-case determination and they stress competitive factors as opposed to arbitrary criteria. Moreover, the rules also take into account foreign trade considerations, and the FCC has pledged that its policies will dovetail the Administration's position in trade negotiations. Thus, the U.S. will be able to implement any commitment to open up its telecom market to foreign trade and investment.

conditional on receiving sufficiently favorable responses from enough countries. The WTO negotiations are due to end April 30, 1996, and hopefully will bear fruit. But even if they fail, the FCC's rulemaking and the provision in the 1996 Act enhance the ability of the U.S. to pursue liberalization of trade and investment in telecom services, through bilateral or multilateral agreements.

2.3 Making Better Use of the Radio Spectrum

The radio spectrum is the range of electromagnetic wave frequencies used in wireless applications, including radio and television broadcasting, paging, and mobile phones. The spectrum is an increasingly scarce resource. Assigning in an efficient and equitable manner the rights to its use has taken on increased urgency as demand for spectrum has risen with the growth of wireless technologies. The exciting potential of wireless services is illustrated by the rapid growth of cellular telephones, which in the U.S. grew from virtually no subscribers in 1984 to about 5 million in 1990 and about 30 million in 1995; and by the growth of television delivered via direct-to-home broadcast satellite service ("DBS") which, since its inception in June 1994, already has attracted over 2.5 million subscribers.

Spectrum in the U.S. is allocated largely through non-market mechanisms. The FCC, which manages spectrum used by the private sector, designates particular regions of the spectrum for particular uses (akin to land zoning).[7] It then assigns licenses to individual applicants for the designated uses. Historically, assignment was free of charge, in ways that created both inefficiencies and inequities (Kwerel and Williams, 1993).

At first, license assignment was done through administrative hearings: applicants argued the merits of their case, and FCC Commissioners judged which applicants would best serve the "public interest." Administrative hearings create obvious inefficiencies: spectrum need not go to the most productive users, and the proceedings themselves caused losses from rent seeking and especially from lengthy delays in introducing new technologies such as cellular telephones. For example, although the spectrum allocation process for cellular services began in 1968, the first commercial cellular licenses were only assigned in 1982,

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[7] Spectrum for government use is managed by the National Telecommunications and Information Administration (NTIA), a branch of the Commerce Department.

partly due to the delay imposed by the hearings process.

In 1981 Congress authorized the FCC to assign licenses in certain cases using lotteries. Lotteries reduced delays in awarding licenses, and subsequent resale of licenses allowed users who valued spectrum highly to try to obtain licenses in a secondary market. However, using the secondary market can entail inefficiently large transaction costs, especially in assembling suitable blocks of licenses. The lotteries also created windfall gains to lottery winners--windfalls that became transparent when certain lottery winners resold their licenses at huge profits.

These visible windfalls fueled political pressure to assign at least some spectrum through auctions: applicants bid for licenses and the proceeds from leasing this public asset go to all taxpayers. In 1993 Congress gave the FCC limited authority to use auctions for assigning licenses to provide services for which subscribers pay fees (unlike advertising-financed broadcasting), such as personal communication services or PCS--advanced mobile two-way voice and data communications services. Auctions tend to assign spectrum to the highest-value users (who are willing to bid highest), while avoiding delays and rent-seeking costs. In addition to these efficiency advantages, auctions also are more equitable: they raise revenue for all taxpayers from the disposition of rights to use a public resource, instead of conferring windfall gains on a lucky few.

Designing good auction rules for PCS and other spectrum licenses poses novel and difficult problems.[8] The FCC developed innovative auction rules to address these issues, and has conducted very successful auctions. For example, auction winners were able to assemble suitable aggregations of PCS licenses over frequency bands and regions, as needed to form efficient communications networks (Cramton, 1995). Auctions have been held for PCS licenses over both narrow and broad geographic regions, and for DBS licenses. They have

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[8] Bidders are often interested not in a single license but in suitable blocks of licenses, which makes the values of licenses interdependent. For example, aggregating licenses over adjoining regions allows a PCS device to use the same spectrum frequency over a wider area and makes boundary coordination easier, features which can make licenses for certain spectrum bands complements. However, they also can be substitutes, because a bidder can reconfigure its proposed network to use a different set of frequencies. Designing auction rules to help bidders cope with this interdependence in the values of licenses can both promote economic efficiency and bring in greater auction revenue.

attracted participation by established and new players, including small businesses. And since their inception in July 1994, the auctions have already raised almost $20 billion for U.S. taxpayers in lieu of granting windfalls to a lucky few.

The Senate bill preceding the 1996 Act would have continued the move in the right direction.[9] Although these provisions were dropped from the final Act, they may well resurface in other legislation. If adopted, they will help deploy spectrum in its more productive uses, raise revenue for all taxpayers, and increase the public's confidence in the political system by making the license assignment process more transparent and "fair." But more remains to be done in ensuring that spectrum goes to the right uses and the right users, and that users face correct incentives to economize on spectrum use. To achieve this, some economists advocate giving all licensees (including existing ones) flexibility, subject to technical non-interference constraints, to pursue any applications or to sell their spectrum licenses to others.

3. ROLE FOR GOVERNMENT: MEDIA CROSS-OWNERSHIP, CABLE RATE DECONTROL, TELEPHONE-CABLE CONSOLIDATIONS

3.1 Media Cross-Ownership

The Administration opposed easing the limits on national radio and TV ownership and on cross-ownership (one entity owning different outlets such as broadcasting and publishing) (see the speech by Vice President Gore, 1995). It is difficult to oppose expanded national ownership limits on narrow economic grounds. Antitrust tests for market power would look not at how many stations one entity owns nationwide, but rather on its *market share* of facilities in the relevant market, which often is local not national (and may include alternative outlets to television). Therefore, the objection must be evaluated on other grounds, e.g., that moving from local stations to national networks would skew the content of information

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[9] The Senate bill would have: (a) extended the FCC's authority to conduct auctions through fiscal 1999; (b) with a few exceptions, *required* the FCC to use auctions for all spectrum bands sought for exclusive use by new applicants (not renewals), and not just for bands earmarked for certain uses as until now (the additional exceptions are for spectrum awarded free to public-safety radio services and to TV stations for digital broadcasting); (c) allowed private users to take over frequencies used by government users in exchange for compensating government users for their costs of moving to different frequencies.

provided away from local news (protecting diversity of information indeed was a major Administration concern).

The objection to cross-ownership also is open to the criticism that the relevant market power test depends on concentration, not the absolute number of different outlets owned by one party. This narrow antitrust objection is valid. But there is a broader objection to cross-ownership. If cross-ownership becomes the norm, there may not be sufficient independent voices to speak out on issues that affect the interests of any media segment at the expense of other industries or consumers. This danger is nicely illustrated by the debate over the pending proposal to give free spectrum to TV stations for digital broadcasting, spectrum whose value market value is estimated at billions of dollars. At present, television broadcasters are noticeably mum, and the proposed giveaway is attacked in other media such as the press. But if all media are cross-owned, who will be left to blow the whistle?[10]

3.2 Cable Rate Decontrol

Critics of cable rate regulation stress the difficulties of regulating cable entities that, unlike telephone companies, are not only delivery conduits but also producers of content, namely programming. They argue, somewhat inconsistently, that regulation reduces program quality, and that regulation is cumbersome because of the scope to evade it through retiering--shifting programs from more heavily regulated tiers ("basic") to less regulated ones ("expanded basic" or "premium").[11] They further believe that regulation of the

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[10] Some incentives could remain to blow the whistle since a broadcaster that provides important news may gain audience share and advertising revenue at the expense of rivals--in the same way that incentives exist to cheat on a cartel. But this incentive may not be strong enough when ownership concentration is moderate or high and when the stakes from the giveaway (as in spectrum) are high. Moreover, one would need a critical mass of media voices making the same point in order for it to be heard above all the normal "background noise" and resonate with the public.

[11] "Basic" service typically includes the signals (delivered over cable) of local TV broadcasting stations and public, education and government channels. "Expanded basic," also known as "cable programming" includes all other channels (such as ESPN), that are not offered on an individual channel basis. "Premium" programs include channels priced on an individual basis (such as HBO or Showtime), pay-per-view events, and in the future may include "interactive-on-demand" services, such as video-on-demand. "Premium" programs are not regulated. The problem of regulating firms that operate in markets with differing

traditionally monopolized delivery function will soon be unnecessary because of growing competition to cable companies from telephone companies, DBS, or other sources.

The Administration worried that such competition will develop slower than touted, and that until it develops cable operators will retain substantial market power to raise rates. It preferred to deregulate rates only once entry has brought sufficient competition to substitute for regulation. The 1996 Act strikes a reasonable balance between these positions. It deregulates immediately rates charged by small cable companies for cable programming services and some basic services. For large systems, it deregulates cable programming services by March 31, 1999. And it lifts all rate regulation sooner if a system faces "effective competition," defined as the offering by a rival of comparable video programming in the cable system's franchise area using the wireline or wireless facilities of a telephone company (but not DBS). Of course, operationalizing the "effective competition" test is likely to be contentious.

3.3 Cable-Telephone Consolidations

In most traditionally unregulated industries, the prospects for present and future competition are largely determined by actual competitors--the firms already in a market. But in traditionally regulated monopolies, future competition must largely come from outsiders--from current potential competitors. For this reason, the Administration opposed excessive loosening of restrictions on mergers and cross-ownership between cable and phone companies in the same local area. Although there are technological challenges in using phone wires to deliver video, and cable wires to deliver phone service, cable and phone companies nevertheless are likely potential competitors, as both have wires to the home. Thus, mergers or joint ventures among them could delay competition.

