

EVALUATING COMPETITIVENESS OF TELECOMMUNICATIONS MARKETS:  
A GUIDE FOR REGULATORS

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## EXECUTIVE SUMMARY

For the past two decades, actions by the FCC, courts, and state public utility commissions have opened telecommunications markets to competitive entry. Now the question facing regulators is, "Is there enough competition to result in fair prices in the absence of regulation?" Over thirty states have passed legislation enabling state commissions to deregulate dominant telecommunications carriers, if the commissions can answer, "yes."

Competition seems an ordinary word, understood by everyone, but in fact there is a range of market structures between monopoly and perfect competition. Informed observers can differ as to whether a market is basically competitive or noncompetitive. This report attempts to assist state commissioners in being informed participants, to shed light on some aspects of competition.

### Goal Setting

In developing rules for deregulation it is helpful for commissions to consider explicitly, if informally, their goals. One reason that informed observers differ in their assessment of a market as competitive or noncompetitive is that they may have different goals or prioritize the goals differently. A commissioner who emphasizes a reduction in regulatory costs will choose to deregulate a market at a higher level of market concentration than a commissioner whose first priority is reasonable rates.

### Market Structure and Performance

Another reason that informed observers differ is that there is a continuum of market structures. Few markets are perfectly competitive and few are pure monopolies. Perfect competition is preferable to monopoly in several respects (lower prices, greater output, and no concentration of social power), but in the continuum of market structures, most have some competitive characteristics and some monopoly ones.

Monopolistic competition refers to a situation in which there are many firms (like perfect competition), but each has a differentiated product and a downward-sloping demand curve (like a monopolist). The private branch exchange (PBX) and customer premises equipment (CPE) markets might fall into this category. Although price exceeds marginal cost in monopolistically competitive markets, economists often conclude the variety in products makes consumer satisfaction comparable to that of a perfectly competitive market.

Oligopoly refers to a market with only a few firms. In this case, several factors influence whether the market is basically competitive or noncompetitive. One factor is the size distribution of the firms. If there is a dominant firm, as in most telecommunications markets, the unregulated market price may exceed costs for a considerable time. A second factor is barriers to entry. As discussed by Professor Joe S. Bain and, more

recently, in the contestable markets literature, a profit maximizing monopolist or dominant firm will choose a higher price if there are barriers to entry by would-be competitors. In telecommunications exclusive franchises, capital and advertising requirements, and the need for interconnection are among the barriers to entry. A third factor affecting market competitiveness is the nature of the product. Telecommunications markets possess several factors which facilitate tacit collusion: (1) homogeneous products, (2) frequent, small, regular transactions, and (3) posted price lists. However, the high ratio of fixed to variable costs in telecommunications promotes price rivalry.

In short, in setting criteria for deregulating markets economic theory and the industrial organization literature indicate it is necessary to assess the number and size distribution of firms in the industry, the barriers to entry and exit, and the nature of the product.

#### Competitive Standards in Other Markets

In distinguishing between competitive and noncompetitive telecommunications markets commissioners can draw upon antitrust standards and comparisons of market concentration in telecommunications with concentration in other markets.

Antitrust law is effective in stopping explicit collusive behavior, but not in stopping tacit collusion. Since telecommunications markets have features which promote tacit collusion, antitrust law provides neither guidance to regulators nor protection in case of premature deregulation. Antitrust law prohibits "monopolization" in Section 2 of the Sherman Act. Although successfully invoked in the divestiture of AT&T, the legal history of Section 2 does not offer explicit market concentration criteria. Instead, the courts determine in a somewhat ad hoc fashion whether (a) the dominant firm has market power and (b) whether that market power was acquired or maintained by predatory practices. Some economists contend that the lack of consistent criteria for market power and the condition that the power be unfairly acquired or maintained reduce the effectiveness of Section 2. Finally, in determining which mergers to challenge for anticompetitive effects, the Department of Justice developed criteria which may be helpful for state commissions in deregulating telecommunications. The Department of Justice measures market concentration by the Herfindahl-Hirschman Index. A compilation of the HHIs in the most recent Census of Manufactures suggests high concentration in telecommunications relative to other industries.

#### Competitive Outcomes

While competitive markets perform better than others, they often exhibit some turmoil. Open entry and deregulation of airlines led to lower prices and higher load factors (passengers per flight), but also to a proliferation of airlines and later consolidation. In the late 1970's deregulation, coupled with higher energy prices, reduced the profitability of airlines. In telecommunications, ventures by diversified telephone companies (the Regional Bell Holding Companies and AT&T) have exhibited lackluster performance, partly due to start-up costs and perhaps partly due to mistakes. As some telephone markets become increasingly open to competition, telephone companies are likely to make losses as well as

profits, so regulators will need to be increasingly on guard that the companies do not compensate for competitive losses by increasing prices in their remaining monopoly markets. In fact, as telecommunications markets become competitive, one might see bankruptcy rates similar to those in other industries.