Antitrust enforcers could challenge such anticompetitive consolidations on a case-by-case basis, but doing so for a potentially large number of transactions in different regions would be quite costly. Maintaining clear prohibitions may be preferable, as long as such consolidations yield no significant economies, and as long as local cable and telephone

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intensities of regulation and can manipulate their mix of activities to evade regulation is paramount when discussing the issue of Bell entry into long-distance phone service.

companies remain among each other's most likely potential competitors.

The 1996 Act prohibits the acquisition of more than a 10% interest by a telephone company in a cable company operating in the telephone company's service area, or by a cable company in a telephone company operating in the cable company's franchise area. It also prohibits joint ventures among such entities. However, it makes an exception for rural areas with fewer than 35,000 residents (provided the cable system serves less than 10% of the households in the telephone company's service area).[12] The presumption is that small markets could not support separate phone and cable systems; but it is based on no solid evidence, and the exception could delay competition in local phone and cable service. Still, these exceptions are much narrower than in earlier drafts of the legislation.

4. ROLE FOR GOVERNMENT: TELEPHONE COMPETITION

4.1 Background

4.1.1 Local and Long-Distance Service

The consent decree that broke up AT&T was filed with the court in August 1982 and went into effect January 1984. It aimed to separate (a) those segments of the business that--because of natural monopoly characteristics or for jurisdictional reasons--would remain rate-regulated (local telephone service) from (b) those segments that were viewed as potentially competitive and eventually could be unregulated (equipment manufacturing, and long-distance service). AT&T inherited the potentially competitive segments, while seven Bell companies inherited regulated regional monopolies over local service. The Bells were prohibited from re-integrating into long-distance service or equipment.

The distinction between "local" and "long-distance" service is inherently somewhat arbitrary. The decree distinguished them by dividing the part of the country served by the old AT&T into about 160 newly created Local Access Transport Areas (LATAs). The region served by any of the new seven Bells encompasses multiple LATAs, but the decree permits a Bell to use its facilities only for service within a LATA (intraLATA). To complete

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[12] The Act includes other exceptions to the anti-buyout ban and also allows the FCC to waive the ban in so-called "failing firm" situations.

interLATA calls it must use facilities of a long-distance carrier, also known as Interexchange Carrier (IXC), such as AT&T, MCI or Sprint. (Thus, for purposes of the decree, long-distance service means interLATA.) The thinking was that technological conditions made interLATA service potentially competitive, but that actual competition would emerge only if the Bells, that controlled the vital local exchange networks, were barred from long distance (more on this below).

Today, Local Exchange Carriers (LECs)--the companies that provide the lines into subscribers' premises--remain virtual monopolists in their local service areas. Although there are many independent LECs especially in rural areas, LECs owned by the Bells account for about 75% of all LEC revenues nationwide. LECs' prices, for local calls and for access to IXCs, are regulated by the States and the FCC. In contrast, long-distance service is largely unregulated and relatively competitive. Four IXCs have national networks, several others have regional networks, and many offer service using leased facilities. Reflecting the change in market structure since 1984, the FCC ruled in October 1995 that AT&T should be reclassified as "non-dominant."

In 1994 consumers spent about $135 billion on wireline phone service[13] (compared with about $25 billion on cable TV). Of this, IXCs received about $63 billion, but paid about $28 billion to LECs in access fees. In addition, LECs earned approximately $72 billion from local service (about $13 billion from intraLATA toll calls, and the rest from purely local service), bringing their total wireline revenues to $100 billion.

The Act seeks to increase competition in long-distance service and introduce it to local service. As mentioned, it relaxes legal barriers to entry into local service; in addition, it requires LECs to share their networks with entrants (by providing reasonably-priced interconnection as well as access to pieces of their networks--"unbundling"). It also abandons the structural-separation policy embodied in the 1984 AT&T breakup by superseding that decree and--under specified conditions--allowing the regulated Bells to provide unregulated long-distance service and manufacture equipment.

The issue of Bell entry into long-distance was probably the most contentious issue

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[13] Revenues from cellular and other phone service added about $16 billion, with some of the cellular revenues going to LECs.

in the legislation. Supporters argued that the Bells would add needed competition to the long-distance market. Opponents, including the Administration, argued that competition would be hampered by allowing Bell entry before they face meaningful competition in local networks and without sufficient regulatory safeguards.

Allowing Bell entry on these terms raises two dangers: (a) distorting competition in long-distance, as the Bells could abuse their monopoly control of vital local networks to gain inefficient advantages in long distance; and (b) delaying local competition, by granting Bells' the "carrot" of entry into long distance before they have seriously opened their local networks to competitors, thereby reducing their incentive to continue cooperating with entrants. The 1982 AT&T decree stresses only point (a), the threat to long-distance competition, as has the Department of Justice throughout. However, a strong economic argument can be made also for (b), that is, for conditioning the Bells' authority to enter long-distance on their cooperation with local entrants--since a major goal of the 1996 Act (a goal not addressed by the 1982 decree) is to promote local competition.[14]

The issue of Bell entry not only is controversial, but is probably the most important economic issue in the legislation, because of the large size of the telephone industry, and because Bell entry would cause a significant change in market structure that would be very difficult to reverse if competitive problems arose. It also is widely misunderstood--it is mischaracterized as "deregulation" and "promoting competition," inducing reactions such as "what is wrong with allowing entry?" We therefore begin by recalling why the AT&T breakup was sought in the first place (see also Brennan, 1987; Brock, 1994).

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[14] The so-called VIII(c) test in the 1982 consent decree allows a Bell to enter a new market (only) if there is no substantial possibility that the Bell or an affiliate could use monopoly power to impede competition in the market it seeks to enter. In principle, this could be demonstrated even without the emergence of local competition (e.g., if improved regulation could somehow prevent abuse of Bell market power in the entered market). But to argue against the "carrot" argument on the grounds that it is not included in the VIII(c) test is to miss the point that much of the pressure for the new legislation came from the Bells in order to vacate the 1982 decree. And if the decree is to be superseded by legislation, then we can start with a clean slate. In that case, invoking the carrot argument makes good economic sense, because it will be very difficult to obtain Bell cooperation with entrants in order to foster local competition if the Bells have no incentive to extend such cooperation.

4.1.2 Why the 1984 AT&T Breakup: Regulatory Evasion via Favoring Unregulated Affiliates Distorts Competition and Is Inefficient

A price-regulated monopolist can use its affiliates in other, less regulated markets to evade price regulation, in the process inefficiently harming competitors and consumers. Before its breakup, AT&T's local rates were subject to Cost-of-Service-Regulation (COSR), but its rates in long-distance service and its equipment prices were regulated more lightly. Such asymmetric regulation creates incentives to shift profit to the less regulated markets, since the affiliates' profits go to the same stockholders. Profit shifting entails favoritism towards the firm's less regulated affiliates, through cross-subsidization or, more importantly, through access discrimination against competitors.

Cross-subsidization involves misattributing *costs* of other less regulated businesses to the regulated one, where--under COSR--higher costs can be used to "justify" requests for higher rates. The cost shifting could involve real transfers, such as inflated payments to affiliates for inputs, or accounting allocations of supposedly common costs. (Such cost shifting is akin to the use by multinationals of transfer pricing to minimize tax liabilities by shifting costs into jurisdictions where tax rates are higher.) For example, AT&T allegedly favored its equipment affiliate, Western Electric, by paying it inflated prices for possibly lower quality equipment than offered by independents.[15] In principle, cross-subsidies may pose a problem whenever a regulated firm also operates in unregulated markets; but it is more likely to escape regulatory detection when markets are closely related.

Access discrimination against competitors in the less regulated segments is likely to pose the greater threat to competition. The bottleneck monopolist may try to evade regulation by forcing customers who demand an unregulated service that hinges on access to the bottleneck service to purchase from it also the unregulated service at a higher price ("tying"). To do so, the monopolist reduces competition in the unregulated market, by using its technological control of the bottleneck facility to discriminate against competitors of its affiliate in the non-price access terms to the bottleneck, in ways that are difficult for

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[15] For a summary of these allegations and allegations of access discrimination against long-distance carriers, discussed shortly, see Judge Greene's opinion rejecting AT&T's request to dismiss the Justice Department's antitrust case (United States v. American Tel. & Tel. Co., 1981). See also Brock (1994).

regulators to detect or prevent. Such discrimination steers customers from competitors towards the monopolist's unregulated affiliate. Consistent with this theory, AT&T was alleged to have discriminated against long-distance rivals like MCI, e.g., by providing them poorer-quality connections to the local network, and by imposing unnecessary delays in responding to requests.[16]

The precise distortions depend on the specific method of price regulation. COSR creates incentives for both cross-subsidization and discrimination. (COSR has other bad effects that are present also for a firm operating in a single market, such as reducing incentives to contain costs; the focus here is on bad incentives specific to the multimarket case, which arise from asymmetric regulation in the different markets.)

In theory, incentives to cross-subsidize can be avoided by replacing COSR with other methods of price regulation such as *price caps*, which decouple the allowable price from those elements of cost that the firm can control. The firm's incentives to allocate unregulated costs to the regulated business are eliminated if higher reported costs do not lead to a higher allowable price. In practice, however, price caps are never pure--they are not set initially forever, but are revised in light of a firm's experience with costs. Price caps therefore amount to cost-based regulation with a longer lag, so a firm still has some, albeit weaker incentives to shift costs of unregulated businesses to the regulated one.