### Regulation in Monopoly and Competitive Markets

An unregulated natural monopoly faces little potential competition, because the minimum optimal scale is nearly the entire market. The monopolist will select a price which exceeds marginal cost. It will receive higher profits than it could in alternative enterprises, especially when the market demand for its product is inelastic, as it is for most public utilities.

One solution for authorities is to change the market structure, to break the firm into small competitors. However, divestiture often causes society to forego economies of scale, so most nations have tried to control a public utility's behavior directly, through public ownership or rate-of-return regulation. Whether the price is set at the efficient, marginal cost price or the zero profit, average total cost price, a regulated price is likely to be lower than an unregulated monopolist's. The drawback is that regulation generates social costs as well. An NTIA study suggests the direct regulatory costs are less than one percent of telecommunications service revenues. Telephone regulation seems effective. From 1960 to 1981, the Consumer Price Index rose at a 5.5 percent annual rate and the Handy-Whitman Index of costs incurred by telephone companies rose 3.7 percent per year, but the rates paid by consumers, as measured by the telephone component of the CPI, rose only 1.8 percent per year.

Price regulation of competitive markets is often neither efficient or sustainable. It is not efficient because it forces the price paid by consumers to differ from the marginal cost to society of providing the service. Price regulation is also not efficient because it often generates a surplus (as with agricultural price supports) or a shortage (as with regulation of domestic oil prices in the 1970's). Regulators have difficulty coping with the surpluses, shortages, and the large number of firms in an otherwise competitive market. The benefits of price regulation are that it may promote short term market stability and equity, but most economists contend that other policies can achieve the same goals with fewer detrimental effects.

In short, there are costs to deregulating a monopoly prematurely and costs to continuing regulation of a market which has become competitive. Often careful consideration is necessary to determine whether an apparent monopoly is in fact a monopoly. A cable television franchise or a single railroad serving a town may appear to have a monopoly, but may actually be subject to competitive pressure from other services. Cable television faces competition from off-the-air television, VCRs, movies, radio, and other news and entertainment sources. A railroad competes with trucks for freight customers and with buses and personal automobiles for passengers. In telecommunications local exchange carriers provide the only central office based switch for large businesses (Centrex), but private branch exchange (PBX) vendors are strong competitors.

Most telephone companies provide both monopoly and competitive services. There are several alternatives for regulators to prevent cross-subsidization and predatory interconnection by telephone companies in their competitive ventures: divestiture, technical standards, separate subsidiaries, accounting separations, price caps, and peak responsibility cost allocation. The choice among them is difficult because some have never been implemented and none addresses all problems completely.

#### Guidelines

One can combine the information above into a seven point process for deregulation: (1) Set prices according to costs. (2) Eliminate unnecessary barriers to entry. (3) Observe market concentration. (4) Observe whether price is maintained above cost. (5) Assess whether the characteristics of the product facilitate tacit collusion. (6) Look for competition from seemingly dissimilar sources when determining the relevant market definition. (7) Adopt a method for controlling cross-subsidies from the monopoly to the competitive services of the firm, and observe the results of alternative methods adopted in other jurisdictions.

In general, commissions can facilitate competition, but will want to insist upon evidence of current competition before deregulating the dominant carrier's service. Deregulation of a currently noncompetitive market, based on projections of future technological improvement and competition, is likely to lead to high short term prices relative to those under regulation, and possibly high long term ones, too, since forecasts of rapidly changing technology are uncertain. Compared with state legislatures, regulatory commissions are better able to judge whether there is effective competition, and better able to adapt to unforeseen problems with deregulation.

#### Studies of Post-Divestiture Competition in Telecommunications

Competition varies among states, Local Access and Transport Areas (LATAs), and services, so each commission must do studies of its own. However, it is possible to learn from studies of competition by others. A study by the Virginia State Corporation Commission, for example, shows that after divestiture, AT&T reduced its off-peak discounts for intrastate long distance services in many states, effectively raising prices. This occurred in both states which continued rate-of-return regulation and those, like Virginia, which deregulated AT&T. It may partially reflect differing levels of competition (high volume business day customers have more alternatives than off-peak residential customers). It may also reflect post-divestiture AT&T access costs, which constitute much of its cost of service and which are not usually time-of-day sensitive. In any case there is little evidence that competitive pressure forced AT&T to reduce its rates to reflect the reduction in its access costs after divestiture. The California Public Utility Commission performed a survey of telecommunications experts. The survey indicated that some services (e.g. basic local, intraLATA switched services, and interLATA switched services) are not competitive. Others, such as mobile services, are quite competitive, and all services are expected to become somewhat more competitive by 1991.