Moreover, price caps leave intact incentives to discriminate against competitors in the unregulated markets. Since the firm's regulated prices are capped, while its prices in unregulated markets are not (more generally, allow higher margins than in the regulated market), the firm gains from shifting business in unregulated segments from rivals towards its affiliates by reducing rivals' access to the monopoly bottleneck facilities.

Regulatory evasion through cross-subsidies or discrimination is inefficient. Cross-

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[16] As explained in more detail shortly, cross-subsidies and discrimination inefficiently harm both consumers and competitors: (a) consumers pay higher prices and consume too little of a service; (b) consumers are denied the variety and innovation that competitors would offer; (c) potentially more efficient or innovative competitors are denied profit opportunities. Effect (a) can occur in regulated local service due to cost shifting and supply favoritism; or in unregulated long-distance service, because the preempted entrants may be more efficient, and because even equally efficient entrants could permit a regulatory yardstick hence tighter regulation of the monopolist in long distance.

subsidies inflate the reported cost of regulated services, leading to monopolistically higher prices. Prices of unregulated services--whose costs are under-reported--may fall, but need not (e.g., if the cost shifting involves only allocation of fixed costs, or if rivals are driven out of the unregulated market by the cross-subsidies); even if prices fall, they would be artificially below cost, and consumption of unregulated services inefficiently high. Also, sales may be diverted away from more efficient competitors in the unregulated markets, because the regulated firm attains an artificial advantage through cross-subsidies.

Discrimination in access terms against competitors in unregulated markets creates similar distortions. It raises prices for those unregulated services, because excluded competitors might have been more efficient and because even equally efficient competitors could curb the monopolist's prices more effectively than can regulation alone. In addition, consumers lose the variety and innovation that competitors would bring. And potential competitors who may be more efficient or innovative are denied profit opportunities. Importantly, these resulting losses from discrimination can far exceed the gain to the regulated monopolist: the monopolist is willing to exclude a rival that would generate large benefits to consumers if exclusion raises its own profit even modestly.

The Department of Justice successfully sought AT&T's 1984 breakup because it felt--and the court agreed--that regulation alone could not, without imposing undue burdens, prevent the many ways in which AT&T could use its control of local telephone service to inefficiently favor its affiliates in equipment manufacturing and, especially, long-distance service. Indeed, the Justice Department and AT&T tried to negotiate a settlement without divestiture; the result was a draft consent decree which for its length and complexity became known as Quagmire II, or the Telephone Book decree...

4.1.3 Unbundling Regulated Bottleneck Monopolies from Potentially Competitive Segments: Alternative Approaches

The old AT&T case illustrates a generic question: how does one introduce competition into industry segments that are potentially competitive but that hinge on access to a bottleneck monopoly segment that is price-regulated? Another example is electricity, where generation is potentially competitive but requires access to transmission, which for the foreseeable future will remain a regulated (natural) monopoly. Similar issues are likely to arise today in

telephone service, where the potentially competitive long-distance segment still requires access to the monopoly local network; even within local service, certain functions such as marketing and billing are potentially competitive, but providers would require access to the underlying monopoly physical network. How to inject competition into such markets is a difficult challenge. We are wrestling here with hard questions, to which there are no easy answers. But as we look at the 1996 Act and beyond, it is worth noting the pros and cons of three regulatory approaches: mandated equal access, structural separation, and global price caps.

Equal Access. This approach regulates the monopolist's conduct, but not market structure directly. The bottleneck monopolist is allowed to operate in the potentially competitive segments, but its prices for access to the bottleneck are regulated and it is required not to discriminate against competitors' access in any way, whether through quality of connections, speed of responsiveness to requests, etc. This approach, which we call (mandated) equal access, attempts to prevent discrimination in the face of strong incentives by the firm to engage in discrimination. The next two approaches instead reduce the incentives to discriminate: structural separation bars the monopolist from unregulated markets; global price caps extend price regulation to cover the monopolist's sales in the unregulated markets.

Structural Separation. This was the approach taken in the AT&T breakup--keep the regulated bottleneck monopolist out of related potentially competitive segments, to prevent favoritism through cross-subsidies or access discrimination. Criticisms of structural separation include: (a) It sacrifices economies of scope between the bottleneck and related segments. (b) The monopolist may have other unique know-how and skills that it could usefully deploy in the related markets. (c) There is uncertainty over where to draw the line between the allowed and prohibited markets--the correct line depends on knowing where the monopoly bottleneck lies, but the bottleneck can change over time with technology. For example, in local telephone networks, does the bottleneck include regional trunk lines, only switches and local loops, or only local loops?

Global Price Caps. The pros and cons of structural separation versus equal access are

discussed further in section 4.2, where we see that both have serious drawbacks. Given these drawbacks, it is worth mentioning a third approach that had been noted by earlier authors but has recently been forcefully advocated by Laffont and Tirole (1996).

The idea behind global price caps is based on two principles. First, price caps reduce incentives for cross-subsidization and other cost misallocations. More importantly, conventional price caps preserve incentives to discriminate against competitors only because such caps are *partial* and thus amount to asymmetric regulation: the monopolist's access prices to competitors in unregulated markets are capped, but the monopolist's own output prices in those markets are not regulated.[17]

Structural separation avoids this regulatory asymmetry by barring regulated monopolists from unregulated markets. An alternative is to regulate symmetrically, by extending regulation to cover the monopolist's prices in the potentially competitive markets (but exempt competitors who do not control any monopoly bottleneck). *Global price caps* take this approach. A global price cap involves placing a ceiling (cap) on a weighted average of the monopolist's prices in all markets. In telephones, the global cap on a monopolist LEC would include prices for local service, access fees to IXCs for long distance service, and the LEC's own retail prices for long-distance service. Under a global price cap regime, if the LEC can provide long-distance service less efficiently than an IXC, the LEC could cut its cost by switching traffic from its facilities to the IXC, and thereby raise its profit since the LEC's allowable revenue would not change. Thus, global price caps in theory eliminate incentives to discriminate.[18]

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[17] The monopolist then gains from access discrimination--using technological control of the bottleneck to disadvantage rivals in the unregulated markets, thereby allowing its unregulated affiliates to raise their prices. For example, under the 1996 Act the Bells' access fees to IXCs would remain regulated (until enough local competition develops), but the Bells could offer long-distance service to final customers at unregulated rates. The Bells then have strong incentives to discriminate against IXCs.

[18] Laffont and Tirole (1996) show that the Ramsey solution can be induced by choosing price weights that are proportional to the quantities that would be sold in the different markets in the Ramsey equilibrium, and choosing the cap to yield only zero profit. The focus of their paper is to justify including in the global price cap also the access prices charged by the local bottleneck monopolist (e.g., local phone company) to unregulated rivals (e.g., long-distance companies), as opposed to regulating access prices using other schemes such as the "efficient components pricing rule." In the U.S., the main issue has been that access pricing is regulated but the monopolist might operate in unregulated markets, creating the incentive for discrimination. The logic of their argument applies straightforwardly also to this case.

In practice, there will be various problems. As mentioned, price caps are always revised over time, so incentives remain to shift costs towards unregulated segments. Second, granting the monopolist latitude over prices may allow it to engage in predatory pricing against potential competitors. For example, if the monopolist's bottleneck is not completely secure (and it never is), and if entry into the bottleneck is made significantly more likely by the presence of competitors in complementary segments, then the monopolist may still want to stifle the growth of such competitors, possibly through predation. But a reasonable response to this is to supplement global price cap regulation with antitrust enforcement against predation.

Third, a global price cap gives the firm latitude over the price structure (subject to the overall cap), but the firm's profit-maximizing choices may differ from the regulator's. For example, in the U.S. regulators have encouraged cross-subsidies to local service from long-distance service, through setting high access prices for long distance and using the revenue to subsidize local service rates. A LEC operating under a global price cap would generally not choose this same pattern. But the correct response to this concern is to try and move away from cross-subsidies find other ways to achieve the same underlying goals, for example, by subsidizing poor people directly rather than distorting relative prices away from costs. Cross-subsidies in telecom are probably inefficient and, in any case, become less tenable as one moves to competition. As discussed further in Section 5, other ways will have to be found to meet the underlying social goals.

4.2 Bell Companies' Entry into Long-Distance Service

Having discussed approaches to fostering competition in markets that rely on a key segment which remains monopolized and the rationale for the 1984 AT&T breakup, we turn to the issue of Bell entry into unregulated markets today. Almost from the outset, the Bell companies have clamored for repeal of the decree's line-of-business restrictions, especially those provisions barring them from long-distance service. Proponents of Bell entry into long-distance argue that their entry would create substantial efficiencies and that regulation could adequately prevent access discrimination. Opponents counter that the benefits from

Bell entry would be modest, and that discrimination could not be adequately prevented--the same dangers and distortions discussed earlier in the context of the 1984 breakup could resurface today.