An FCC study of interstate switched services shows that AT&T's market share fell to 74% after divestiture, partly due to additional entrants and

partly due to the equal access provisions of the Modified Final Judgment (MFJ). An examination of the telephone components of the CPI shows the jump in local charges and the decline in interstate long distance rates due to post-divestiture competition and the FCC subscriber line charge.

Finally, in preparation for the triennial review of the MFJ, Dr. Peter Huber presented data and analysis for the Department of Justice, showing that competition is patchy in some markets, but likely to improve as telecommunications moves toward "geodesic" networks. Judge Harold Greene reviewed the evidence of Huber and others and concluded that the Regional Bell Holding Companies continue to control the "local bottleneck."

In summary, few studies of post-divestiture competition exist and are often inconclusive about the extent of competition. This is to be expected, since many markets have not been open to competitive entry very long. Conclusions at this point are tentative, but raise concern about the effectiveness of competition in several markets. A review of the studies points to the need to monitor data on markets (particularly based on LATAs and individual services) before and after deregulation by a commission.

#### Local, IntraLATA, and InterLATA Deregulation

Telecommunications markets are difficult to enter for several reasons. The dominant firm in local (the LEC), intraLATA (the LEC), and interLATA (AT&T) initially served the entire market. To expand, entrants must attempt to win over the dominant firm's customers or hope for overall market growth. This problem is exacerbated by the high fixed costs of telecommunications entry. Once interexchange carriers have established a point-of-presence in a LATA in order to provide interstate service, the incremental costs of entry into the intrastate long distance markets from that LATA is easier.

The minimum optimal scale is more likely to be achieved by entrants in long distance services than in local services, due to the nature of transmission facilities. The nature of switched services (frequent, small sales, homogeneous product, posted tariff prices, dominant firm) promote tacit collusion among interexchange carriers. Private line services and networks are characterized by conditions which inhibit tacit collusion.

The local bottleneck problem is more serious in intraLATA competition than in interLATA competition because the MFJ prohibits the BOCs from entering interLATA, but not intraLATA, toll markets. Other conditions also suggest that interstate competition will continue to exceed intrastate, interLATA competition, which in turn is likely to exceed intraLATA competition.

#### Concluding Remarks

This report indicates several aspects of competition which are important to commissions considering telecommunications deregulation. This report proposed qualitative steps for market analysis of competition. It is not possible to draw specific market concentration and other mechanical criteria which are applicable for deregulation in all states. Each state shapes its regulatory and deregulatory policies based on its goals and circumstances. Much is still unknown about the amount of competition in

particular telecommunications markets. Diversity in deregulatory approaches permits tests of the evidence.

Although many informative studies of telecommunications competition have been made, additional LATA and service specific studies are needed. The actions of market participants suggest that competition in both local distribution and long distance service is not very strong. Judge Greene noted, for example, that the presumed beneficiaries of a relaxation of MFJ restrictions on Regional Bell Holding Companies (business and residence user groups) almost unanimously oppose the relaxation. Similarly, it is counter intuitive that MCI and Sprint support deregulation of AT&T by the FCC, since that presumably would make AT&T a better competitor. Perhaps the most clear conclusion is that caution is called for in telephone deregulation.

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## FOREWORD

At its September 1987 meeting the Institute's Board of Directors asked us to give priority in the Telecommunications and Water Research Division to preparing a report for use by regulators (especially newer ones) in understanding and evaluating arguments about competitive markets in telecommunications. This document is the result of that effort.

Douglas N. Jones  
Director  
Columbus, Ohio

January 14, 1988



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In collaborative efforts such as this it is difficult to assign credit (and blame). As principal author, John Horning directed the project, amended the work of the other authors, and wrote the executive summary, chapters 1, 3, 5, and parts of chapter 7. Raymond Lawton helped coordinate the work effort and wrote chapter 4 and part of chapter 6. Jane Racster wrote part of chapters 6 and 7, and William Pollard drafted chapter 2 and part of chapter 7. Douglas Jones authored appendix A and Vivian Davis prepared appendix B.

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CHAPTER 1  
INTRODUCTION

Many state public utility commissions and state legislatures are considering proposals to deregulate a portion of the regulated telephone markets. Some proposals attempt to simplify regulation by continuing to assume a monopoly market structure for core services while trusting competition to result in a public interest outcome for the rest. Other proposals rely on competition to hold down prices in the absence of all regulatory oversight.

In the latter case state regulators face several difficult questions: Is the particular market sufficiently competitive? Can the competitive process be protected from predatory practices? Can customers in noncompetitive markets be protected from undue price discrimination? The purpose of this report is to assist regulators and legislators in addressing these questions.

Organization of the Report

The report consists of seven chapters. The remainder of this chapter describes the background for the deregulatory proposals and the performance criteria by which the proposals are judged. Before evaluating proposals it is helpful to explicitly review the criteria to be used. These might include price, quantity, quality, technological innovation, income distribution and economic efficiency. A proposal may be an improvement according to some criteria, but not according to others. This report reviews the pros and cons of each proposal, but state commissions and legislatures decide which criteria are most important.

Part I examines the role of market structure. Chapter 2 uses economic theory and industrial organization literature to discuss the spectrum of market structures and the effect of competitive and noncompetitive market structures on the performance criteria. In chapter 3 antitrust guidelines for distinguishing between competitive and noncompetitive markets are

evaluated to develop lessons for telecommunications deregulators. Chapter 4 contains a discussion of one feature of competitive markets which advocates of deregulation sometimes overlook: not all firms in a competitive market succeed. Moreover, the dominant telecommunications provider is likely to lose money in some of its ventures in competitive markets.

Part II looks at regulation and competition in telecommunications. Chapter 5 explores the effects of regulation on monopolies, competitive firms, and telephone companies, which serve both competitive and monopoly markets. It reviews the difficulties of applying regulation to telephone companies, which serve both competitive and monopoly markets, and offers a revised set of guidelines for assessing competition. Since competition takes time to develop, chapter 5 considers approaches to relaxing regulation of telephone companies as a market segment becomes competitive.

Chapter 6 reviews the results of competitive entry and/or deregulation so far and offers advice for studies to monitor the effects of deregulation.

Chapter 7 applies the guidelines developed in earlier chapters to three current policy proposals: (1) deregulation of intrastate, interLATA carriers, especially AT&T, (2) deregulation of intraLATA toll service, and (3) deregulation of local service.

There are four appendices. Appendix A gives a history of telecommunications initiatives by the courts, by state and federal commissions, and by state and federal legislatures. New regulators may appreciate appendix B, which provides the positions of several parties and expert witnesses on deregulation. Appendix C lists the works cited in this report, and appendix D contains some additional useful publications.

### Background

The current deregulatory proposals are the most recent phase in the trend towards increased competition in telecommunications over the past three decades. Table 1-1 and appendix A detail the initial phases. First, decisions by the Federal Communications Commission (FCC) and the federal courts opened several markets to competitive entry: private line, customer premises equipment (CPE), and long distance service. Second, the authorities attempted to prevent predatory behavior by AT&T, the incumbent firm. The FCC registration program to permit connection of registered

TABLE 1-1

PREDIVESTITURE CHRONOLOGY OF TELEPHONE COMPETITION DECISIONS

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1956	"Hush-a-phone" decision for the first time grants telephone customers the right to use their phones in a "privately beneficial" manner.
1959	FCC allows construction of microwave facilities above 890 megacycles for private use.
1968	Carterfone decision opens the telephone terminal equipment market to competition.
1969	FCC authorizes MCI to establish a microwave transmission system to serve multiple business customers.
1971	FCC allows all telecommunications companies, except AT&T, to provide computer services on an unregulated basis if done through a separate subsidiary.  Specialized common carriers are encouraged, by the FCC, to enter the private line telecommunication market.
1974	Department of Justice (DOJ) files suit against AT&T charging them with antitrust violations and seeking to break-up the Bell System.
1975	FCC found that MCI's Execunet Service (a long distance service) exceeded its operating authority.
1977	FCC's registration program is adopted permitting connection of registered terminal equipment to the telephone network without a protective device.
1978	U.S. Court of Appeals orders AT&T to provide MCI with connections enabling it to provide long distance service.
1980	FCC issues Computer Inquiry II allowing deregulation of customer premises equipment effective January 1, 1984.
1981	FCC authorizes entities to buy and resell long distance services.
1982	AT&T & DOJ announce a settlement to the antitrust case whereby AT&T agrees to divest its 22 Bell operating companies.  Judge Greene of the U.S. District Court for the District of Columbia approves the settlement.
1984	Divestiture occurs.

---

Source: Rhonda Fergus, Public Utility Commission of Ohio

terminal equipment to the telephone network is one example; the divestiture of AT&T is another.