4.2.1 Arguments for Bells' Entry: Costs of Structural Separation

Proponents of Bell entry raise several points, which opponents vigorously contest:

"Long-distance market is not competitive." Bell proponents argue that the long-distance market is far from perfectly competitive and that Bell entry would bring much lower prices.[19] Opponents retort that the long-distance market is very competitive, citing several indicators. There are four independent national long-distance networks and many regional ones, offering a proliferation of price and service packages. Reflecting this competitive jockeying, in 1994 about 20% of all customers changed their long-distance company. Also, customers increasingly originate international calls in the U.S. rather than abroad (through call backs and similar devices), presumably due to lower U.S. prices--that are indicative of greater competition in the U.S. than abroad since the breakup of AT&T and the emergence of competitive IXCs.[20] In addition to the fall in prices, IXCs also point to the great innovation spurred by competition, for example, Sprint's deployment of its fiber optic network prodded AT&T to accelerate deployment of its own fiber network.

Overall it is safe to say that the long-distance market is at least fairly competitive. Moreover, the perfectly competitive benchmark may not be relevant in an industry such as this that still exhibits significant fixed costs.

"Significant benefits to consumers from integrated service." Most observers see significant consumer benefits from seamless, one-stop shopping for all communications needs; for example, an integrated provider could offer simplified calling plans. The Bells could provide

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[19] Some go so far as to call the IXCs a cartel, and note that the "cartel's" job is made easier by FCC rules that required AT&T to file publicly with the FCC any changes in tariffs 45 days in advance, creating scope for price leadership. The obvious reply to this is to abandon such FCC rules. Indeed, the FCC has recently reduced this 45 day requirement, albeit on the different grounds that AT&T is no longer a "dominant" carrier in long-distance service. Crandall and Waverman (1995) argue that long-distance prices are not perfectly competitive, but certainly not at cartel levels either.

[20] In 1985, approximately 50% more minutes were logged on calls from the U.S. than into the U.S., but this differential has increased steadily, and in 1993 exceeded 100%, suggesting an increasing gap between foreign and U.S. long-distance prices. Conceivably such an increasing gap might be due to lowering of access fees from LECs to IXCs mandated by the FCC, not to lower IXC margins brought about by increased competition. However, there is evidence that the decline in long-distance rates, at least within the U.S., has outpaced the decline in access fees.

such integrated service if allowed into long distance. IXCs argue, however, that delivering such consumer benefits does not require Bell entry: others could do the job if regulators forced the Bells (and other LECs) to resell their local service at appropriate discounts to IXCs, as the Act indeed requires (see the next section).[21] IXCs or other companies could resell such local service together with long-distance and other services.

"Technological economies of scope between local and long-distance service." Even if the long-distance market were not competitive, a key question is why entry would be more profitable for the Bells than for other firms. This could be the case because only the Bells could use such entry to circumvent local rate regulation (a "bad reason"), or because they have special legitimate cost advantages in offering long-distance service (a "good reason"). The Bells cite the latter.

They argue with some justification that LATA-based distinctions between "local" and "long-distance" service can be quite artificial, at times amounting to arbitrary regulatory lines with little economic or technological underpinnings. For example, a Bell sometimes may use its own facilities to complete a fairly long call (intraLATA toll call), but must use an IXC's facilities to complete short calls to a neighboring LATA. Allowing Bell entry into long distance would let them tap economies of scope, since a Bell could link its existing regional networks to provide long-distance service at lower cost than would be incurred by a de novo entrant deploying new long-distance capacity.

4.2.2 Arguments Against Bells' Entry: Preventing Access Discrimination

Opponents concede that there exist some technological economies of scope in providing local and long-distance service. But they note that such economies existed also when the decision was made to break up AT&T. The policy judgment then was that (a) breakup was necessary to protect competition in the potentially competitive segments--regulation alone

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[21] Allowing IXCs to offer (resold) local service while barring the Bells from long distance may seem unfair; but the fundamental asymmetry must be remembered--the Bells control the local network and therefore might threaten competition in long distance if allowed to enter. There is no similar danger of IXCs threatening local competition.

was not enough--and (b) that the gains from competition in those segments would outweigh any losses from sacrificing economies of scope. Fundamentally, opponents of Bell entry argue that not enough has changed since 1984 to justify a policy shift.

Some forty leading economists, on behalf of three Bell companies that sought to repeal the 1982 decree and be allowed into long-distance, argued that circumstances indeed have changed. Brennan (1995) assesses their arguments and overall, finds them not compelling. Following is a sampling of the arguments and my assessments.

"Better regulation." The move from COSR to incentive-based regulation (e.g., price caps) adopted by many States, reduces incentives to cross-subsidize. However, as noted earlier, price caps are just cost-based regulation with a longer lag, and thus reduce but do not eliminate cross-subsidization incentives. Moreover, even pure price caps (unless they are global) do not reduce incentives for access discrimination. Finally, requiring the Bells to provide unregulated activities through separate subsidiaries also does not eliminate discrimination incentives because the subsidiaries' profits flow to the same shareholders.[22]

Proponents of Bell entry further argue, correctly, that regulators today are more attuned to the dangers of discrimination. But regulators would still find it difficult to effectively police all avenues of technological discrimination. My own instinct is that "where there is a will there is a way"--once the Bells are allowed into long-distance, they would find ways to discriminate against competitors. Discrimination may be especially difficult to prevent when IXCs require customized (rather than standard) arrangements in order to provide enhanced services that depend on the local network; and enhanced services is where many project the most rapid growth. The Bells might delay their responses, charge higher fees, etc. For recent examples of such behavior see Cauley (1995). Moreover, even if regulators can detect discrimination, their enforcement ability and political latitude to act

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[22] It is possible to dilute the common interests of the different units, for example, by requiring that subsidiary managers be rewarded only based on the performance of their units, not of the company as a whole. However, to eliminate incentives for discrimination one would have to eliminate any commonality of interest (including through personnel rotation or central oversight), in which case it is difficult to see how any economies of scope between the various services would be preserved. That is, what would be the advantage of such regulatory quasi-separation within a firm over complete structural separation?

may be limited.

"Established long-distance competitors." Major IXCs have made substantial investments that are largely sunk, so the Bells are unlikely to drive these IXCs out of the market. Nevertheless, the Bells still could use their control of key local facilities to squeeze rivals in the short run, and threaten their viability in the long run by discouraging their future investments and innovation. Thus, Bell entry into long-distance could well reduce prices in the short run, while rivals remain potent competitors; but in the long run it could stifle competition and undo many of the benefits of the original breakup.

"Local telephone competition is just around the corner." A rhetorical response is that if competition really is so imminent, why don't we wait a few months until it arrives? More to the point, in evaluating the state of competition, it is important to distinguish between various local network services. Competition has been growing in limited services to certain customers: competitive access providers have been bypassing LEC trunk lines and connecting large business customers through private lines to IXCs. But the LECs still face no serious rivals for providing switched network services, with the result that smaller businesses and residential customers still largely depend on the LECs for access to IXCs, as well as for virtually all their local calls. The LECs' persistent dominance is reflected in the fact that, despite the heralded growth of competitive access providers, the LECs still command about 96% of all fees paid to access local exchange networks.[23]

In short, there are legitimate concerns that if the Bells are allowed to reenter the unregulated long-distance and equipment markets before they face local competition and thus remain price-regulated in local service and access, regulation alone could not prevent them from inefficiently excluding competitors in unregulated markets. Under such circumstances,

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[23] Revenues of competitive access providers are included in the total access fees. Undoubtedly the absence of local competition is due in large part to past legal barriers, which the 1996 Act repeals. But entrants have also faced technological problems. Providing phone service over cable lines is still in experimental stages. Wireless may eventually offer alternatives to the wireline local loop to a customer's premises, but currently is higher cost, less secure, and lower quality than wireline connections.

allowing the Bells to provide unregulated long-distance service would give them incentives to discriminate against long-distance rivals. Allowing them to manufacture switches and other network equipment could enhance their *ability* to discriminate, by making it easier to retain proprietary control of important technical information needed to interface with long-distance and other unregulated services that rely on local networks.

4.2.3 Competitive Safeguards in the 1996 Act

In my view the most compelling answer to "what has changed since 1984 to justify repealing the consent decree and allowing the Bells into long distance" is this: unlike the decree, the 1996 Act makes a conscious and serious effort to promote also local competition--by repealing state regulatory barriers (as discussed in Section 2.1) and by requiring incumbent local phone companies to cooperate with entrants (see below and Section 4.3). The Act reflects an increasing belief, prompted partly by technological advances, that competition is feasible in at least some segments of local networks.

Local competition, in addition to its inherent benefits discussed in Section 4.3, can help prevent access discrimination by the Bells against IXCs. Local competitors offer IXCs alternative ways of reaching some customers. They also provide regulators a useful "yardstick" for policing discrimination: a Bell's claim that it is not feasible to provide certain services to an IXC will ring hollow if the local competitor finds no difficulty providing such services.

An approach that prevents discrimination against IXCs while minimizing the extent of hands-on regulatory involvement would be to allow the Bells into long-distance only after sufficient local competition has developed to eliminate the Bells' market power over local networks. However, that requisite degree of local competition would take quite some time to develop.[24] Such a delay in authorizing Bell entry would have been politically untenable, and may be economically inferior to the alternative discussed below.

That alternative approach is to require less local competition as a precondition for allowing the Bells into long-distance, but leave more room for regulatory discretion. This

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[24] A good conceptual test for when sufficient local competition exists for competition alone (without regulatory intervention) to prevent Bell discrimination against IXCs would be to ask regulators if they feel confident enough in the strength of local competition that they would be willing to deregulate local rates. Under this test, a Bell entry into long distance would likely be a good few years away.

is essentially the approach taken by the 1996 Act.[25] The Act: (a) imposes regulatory safeguards against Bell discrimination and other abuses; and, importantly, (b) links the Bells' entry authority to their ongoing cooperation with entrants into local networks, giving government "referees" the discretion to make key judgments.