As competition began to flourish, two new phases of regulatory activity became prominent. First, to enable the incumbent firm to respond quickly and effectively to its competitors, the FCC and many state public utility commissions have adopted "flexible price regulation" for the incumbent firm. Table 1-2 shows the status of flexible regulation in the states. Second, many state commissions and legislatures (see table 1-3) authorized deregulation of firms or services when their markets become sufficiently competitive. Competition, rather than regulation, would then restrain prices.

Regulators and legislators face several difficulties in service-by-service and market-by-market deregulation. For instance, what criteria should be used to determine whether competition is sufficiently strong to permit deregulation? How can commissions prevent a regulated firm from subsidizing its competitive ventures with funds from its monopoly services? The first question, however, is "What is it that is intended to be accomplished?"

#### Performance Criteria

A proposal can be judged on the extent to which it satisfies social goals. Legislative intent, sometimes explicitly stated in bills, is often a mixture of goals and the policies to achieve them. The 1987 telecommunications deregulation bill (H.B. 563) in Ohio, for example, gives its intent as:

1. Encourage innovation
2. Promote diversity and options in telecommunications services and equipment
3. Maintain reasonable and affordable charges for basic local exchange service
4. Maintain public utilities commission jurisdiction over telephone companies to the extent necessary to ensure the availability of basic local exchange service throughout the state

TABLE 1-2

## SURVEY OF FLEXIBLE COMPETITION AND REGULATION

State	Degree of Regulation		
	AT&T	OCC	Reseller
Alabama	A,R,P	A,R,P	A,P
Alaska	n/a	P	P
Arizona	B,R	B,R	D
Arkansas	A,R,P	A,P	A,P
California	A,R,P	D	D
Colorado	A,P	A,P	D
Connecticut	n/a	P	P
Delaware	P	P	P
Florida	B,R	D	D
Georgia	A,R,P	A,R,P	D
Hawaii	n/a	A	n/a
Idaho	C,R,P	P	D,P
Illinois	F	F	F
Indiana	A,R,P	A,P	A,P
Iowa	A,R	A,R(1)	A,R(1)
Kansas	B,R	D	D
Kentucky	A,R,P	D	D
Louisiana	B,R	D	D
Maine	P	P	A,P
Maryland	D	D	D
Massachusetts	A,R	A	A
Michigan	B,R,P	D	D
Minnesota	D(2)	D(2)	D(2)
Mississippi	B,R	B	D
Missouri	B,R,P	B,P	B,P
Montana	C,R	D	D
Nebraska	D	D	D
Nevada	D	D	D
New Hampshire	n/a	n/a	n/a
New Jersey	B,R	B	D
New Mexico	n/a	n/a	D
New York	B,R,P	C,P	C,P
North Carolina	C	D	D
North Dakota	n/a	n/a	D
Ohio	B,P	B,P	B,P
Oklahoma	A(3)	A(3)	D
Oregon	B	D	D
Pennsylvania	A(4)	A(4)	D
Rhode Island	n/a	n/a	n/a
South Carolina	C	C	C
South Dakota	n/a	n/a	D,P

TABLE 1-2 (continued)  
SURVEY OF FLEXIBLE COMPETITION AND REGULATION

<u>State</u>	<u>Degree of Regulation</u>		
	<u>AT&amp;T</u>	<u>OCC</u>	<u>Reseller</u>
Tennessee	C	D	D
Texas	B,R	D	D
Utah	n/a	n/a	D
Vermont	n/a	D	D
Virginia	D	D	D
Washington	D	D	D
West Virginia	D	D	D
Wisconsin	A,R,P	A,P	D
Wyoming	n/a	n/a	A

Key:

- A - No pricing flexibility: Any tariff change requires prior state approval
- B - Banded rates: Company free to move rates between ceiling and floor levels
- C - Ceiling prices only: Company can set rates at any point below rate ceiling
- D - Full pricing flexibility: Company may reprice without prior state review
- F - Floor prices only: Company can set rates at any point above floor level
- P - Pending proceeding may result in changes to regulation in the future
- R - Rate of return prescribed by state

OCC = Other Common Carrier: A facilities-based carrier other than AT&T

\* Single-LATA state

n/a = Not applicable

- (1) Iowa does not regulate telecom firms having fewer than 15,000 subscribers
- (2) Minnesota PUC can order rollback & refund for 10 months after effective date
- (3) Oklahoma has 30 days to veto rate changes; inaction means approval
- (4) Changes below threshold level are decided within 30 days; denial is rare

Source: Table appears in State Telephone Regulation Report, September 24, 1987, p. 3.