The Act specifies the following process for authorizing Bell entry into unregulated (what the Act calls "competitive") activities:

Separate affiliates. Long-distance service, as well as the manufacturing of equipment, must be offered through separate affiliates, to help regulators detect and prevent cross-subsidization from the regulated local telephone service to the unregulated businesses. A regulated Bell company may not discriminate in any way in favor of its affiliates. Separate affiliates must be maintained for three years after a Bell company is authorized to offer long-distance service in its region (see below), unless the FCC extends the requirement.

Long-distance service from out-of-region States, and equipment manufacturing. A Bell company may offer long-distance service immediately originating in any State where it does not provide local service (on the theory that it does not control local networks in such out-of-region States and hence cannot disadvantage IXCs). It may manufacture telecom equipment as soon as it receives FCC approval to offer long-distance service originating in any "in-region" State (one where it provides local service).

Long-distance service from in-region States. To offer such service, a Bell must receive FCC approval on a State-by-State basis. FCC approval is granted only after the following requirements are met.

Competitive checklist implemented. Within 6 months of the Act's enactment the FCC will issue rules for interconnection and network unbundling (discussed further in Section

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[25] A similar approach was proposed to judge Greene, who oversees the AT&T decree, by the Justice Department, AT&T and Ameritech (a Bell company). The so-called Ameritech proposal involved a trial in two of Ameritech's local service, Chicago and Grand Rapids. Ameritech would offer to rivals interconnection and access to unbundled pieces of its local network. In exchange, it could offer long-distance service in these markets, but only after proving there is some actual local competition, and only under DOJ's ongoing supervision to make sure it continues cooperating by opening up its local network to AT&T's entry. The Ameritech proposal is similar to the Act's, but likely contained stronger safeguards against Bell misbehavior.

4.3), that all incumbent local exchange companies must follow in dealings with new local competitors. Before receiving long-distance authority in an in-region State, a Bell at a minimum must *offer* price and other terms that are consistent with these FCC rules. Consistency is to be certified by the State public utility commission (PUC). Moreover, if the applying Bell has received an interconnection request from a new local competitor, it must first have *fully implemented* a binding interconnection agreement with the competitor. That agreement must satisfy the FCC rules; the competitor must provide local exchange service to both *business and residential* customers in the State (pure access providers, for example, do not suffice); and it must use exclusively or predominantly its *own facilities.*[26] In short, the local competitor must have more than a token presence.

FCC "Public Interest" determination, with Justice Department consultation. Certification by the State PUC that the applying Bell has complied with the FCC's local-competition rules is necessary but not sufficient to authorize the Bell to provide long-distance service in that State. The FCC also must consult the Justice Department regarding the likely competitive implications and accord the Department's evaluation "substantial weight." Based on this input and its own evaluation, the FCC must determine that Bell entry would be in the public interest.

This approach makes considerable sense. Implementing the competitive checklist will help promote local competition, but does not guarantee its imminence or durability. Some uncertainty remains about the feasibility of widespread local competition, and there is the risk that the Bells would cease cooperating with local entrants and stifle competition once they are allowed into long-distance.[27] Accordingly, the Act provides the additional

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[26] The meaning of "predominantly facilities-based" competitor is unclear. Precisely what facilities should the competitor be required to possess, as opposed to leasing from the local Bell? One criterion would be to focus on those facilities in which discrimination by the Bell against IXCs would be more difficult to prevent and insist that the competitor own such facilities, while counting on regulation to prevent Bell discrimination in access to the other facilities. For example, if discrimination in switching functions were more difficult to prevent than discrimination in access to loops, the test for a "predominantly facilities-based" entrant would require an entrant to possess its own switching facilities--so as to provide competitive alternatives to the Bell in that function.

[27] In an earlier version of the House bill, before being allowed to offer long-distance service in its region a Bell company had to face a local competitor that was "*comparable* (to the Bell) in price, features, and *scope*." Such a requirement of strong local competition

competitive safeguards in the FCC's public interest test. The strong consultative role for the Justice Department is important given the leading role played by the Department's Antitrust Division in bringing competition to long-distance telephone service through the AT&T breakup, and its general expertise and mandate in competition matters.

Some have criticized this discretion given to the FCC and Justice Department as overly regulatory. However, it is important to allow regulators and antitrust enforcers latitude to make subjective judgments that significant and durable local competition is developing because, by its very nature, a checklist cannot hope to capture all the relevant competitive eventualities.[28] Indeed, the success of the 1996 Act in protecting and increasing competition in long-distance service will largely hinge on the ongoing, hands-on involvement by the FCC, state regulators and antitrust enforcers to implement the Act's equally important other goal, of promoting local exchange competition.

4.3 Promoting Local Competition

4.3.1 Local Telephone Networks and Types of Entrants

To understand how the Act attempts to promote local competition it is helpful to review briefly the main elements of a local public switched telephone network. These include: (a) wireline *local loops* connecting customer premises to the LEC's switch; (b) *switches*, essentially computers that route calls through trunk lines; (c) *trunk lines*, transporting multiple calls between switches; (d) *signaling and control systems*, for example, to assist in call routing and processing; and (e) *operator* services.

There is some debate over which if any of these segments are natural monopolies today. The most likely candidates are the local loop and the signaling and network control elements. Technology, especially wireless, is moving rapidly, making it hazardous to guess beyond, say, five years. But even if network elements are no longer natural monopolies, most observers agree that entry on a large scale comparable in scope to an incumbent LEC

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would have reduced the need for regulatory and antitrust discretion in approving Bell entry. However, this "comparable scope" language was dropped after furious lobbying by the Bells, presumably recognizing that it will take a long time for such a competitor to emerge.

[28] Similar sentiments have recently been expressed by the main telephone regulator in the U.K., Oftel director-general Don Cruickshank (Lewis, 1995).

would take a long time, given the massive investment required. An entrant would require cooperation by the LEC, and the Act requires such cooperation. In discussing the requisite cooperation, we can distinguish three types of entrants: *full facilities*, *reseller*, and *partial facilities*.

A *full facilities* entrant--one that is vertically integrated to the same degree as the LEC--would still need *interconnections* to the LEC's network, to terminate calls to or receive calls from the incumbent's customers, to enable customers to maintain their telephone numbers if they switch carriers ("number portability"), and to access common signaling facilities and databases. Good and reasonably priced interconnection is vital to an entrant because telephone service exhibits such strong positive network externalities: the network's value to a subscriber increases with the number of subscribers reached by the network. This is a critical distinction between telephones and, say, textiles: a new textile manufacturer does not need much cooperation from incumbents; but an entrant into local telephone service needs substantial cooperation from the incumbent. Since an entrant will at least initially be much smaller, the incumbent can use interconnection terms as a strategic weapon against entrants.

A *reseller* would lease access to all physical facilities from a LEC in bulk, but would perform all customer-related functions such as marketing, and billing ("retailer" would be a better term than the commonly-used "reseller," as the latter wrongly suggests only an arbitrage role). It would resell local service to its customers, along with any other services that would be jointly marketed, for example, it might jointly market local and interexchange service. Such joint marketing is important because customers value one-stop-shopping. Since a reseller undertakes costly functions otherwise performed by the LEC, to succeed it must buy the LEC's network service at a sufficiently discounted wholesale price. The discount relative to retail prices should reflect the cost savings the LEC could realize from cutting back on these functions and delegating them to a reseller.

A *partial facilities* entrant would purchase only some elements from the LEC and supply the rest itself. It would need interconnection as would a full-facilities entrant. In addition, it would need access at economical rates to facilities that it does not provide but instead wishes to lease from the LEC. For example, it might install its own switch but not wires to individual homes, and seek to use the incumbent's local loop. Such an entrant

requires *network unbundling*--availability and economical pricing of a subset of network elements (as opposed to all elements as required by resellers).[29]

4.3.2 Benefits of Resale or Partial-Facilities Entry

The social benefits of entry by firms that are not entirely facilities based can be quite real. These benefits can be grouped into two categories. First, there are inherent benefits from cutting prices and costs in the segments that are entered,[30] and from increasing product variety and convenience, e.g., by allowing one-stop-shopping for local and long-distance service.[31] Second, resale or partial-facilities entry can assist and accelerate the transition to full-facilities competition.

The transition issue arises because entrants rarely attain a large market share overnight, but instead grow over time. In long-distance service some entrants began mainly as resellers and added their own capacity as their name recognition and subscriber base grew.

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[29] Both resale and partial-facilities entry can be viewed as unbundling the LEC's integrated functions: resale involves the unbundling of only the complete package of LEC network functions from the marketing and other customer-related functions. Partial facilities entry involves unbundling certain of the network facilities or functions. But "unbundling" is sometimes used to describe only partial facilities entry, as distinct from resale.

[30] Consumers may pay lower prices for two reasons. (1) Even entrants that are no more efficient than the LEC in providing the entered services (e.g., marketing functions in the case of resellers, and trunk lines in the case of some partial-facilities entrants) can help to cut prices, since regulation alone is unlikely to constrain the LEC's pricing down to cost. (2) Entrants may be more efficient than the LEC in their entered segments, resulting in cost cutting and price cuts to consumers. In (1), social gains arise due to the expansion in output. In (2) they arise for this reason and because of lower costs.