TABLE 1-3

## TYPES OF DEREGULATORY LEGISLATION

<u>State</u>	<u>Identification of Law</u>	<u>Year Enacted</u>	<u>Type</u>
AZ	ARS sec. 40-281(E)	1984	unique
CO <sub>1</sub>	CRS sec. 40-15-108(8) [now at sec. 40-15-203 (6)(a)]	1984	RFM
CO <sub>2</sub>	CRS art. 40-15 (HB 1336)	1987	stepdown var. (RFM)
CT	Public Act No. 87-415 (SB 1046)	1987	RFM (IX)
IL	1985 Ill. Laws. 7048	1985	self- certification
IN	ICA sec. 8-1-2.6-1 to 8-1-2.6-7	1985	RFM
IA	IC sec. 476.1	1983	quasi-RFM
MI	1986 Mich. Pub. Acts 305	1986	RFM
MN	SF 677	1987	stepdown var. (RFM)
MO	HB 360	1987	stepdown var. (RFM)
MT	MCA sec. 69-3-801 to 69-3-824	1985	detariffing var. (RFM)
NE	LB 835	1986	Neb. model
NV	Act of 5/31/86, ch. 360, 1985 Nov. Stat. 1016	1985	RFM
NM	NMSA sec. 63-9A-1 to 63-9A-20	1985	detariffing var. (RFM)
NC	NCGS sec. 62-2, 62-110	1984	RFM (long distance)
ND	1985 N.D. Sess. Laws. ch. 515	1985	RFM
OR	Act of 3/19/85, ch. 550, 1985 Or. Laws	1985	RFM
TX <sub>1</sub>	TRS art. 1446c	1983	unique
TX <sub>2</sub>	SB 229	1987	unique
TX <sub>3</sub>	SB 444	1987	RFM (local exchange)
UT	UCA sec. 54-86-1 to 54-86-9	1985	RFM
VT	S 114	1987	RFM + "social contract"
VA	VC sec. 56-481.1, 56-482.1, 56-482.2	1984	RFM (IX)
WA	Act of 5/21/85, ch. 450, 1985 Wash. Laws 1976	1985	RFM
WI	1985 Wisc. Laws 297	1986	RFM

Notes:

Standard Regulatory Flexibility Model (RFM)

- <sup>1</sup> Ultimate responsibility for deregulation is delegated to the PUC by the legislation.

TABLE 1-3 (continued)  
TYPES OF DEREGULATORY LEGISLATION

Notes, continued:

- <sup>2</sup> The PUC is given broad discretion to determine the scope and nature of deregulation. Thus, "deregulation" means regulatory flexibility as determined by the PUC, and may include complete and total deregulation.
- <sup>3</sup> The standard for deregulation by the PUC is the existence of competition.

Stepdown Variation of RFM

- <sup>1</sup> Ultimate responsibility for deregulation is delegated to the PUC by the legislation.
- <sup>2</sup> The PUC is given broad discretion to determine the scope and nature of deregulation, but must deregulate in steps specified by the legislature. Usually there are three steps from full regulation to deregulation.
- <sup>3</sup> The standard for deregulation by the PUC is the existence of competition.

Detariffing Variation of RFM

- <sup>1</sup> Ultimate responsibility for deregulation is delegated to the PUC by the legislation.
- <sup>2</sup> The PUC is given discretion to detariff, but cannot deregulate further. Thus, although the PUC may also be given discretion to prescribe other forms of regulatory flexibility, "deregulation" essentially means detariffing, not complete and total deregulation.

Nebraska Model ("social contract")

- <sup>1</sup> Deregulation is accomplished by the legislation itself, and the PUC is delegated essentially no responsibility for deregulation.
- <sup>2</sup> "Deregulation" means essentially total cessation of rate regulation of all telecommunications services and companies, and the PUC is given no discretion to determine the scope or nature of deregulation.
- <sup>3</sup> No standard for deregulation is provided or necessary; in particular, the existence and degree of competition are immaterial.
- <sup>4</sup> [In some (but not all) cases, cessation of rate regulation of basic local exchange service is conditioned on rate increases for such service not exceeding certain maximums over particular periods of time.]

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Source: Philip E. Stoffregen of Brick, Seckington, Bowers, Schwartz and Gentry, P.C., in a presentation to the Second Annual Conference on Deregulation and Competition, Washington, D.C., September 21, 1987

5. Modify traditional rate regulation to provide for price regulation and detariffing of certain services and equipment provided by telephone companies
6. Establish lifeline telephone service to be provided by basic local exchange carriers

Points 1 through 4 are goals, while points 5 and 6 may be means by which the goals of reduced transactions (regulatory) costs and income redistribution (lifeline service) are achieved.