[31] Concrete advantages of one-stop-shopping can include: (a) assuring customers that there will be "no finger-pointing" between different providers when something goes wrong (recall that resellers assume complete responsibility for satisfying their customers); and (b) offering simplified pricing structures e.g., providing quantity discounts and guaranteed prices on all of a customer's calls without having to distinguish whether calls are intraLATA or interLATA. Simplified pricing is said to be important to customers, a claim consistent with the surge in advertising of such plans by wireless telephone providers ("one price anytime, anywhere"). Entrants also might bring other innovative services, such as call forwarding, voice mail, call waiting, etc. It is difficult to anticipate in advance what such new services might be, but that is the beauty of competition: it spurs firms to be creative and innovative in responding to perceived customer demands long before these are recognized by economists or other outsiders.

Requiring entrants to be entirely facilities-based at the outset could saddle them with unnecessarily high fixed costs and excess capacity (while subscribers are being added), making entry more risky and more costly. Granting entrants access at reasonable prices to complementary LEC facilities during the transition could permit a faster and more economical transition to full-facilities competition.

In turn, full-facilities competition could bring the above benefits of competition to a broader range of services, and an additional important benefit: it would reduce the need for regulation. For example, in long-distance service there is an active wholesale market in capacity because multiple facilities owners compete to provide capacity. In contrast, implementing resale of local service is likely to require complex regulation as long as LECs retain monopolies over local networks.

4.3.3 Requirements of the 1996 Act: Interconnection and Unbundling

The Act requires any incumbent LEC to cooperate with local entrants, by offering: *interconnection* to its network and *unbundled access* to network elements and services (including the entire network's services at discounted wholesale rates for resellers, as discussed shortly, and including databases and signaling functions). Interconnection and unbundled access must be offered "at any technically feasible point" and "on rates, terms, and conditions that are just, reasonable and non-discriminatory" (compared with those offered to any other including to the LEC's own operation). It also requires all LECs--incumbents and entrants--to offer number portability (allow a customer to retain its phone number if switching to a rival carrier), dialing parity (allow a rival's customers to dial the same number of digits as its own customers to reach other parties, rather than requiring

additional digits), and reasonable access to rights-of-way and poles and conduits. [32]

Inevitably, the Act provides only a blueprint, and leaves such "details" as the pricing of interconnection and of unbundled services to be determined by the FCC and the States. But these details will be crucial, and their implementation will not be easy.

For example, how large is the right wholesale discount from a LEC to resellers? This question already has generated considerable controversy, embroiling state regulators in having to define and assess the costs a LEC avoids by delegating retailing functions to resellers. To illustrate, in Rochester AT&T requested a 45% discount off the retail price, while the incumbent LEC offered 5%. And in the debate over the 1996 Act, a seemingly trivial but actually important issue concerned whether the wholesale discount should reflect the LEC's "avoided" costs or costs that are "avoidable."[33] Prospective resellers of local service, such as IXCs, worried that "avoided" leaves the LECs excessive discretion to play games: a LEC might refuse to cut its marketing staff even if resellers could take over many customer related functions, in order to argue that no costs were "avoided" and therefore that the wholesale discount to rivals should be minimal. But if the wholesale discount is too small, then even a reseller that could perform marketing and other retailing functions more efficiently than a LEC would be unprofitable.

Unbundling of marketing and billing functions from others will be hard enough, as demonstrated by squabbles over the correct wholesale discounts to resellers. Unbundling of network elements is likely to be even harder. There are many fixed and common costs; network congestion is an important element in determining efficient prices; and some unbundling may pose technological challenges (for example, regulators will have to grapple

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[32] The requirements imposed on all incumbent LECs are very similar to those imposed on Bell companies as a precondition for being allowed to offer long-distance service originating in their service regions. The implementation process also is similar: parties are encouraged to reach interconnection agreements through voluntary negotiations, but either party may petition the State PUC to intervene at any time, and may seek binding arbitration during the period 135 days to 160 days after the incumbent LEC received the interconnection request. The State PUC must resolve the issue in a manner consistent with the FCC rules within 9 months of the original interconnection request to the incumbent LEC. If necessary, the PUC must impose a solution.

[33] The Act opted for the former: it requires incumbents to offer their services to resellers at wholesale rates, defined as retail rates less the costs avoided by incumbents.

with the phrase "any technically feasible point").

The difficulties with requiring LECs to share their local networks with competitors illustrate a general problem: it is notoriously hard for regulators to force a firm to do something against its interests. Regulators are far less informed about the business. Even if informed, they often lack adequate enforcement powers. Providing a firm incentives to cooperate is in general a more effective approach than issuing specific, detailed mandates. A powerful incentive to elicit cooperation with local entrants from LECs owned by the Bells (Bell-owned LECs account for about 75% of all LEC revenues nationwide) is to condition--as the Act does--a Bell's right to offer long-distance service on its cooperation with local entrants. If properly enforced, such a linkage will accelerate the development of local competition, thereby safeguarding competition in the long-distance market by reducing the Bells' ability to discriminate against IXCs; it also would bring the benefits of competition to the larger local market.[34]

In short, introducing competition into local networks is likely to be a complex and contentious process, requiring continued active involvement by state regulators, the FCC, the Justice Department, and possibly the courts. Nevertheless, by defining the broad rules and providing for active government involvement to implement agreements and referee disputes, the 1996 Act holds the promise of stimulating ubiquitous, vigorous competition with potentially enormous benefits to businesses and consumers.

5. REDUCING CROSS-SUBSIDIES AND REVAMPING UNIVERSAL SERVICE

A long-standing policy goal in the United States and many other industrialized countries has been promoting universal service--widespread access to service at a reasonable price. To some extent this goal can be defended on narrow economic grounds of positive network externalities, i.e., the benefits of subscribing to telephone service accrue not only to the subscriber but also to others who are interested in calling that person. Support for universal

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[34] Recall that in 1994 LECs' revenues from wireline phone service, including about $28 billion in access fees paid by IXCs, were about $100 billion; IXC revenues net of access fees were about $35 billion.

service, however, is based also on broader considerations--that all members of a society should be entitled to a certain level of key services.

Where attaining universal service is thought to require government intervention, because without it prices would be deemed too high in certain regions or to certain customer groups, economists generally advocate using targeted, explicit subsidies, financed through broadly based taxes. Traditional U.S. regulatory policy has *not* taken this route. Instead, regulators have pursued universal service by setting the rate structure of regulated telephone monopolists to implement a complex system of cross-subsidies.

Cross-subsidization arises when the price in one market does not cover the incremental cost of serving that market and the deficit is financed by charging a price above incremental cost in another market (more on this definition shortly).[35] The "markets" can involve different products (e.g., long-distance versus local calls) or different identifiable customer groups for a given product (e.g., residential versus business customers of local calls). Moving to competition from regulated monopoly-cum-cross-subsidies is likely to reduce some prices, but may increase others. The fear that some prices may rise could lead some groups to oppose competition. Inter alia, they might allege that entrants will engage in *cream skimming*--selectively serve only more lucrative markets and abandon the rest.

The possibility that some parties may lose from a move to competition of course is not sufficient reason to block such a move. One should consider the impact on overall welfare (in economic jargon, is the move a potential Pareto improvement?). To evaluate the overall impact, we must step beyond the rhetoric of "cross-subsidies" and "cream skimming" and ask if the current system of regulated monopoly pricing is the best way of achieving its purported goal of universal service.

Section 5.1 notes that cross-subsidies may be relatively efficient in certain circumstances, but the key question is whether these circumstances apply today. Section 5.2 reviews briefly the U.S. system of cross-subsidies, its tensions with competition, and its

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[35] "Cross-subsidization" was used earlier in the paper to describe attempts by a regulated monopolist to evade cost-based regulation by misattributing costs of its unregulated business to the regulated business, where the higher "costs" can be used to argue for a higher price. Here the term refers to the underpricing of some services financed by overpricing others, but at the initiative of regulators rather than the firm, seeking to finance certain social goals or favor certain groups.

economic distortions. It echoes the belief of many economists that today's cross-subsidies are inefficient and incompatible with a move towards increased competition in telephone service. Section 5.3 discusses the need for revamping universal service and the relevant steps undertaken in the 1996 Act.

5.1 Cross-Subsidies, Common Costs, and Economic Efficiency

The notion of cross-subsidies actually is not always well defined. The simplest case is where there are no fixed or common costs and the various markets could be served independently by different competitive industries at constant marginal costs. Cross-subsidies would involve regulators creating an artificial multimarket monopoly, and requiring the monopolist to set prices in some markets below marginal costs (these marginal costs are then the only relevant incremental costs of serving those markets) while funding the deficit from other prices that exceed marginal costs.

Defining cross-subsidies gets more complicated when serving the different markets entails *large fixed and common costs* that create a multimarket natural monopoly, as can occur in network industries. If the monopoly is to be regulated and if it is to be entirely self financing (receive no outside subsidies--an important and controversial assumption), the task of covering the fixed costs falls to regulators.[36] To cover these costs, prices in some markets will have to exceed marginal costs. And since the allocation of fixed and common costs is inherently arbitrary, the notion of "incremental cost" of serving a market is no longer clear cut, nor is the proper definition of cross-subsidies. In particular, if cross-subsidies are defined as entailing different markups of prices over marginal costs in various markets, cross-subsidies so defined may be efficient.

As stressed in the theory of Ramsey pricing, charging different margins can be efficient when demand elasticities differ across markets, because then it is least distorting to cover the fixed costs by charging relatively higher margins where demands are less elastic (see, e.g., Brown and Sibley, 1989; Laffont and Tirole, 1993). Doing so minimizes the inefficiencies from reduced consumption due to prices that exceed marginal costs. Even setting prices below the marginal costs of serving some market might be efficient if there are

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[36] Fixed and common costs create economies of *scope* between the different markets, but need not create a natural monopoly if the fixed costs are small relative to market demand and thus create only small economies of *scale*. In such a case competition is feasible, and the allocation of common costs does not require regulatory intervention. For example, large economies of scope exist in producing wool and mutton, as both share the common cost of sheep. But if there are no economies of scale in raising sheep, there will be many sheep producers, the wool and mutton markets will be competitive, and the resulting prices will allow producers to just cover the common cost of raising sheep.

strong positive externalities between markets (rather than demand independence as assumed in the basic model of Ramsey pricing). As noted earlier, telephone ownership by different customer groups likely generates such positive network externalities, which might make it efficient to price phone service below marginal cost to certain groups in order to encourage universal service.[37]

It is important to recognize that the issue of cross-subsidies can arise even when prices in all markets exceed the marginal costs of serving those markets, because of the thorny issue of how to allocate contributions for covering the fixed and common costs. Alternative technologies may be available to serve some of those markets at lower prices than the prices charged to those markets in the common-cost monopoly regime. Those markets are then said to be paying the monopolist more than their "*stand-alone costs*" and in this sense cross-subsidizing the other markets--even though prices in the latter may exceed marginal costs. The presence of such alternative ("bypass") technologies means that a multimarket natural monopoly may not be sustainable. That is, even a monopolist that earns only zero profit while pricing efficiently[38] could be vulnerable to inefficient "cream-skimming"--selective entry that targets only a more profitable subset of the monopolist's markets (Brown and Sibley, 1989; Laffont and Tirole, 1993).[39]

In short, cross-subsidies can be an elusive concept and a regulated monopoly exhibiting cross-subsidies conceivably may be efficient. If this view of the industry--as a ubiquitous multimarket natural monopoly that is pricing efficiently to recover common costs

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[37] Selective assistance to some groups may be necessary if there are large asymmetries in incomes. However, one can question the magnitudes of positive externalities from phone ownership, and the implicit assumption that many consumers would choose not to subscribe to phone service if forced to pay competitive market rates. Finally, as discussed later, even if many consumers would drop out, it is probably more effective to assist such consumers directly than by cross-subsidizing entire service classes (e.g., basic phone service to all).

[38] Efficiency could be in a narrow Ramsey sense, or might involve additional considerations such as income redistribution; Ramsey pricing places equal weights on a dollar to each consumer.

[39] The upshot could be higher prices in the remaining markets in order to cover the fixed costs; or worse, that these fixed costs simply can no longer be covered, the monopoly becomes non-viable and some markets go unserved. In both cases, consumption in the previously cross-subsidized markets is inefficiently reduced relative to the regulated situation.

but is vulnerable to cream-skimming entry--were accurate, policymakers would face a tradeoff: restricting entry would better allow exploitation of scale economies, but would deny the benefits of competition and impose regulatory costs. Many economists, however, challenge the above portrait of the telephone industry (e.g., Crandall and Waverman, 1995). They are wary of labeling too many costs as "fixed and common" and the industry as a ubiquitous natural monopoly. Moreover, to the extent there are fixed and common costs, current regulated prices do *not* recover such costs efficiently, nor promote universal service in the most efficient manner.[40]

5.2 Distortions in Current System and Tension with Competition

For many years regulators, supported by Congress, promoted universal service through a system of cross-subsidies among the markets served by a regulated monopolist and across different monopolists (Brock, 1994). Through a complicated nationwide pooling of telephone costs and revenues, local exchange carriers (LECs), especially in high-cost rural areas, received substantial subsidies to keep their rates low. The subsidies were financed by setting artificially high prices for telephone equipment and long-distance calls. In addition, long-distance rates were set by geographic averaging: rates for routes of the same distance were set equal despite different traffic densities and therefore different costs. Subsidies probably also flowed from business to residential customers generally, by overpricing enhanced services (largely used by businesses) to support basic service.

This system was administered by AT&T, whose affiliate Bell System companies provided most local telephone service nationwide and virtually all long-distance service. The system came under strain once AT&T's virtual monopoly began to erode. Inflated prices for equipment and long-distance service attracted entry. The growth of competition in customer premises equipment (such as telephone sets) in the 1970s and later in long-distance service

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[40] According to critics the current pricing structure may not reflect any broad public policy consensus, but regulatory capture: some groups might be more effective than others at influencing the regulatory process, e.g., all residential customers are sometimes subsidized by business customers. Or there may once have been a legitimate reason for a particular pricing pattern but conditions have changed, yet the pricing pattern survives due to political inertia.

reduced the funds available for cross-subsidies. In response, after the breakup of AT&T the FCC introduced fixed monthly fees for all telephone subscribers, reducing the need for subsidies; the FCC and State regulators also instituted explicit access fees for all long-distance carriers originating and terminating calls on LECs' networks. These access fees today still help finance subsidies to rural LECs.

The inflated access fees, however, prompted large business customers to bypass the local exchange, and instead use private lines to connect their premises directly to interexchange carriers (IXCs). Such bypass again threatens the revenue used to cross-subsidize other services. Some local phone companies also allege that revenue from high-volume local business customers cross-subsidizes basic local service to low-volume customers, so that permitting entry into local service also will threaten cross-subsidies: entrants will siphon off the lucrative business customers and reduce the revenue available to keep rates low to other customers. Thus, there is tension between the current system of cross-subsidies and the continued growth of competition. Critics of the present system start by noting its distortions.

Distorted Entry Decisions. As mentioned, access fees charged by LECs to IXCs have been substantially above costs and used partly to cross-subsidize service in rural areas and some basic service nationwide. Such pricing can distort entry in two ways: artificially high prices can encourage inefficient entry, and artificially low prices can discourage efficient entry. Correspondingly, the inflated access fees may have artificially encouraged the growth of competitive access providers that bypass local networks and link businesses directly to IXCs. The current system may also be discouraging efficient entry, and understating the potential for local competition. Artificially low prices for the subsidized incumbent's services can discourage even more efficient potential entrants from competing for such services (e.g., to serve rural areas), because under the current system only incumbents are eligible for certain subsidies.

Distorted Consumer Decisions. The current rate structure also distorts consumer decisions. High long-distance rates subsidize telephone subscription but discourage calling; raising the fixed charge for telephone subscription and reducing the prices for calls would stimulate

calling. The benefits from lower toll rates and expanded calling would make many consumers better off even after paying higher fixed charges.[41] Cross-subsidies from long distance to local service are sometimes defended on the grounds that low-income individuals use local service relatively intensively; but the correlation between income and long-distance versus local calling may not be strong, and some studies have indicated that high toll bills often lead to low-income subscribers being disconnected for nonpayment. Better ways can be found to assist those with low incomes.

Lack of Transparency. A necessary condition for good economic policy is to make costs and goals explicit and transparent. The true extent of cross-subsidies required to ensure goals such as universal service remains unclear because cross-subsidies are now implemented in opaque ways. Would many poor people really drop their telephone service if fixed charges rose but long-distance rates fell? Would entrants really shy away from rural areas, or would they serve them at only modestly higher prices? What portion of the inflated access fees charged for long-distance calls goes towards keeping basic local rates low as opposed to funding internal slack by local telephone monopolists?

5.3 Reforming Universal Service

One approach to preserving universal service and other social goals is to try and maintain a broad monopoly charged with meeting these social objectives, by legally prohibiting entry or by requiring all entrants to make substantial contributions to cover the incumbent's cost of providing below-cost services. The other is to permit widespread competition and develop alternative, market-based ways of funding legitimate social goals. Choosing between these paths reflects different world views about the current and likely future structure of the telephone industry. As technology changes, so will the extent of

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[41] The introduction of fixed monthly fees after the breakup of AT&T caused some to worry that marginal consumers would drop their telephone subscription. But the fall in long-distance rates worked in the opposite direction, to increase the value of phone ownership. From 1984 to 1993 the number of long-distance calling minutes rose by 130% (local minutes rose only 17%), and telephone ownership in the U.S. increased from 91% of all households to 94% (14.6 million subscribers were added).

economies of scale and scope, and with them the efficient industry structure. If these economies become modest, there will be serious losses from restricting entry to protect inefficient cross-subsidies from cream-skimming entry.

The Act reflects a belief that technological change in telecom is so rapid and promising that competition may be possible and desirable in many segments now or in the near future. These rapid changes, and the Act's removal of legal entry barriers as described earlier, imply that attempts to promote universal service by maintaining cross-subsidies through regulated monopolies will become both increasingly inefficient and less tenable. Many economists favor giving competition freer rein and letting prices adjust to better reflect true costs (Brock, 1994; Crandall and Waverman, 1995)

Competition is likely to cut the cost to society of providing universal service, by fostering cost reductions and innovative ways of providing service, and by curbing market power and forcing down prices more effectively than does regulation. Competition may well reveal that most people would get affordable basic telecom services without requiring subsidies. To the extent that assuring universal service will require residual government intervention, such intervention is more efficiently done through mechanisms that are more transparent, more targeted to the particular goals, and that do not distort competition. It is difficult to believe, for instance, that cross-subsidizing local rates by long-distance rates through a system of regulated monopolies is really the most effective way to assist the poor. In reforming the present system we must tackle several issues.