Similarly, recently passed legislation in Wisconsin declared that:

1. Universal telecommunications services continue to be available to the people of this state at just and reasonable rates and be of sufficient quantity, quality and reliability to meet the public interest
2. The public service commission have flexibility to deal with the current period of transition in the industry, while keeping as its main purpose the protection of the interests of ratepayers of public utilities offering regulated telecommunications services
3. The public service commission shall, when consistent with the protection of ratepayers and with other public interest goals established by the legislature, rely on competition rather than regulation to determine the variety, quality, and price of telecommunications services
4. The public service commission ensure that, in general, users of regulated telecommunications services and facilities pay only reasonable and just charges for such services and facilities and that such charges do not include costs associated with competitive activities of telecommunications utilities
5. Partial deregulation be a regulatory system to facilitate competition where it may exist. When the market for a telecommunications service is fully competitive, the level of regulation imposed by the public service commission upon all similarly situated providers of that service shall be equal

Point 1 is a goal, while point 2 is a policy to achieve point 1. Point 3 is a combination. It presumes that a policy (reliance on competition) is most likely to achieve the optimal performance (variety, quality and price).

The National Telecommunications and Information Administration (NTIA) analyzed several regulatory alternatives based on seven criteria: reasonable rates, cost minimization, innovation, price flexibility,

administrative efficiency, adequate returns, and fairness.<sup>1</sup> This report develops an alternative list, following a discussion by F.M. Scherer.

Scherer<sup>2</sup> lists four market performance categories: (1) production and allocative efficiency, (2) progress, (3) full employment, and (4) equity. Often it is hard to be certain which of Scherer's goals correspond to the legislative intent. Does "just and reasonable rates" refer to efficiency or equity? These goals require some elaboration to accommodate the special features of telecommunications markets.

Production and allocative efficiency mean that the cost of producing the last unit of output equals the value that the last (or marginal) consumer places on the good. Several additional goals are sometimes considered along with efficiency. For example, commissions try to limit profits to "reasonable returns." That is, the marginal producer makes zero economic profits. Its return in this market is the same as in its next best alternative. Commissions attempt to achieve efficiency, sometimes through marginal cost pricing, more often by limiting the rate of return.

Efficiency requires an adjustment for significant externalities. An externality is the effect of a market decision between two parties on an unrelated third party. Pollution is an example of a negative externality: the transaction between a producer and consumer leads to dirtier air or water for others. Telephone subscribership is considered a positive externality: your decision to acquire service from the local phone company means that others benefit by being able to call you. Efficiency (and equity) requires that transactions which generate negative externalities (pollution) be taxed, and those that create positive externalities (telephone service) be subsidized.<sup>3</sup> This is one reason for the variety of programs to promote universal telephone service--lifeline rates, Link-up

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<sup>1</sup> National Telecommunications and Information Administration, Regulatory Alternatives (Washington, DC: U.S. Department of Commerce, July 1987).

<sup>2</sup> F.M. Scherer, Industrial Market Structure and Economic Performance, 2nd Ed. (Boston: Houghton Mifflin, 1980), pp. 3-4.

<sup>3</sup> See Stanley Fischer and Rudiger Dornbusch, Economics (New York: McGraw Hill, 1983), pp. 287-293 or Edwin S. Mills, The Economics of Environmental Quality (New York: W.W. Norton, 1978).

America, the Universal Service Fund, and the Rural Electrification Administration (REA) telephone loan program.

Efficiency implies that transactions costs, including regulatory costs, are minimized. Deregulatory proposals try to reduce regulatory costs for commissions, companies, and interested parties, while not hurting the public interest in other respects. Efficiency also means that, if a regulatory apparatus is deemed necessary, that apparatus should be flexible to cope with technological change and the uncertainties of emerging competition. Finally, other wasteful expenditures are minimized, those attributable to the laziness of an unregulated monopoly<sup>4</sup> or due to the incentives of a regulated firm to acquire excess capital.<sup>5</sup>

Scherer's second goal, progress, appears as "encourage innovation" in some state legislation. Innovation often means objective technological advances. Digital central office switches require substantially less maintenance and are much easier to upgrade than electronic or electromechanical switches.<sup>6</sup> Innovation can also mean product differentiation, giving consumers more options. The ever-increasing diversity of customer premises equipment sometimes represents an objective advance, and sometimes is an adaptation of current technology to meet consumer demand for differentiation--e.g., a combination telephone-clock-radio. Maintenance of service quality or reliability is another aspect of progress. Quality can be measured in many ways: blocked call probability, disaster recovery speed, or the level of static on a line.

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<sup>4</sup> See Harvey Leibenstein, "Allocative Efficiency vs. X-Efficiency," American Economic Review 56 (June 1966): 392-415 and Beyond Economic Man: A New Foundation for Microeconomics (Cambridge, Mass.: Harvard University Press, 1976). See also Scherer, Industrial Market Structure, 464-471 for a discussion of x-efficiency and the wasteful expenditures to obtain and defend monopoly power.