What Should Be Included in Universal Service? For many years there was only one basic service to be universalized or not: a telephone was a telephone. Today, however, telephone and other telecommunications networks are evolving to permit a much broader range of enhanced services. As conditions change, it will be important to review, perhaps on an evolving basis the range of services targeted for universal service, and be clear on what is meant by "sufficiently affordable" prices.

Who Should Be Eligible for Support? Should support be given to all rural areas, including luxury ski resorts? Or should it targeted to the poor wherever they reside? And how much should prices be allowed to vary to reflect differences in the costs of serving different

regions?

How Should Universal Service Be Funded and Provided? Once the goals have been clearly identified, funding mechanisms should be devised that do not distort competition. At present, subsidies to serve ostensibly unprofitable markets are not offered to all comers on an equal footing, but are reserved for incumbent monopolists and financed through surcharges on long-distance and other services. Alternative financing methods would be less distorting and more compatible with competition. An example might be a universal service fund, financed by charges levied on all telecommunications carriers, or more broadly. All eligible consumers, whether low-income individuals or designated regions, could draw on the fund, to help them pay for the provider of their choice. Alternatively, the right to provide subsidized service to a designated group could be allocated through competitive bidding by all qualified potential providers.

Revamping the funding of universal service is an integral part of increasing competition in telephone service. In the absence of explicit funding mechanisms, regulators might feel compelled to ensure universal service by protecting incumbents from "unfair competition."[42] For example, they might require entrants to offer a configuration of services, regional coverage, and rate structure very similar to that of the incumbent LEC monopolist. Such obligations could easily stifle competition. Forcing an entrant to be a clone of the incumbent could make entry unprofitable, because some--though not all--elements of local service may still be natural monopolies. Entry is more likely to occur and to be socially valuable if entrants are not forced to duplicate the incumbent's offerings but instead are given flexibility in choosing the technologies with which to serve customers and the mix of services so as to best exploit their comparative advantage.

5.4 The 1996 Act

The 1996 Act does not fully resolve these issues, but does take some useful steps. It requires the formation of a Federal-State Joint Board, representing State and Federal

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[42] Texas recently gave rural phone companies three years of added protection against entry and Wyoming ten (Pearl, 1995).

regulators and consumers, to review thoroughly the existing system of Federal support for universal service. The Board is to recommend reforms within 9 months of enactment. Within 15 months of enactment, the FCC is to complete a proceeding to incorporate the Board's recommendations and establish a specific timetable for implementation. The Act articulates some general principles to guide the reform.

Regarding *what* is included in universal service, the Act stipulates an evolving level of telecom services that the FCC shall define periodically in light of technological changes and market adoption patterns. A core principle in the Act is that *advanced* information services should be made widely available through public institutions such as schools, hospitals and libraries. To promote this goal, all telecom carriers are required to provide service to health care facilities in rural areas and to schools and libraries at discounted rates (more on this point below). Targeting the provision of advanced services through public institutions represents a sensible balance between the desire to make such services widely available, and the danger that mandating widespread provision at discounted rates could severely curtail the profitability of such services and stifle their growth.

Regarding *who* is eligible for support, a principle in the Act is that consumers "in all regions" should have access to telecom and information services whose quality, variety and rates are "reasonably comparable" to those available in urban areas.[43] But it goes further as regards interexchange and interstate telecom services--which include telephone service--by requiring the rates charged to residential subscribers in rural areas to be "no higher" than those charged in urban areas (this incorporates existing policies of geographic rate averaging). Many economists would balk at such a rigid requirement. After all, there are many offsetting benefits of living in rural areas; for example, we do not--and for good reason--try to equalize housing prices in urban and rural areas.

Regarding *funding* of universal service, the Act's principles call for making support mechanisms explicit, targeted and predictable, and for requiring all providers of telecom services to make nondiscriminatory support contributions. The FCC shall determine the appropriate contributions by interstate carriers (though it may exempt small carriers whose

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[43] In designating consumers "in all regions" the Act adds low-income consumers regardless of their location to the list of consumers to whom access should be provided.

contributions would not justify the administrative costs involved); State regulators shall do so for intrastate carriers. Carriers that provide discounted service to public institutions as discussed above may elect to count these discounts as credits towards their required contributions to universal service, or to receive reimbursement from the support funds.

So far the Act's approach to universal service reform is consistent with moving from monopoly to competition, but there are potential tensions. While the Act requires States to remove barriers to competition, it allows them to "impose, on a competitively neutral basis...requirements necessary to preserve and advance universal service..." This language might permit States to require entrants to provide a very similar menu to that of the incumbent, such as similar regional coverage, in the name of preventing cream skimming that would threaten the incumbent's viability and thus universal service. As mentioned earlier, such seemingly "competitively neutral" requirements could nevertheless deter entry by depriving entrants of valuable flexibility. On the other hand, given the considerable uncertainty about the feasibility and imminence of competition in local phone service, a case can be made that States should be accorded latitude in determining their competition policies. Such experimentation may yield useful lessons. It remains to be seen how States will avail themselves of the latitude they have under the Act.

Another source of potential tension between universal service and competition lies in determining which carriers are eligible for subsidies to serve high-cost areas. At present, only incumbent telephone carriers qualify for many cross-subsidies. The Act changes tack in regions not served by rural telephone companies: if more than one carrier seeks to be designated as eligible for financial support to provide service in a particular (high-cost) area, the State PUC must designate all such carriers as eligible. In an area served by a rural telephone company, however, the PUC may designate an additional carrier as eligible only if it first determines this to be "in the public interest." This places a potentially high hurdle for the PUC, and tilts the playing field towards incumbent LECs. Placing the burden of proof on the advocates of competition is unfortunate, because it could delay competition even as technological advances, especially in wireless services, are increasing the scope for competition also in low-density rural areas.

On balance, however, the direction taken by the Act promises to better harmonize the goals of promoting competition and advancing universal service. Perhaps the safest verdict

is cautious optimism.

6. CONCLUSION

Attempting a definitive "conclusion" in an area as volatile as telecom is clearly premature. Instead, I recap some of the main points. There is strong consensus in the U.S. that telecom regulation should be reformed to allow a greater role for competition. Many feel that such reform is long overdue. The 1996 Telecommunications Act, which passed with overwhelming bipartisan support, takes serious and wide-ranging steps in this direction.

It is important, however, not to become euphoric but to hold realistic expectations. Reform in telecommunications is not an easy business. The Act calls for implementation of many requirements. But calling for and actually implementing difficult, technical issues of interconnection and unbundling are two different things. "Nondiscrimination" is an elusive concept when the circumstances of different transactions differ in costs and quality (Schwartz, 1986b). We can expect many hurdles ahead, especially in promoting competition in the huge telephone sector.

Indeed, cynics have called the Act "five pages deregulation, and two hundred pages regulation." They note that the Act does not eliminate much of the highly regulatory language in the 1934 Communications Act, while adding more requirements. A partial reply to this concern is that the Act (in section 401) also gives the FCC substantial discretion to refrain from enforcing certain provisions of the Act if it determines that enforcement is not necessary to protect consumers and would not be in the public interest. In making this determination, the FCC is to consider whether its regulatory forbearance would foster competition. This new regulatory flexibility is potentially quite important.

Cynics might reply, correctly, that this flexibility to make exceptions does not cover the Act's restrictions on the Bell companies' ability to offer unregulated services such as long-distance, nor requirements on local telephone companies to share their networks with competitors. In a sense the cynics are right: the Act does contain a lot of regulation of local telephone companies. But in a more important sense they are wrong: hands-off deregulation is not an effective way to introduce competition into local service given the prevailing monopolies over local networks. The key network externalities in telephone service mean

that entrants will at a minimum need adequate, economical interconnection and there is no avoiding the need for a referee to enforce this.

Moreover, since long-distance service requires access to local networks, increasing competition in long-distance service is not a simple matter of letting the Bells enter with no competitive safeguards. As long as the Bells' access fees to long-distance carriers remain regulated--and there is a good reason for maintaining such regulation until strong competition develops in local networks--the Bells, if allowed to offer unregulated long-distance service, will have incentives to discriminate in access against long-distance carriers and shift profits towards their own affiliates. The 1984 AT&T breakup attempted to prevent such behavior, many would say quite successfully, through structural separation of the regulated and unregulated markets. To attain greater economies of scope and increase the number of potential players, the 1996 Act abandons structural separation. But without strucutral separation, preventing access discrimination may well necessitate increasing the regulation of Bell conduct.

One can look at the glass as half empty or half full. No doubt the road to competition will be bumpy. On the other hand--and all economists have at least two hands--these difficulties should subside once local competition takes root. Many of the problems are ones of transition, and stem from the initial asymmetries of the players. Denying interconnection is a potent strategic weapon for a dominant incumbent; it may be self defeating for a player in a symmetric industry structure. Accordingly, just as the presence of several competing long-distance networks has produced an active market in leasing bulk capacity, securing widespread access to local facilities will require far less regulation if local competition develops. A key question is how fast this will occur.

Overall, the Act holds much potential. It clarifies the rules for investors, thereby providing greater certainty. This alone should result in significantly increased investment. With the removal of artificial governmental barriers to competition but maintenance of proper competitive safeguards against private barriers, competition in telecom should flourish, bringing an explosion of innovation, new services, and lower prices. Of one thing we can be certain: the future in telecom will not be dull!

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