<sup>5</sup> See Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," American Economic Review 52 (December 1962): 1052-69. Regulatory commissions, of course, attempt to discern and disallow wasteful expenditures.

<sup>6</sup> "Industry Brief: Princes and Pumpkins at the Digital Switching-Hour," The Economist, August 29, 1987, p. 74. See also Peter W. Huber, The Geodesic Network (Washington, DC: U.S. Government Printing Office, 1987), chapter 14 and "Telecommunications Survey," The Economist, October 17, 1987, p. 4.

Full employment, Scherer's third performance goal, is less applicable to intrastate telephone service. For example, there is little regulatory concern at the state level for layoffs in the local exchange companies or for the impact of high communications prices on the international competitiveness and employment of large business users.

Commissions place emphasis on equity, Scherer's final performance goal, but equity is an elusive concept. Economists seek Pareto improvements in which "everyone affected is expected to benefit or at least not be harmed."<sup>7</sup> Such unambiguous improvements are seldom available to regulators. Baumol has derived an interesting diagrammatic and mathematical treatment of "superfairness," perhaps the most utopian concept:

A distribution is called (nonstrictly) superfair if each class of participants prefers its own share to the share received by another group, that is, if no participant envies the other.<sup>8</sup>

Commissions appear to look at three things in determining fairness: procedures, stability, and the disadvantaged. Administrative procedures are used to ensure that the power of the commission and the franchise monopoly is exercised in an impartial, impersonal fashion, much like competitive markets act.<sup>9</sup> Voltaire wrote, "Were there but one religion in England, its despotism would be fearful; were there but two, they would be at each other's throats; but there are thirty, and they live in peace and happiness."<sup>10</sup> In unregulated natural monopoly markets, as in state religion, opportunities for arbitrary, unfair treatment abound. The administrative procedures of regulatory commissions permit more equitable treatment than an unregulated natural monopolist would.

With the advent of competition, courts and commissions attempt to preserve the equal opportunity for competitors. The Modified Final Judgment (MFJ), which settled the Department of Justice antitrust case against AT&T,

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<sup>7</sup> Baumol, William J. Superfairness (Cambridge, Mass.: MIT Press, 1986), p. 8.

<sup>8</sup> Baumol, Superfairness, p. 15.

<sup>9</sup> For a brief discussion of this feature of competitive markets, see Scherer, Industrial Market Structure, pp. 12-13.

<sup>10</sup> Quoted in Scott Gordon, Welfare, Justice, and Freedom (New York: Columbia University Press, 1980), p. 195.

requires that the Bell Operating Companies (BOCs) provide major long distance competitors with equal access to the local exchange--"equal" meaning the same as that which AT&T receives. The FCC terminal equipment registration plan ended another series of unnecessary restrictions on interconnection by AT&T.

Commissions strive for stability, too. Baumol writes that "'fairness' in a pricing arrangement depends heavily on consistency with the practices of the past to which people have become habituated."<sup>11</sup> Social contract regulation, which attempts to set prices at the current level with upward adjustments corresponding to some index, appeals to the perceived desire of consumers for stability.

Concern for the disadvantaged is a third aspect of equity. Indeed, the real reason behind lifeline programs and the like may well be equity. No one has seriously tried to estimate the externalities and set telephone subsidies accordingly. Zajac contends that an act is unfair if it deprives people of their "basic economic rights," which include basic utility services, as well as adequate food, shelter, and so on.<sup>12</sup> Peak load pricing is often justified as being efficient, but has equity effects, too. In the case of mass transportation there is opposition to peak load pricing in England and the U.S., out of "fairness to captive low-income riders who have no other means to get...to work."<sup>13</sup> In telecommunications, however, off-peak discounts for long distance service have been popular, partly because those periods have a higher proportion of residence-to-business users. In many ways, commissions follow the Rawlsian concept of justice, which holds that:

A change is equitable if and only if it benefits the member of the community in the most disadvantageous position (or benefits others without harming any of those most 'disadvantaged' individuals).<sup>14</sup>

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<sup>11</sup> Baumol, Superfairness, p. 4.

<sup>12</sup> E.E. Zajac, "Perceived Economic Justice: the Example of Public Utility Regulation," in H. Peyton Young (ed.), Cost Allocation: Methods, Principles and Applications, North Holland, Amsterdam, 1985, p. 19.

<sup>13</sup> See Baumol, Superfairness, p. 1 and p. 4.

<sup>14</sup> Baumol, Superfairness, p. 18. See John Rawls, A Theory of Justice (Cambridge, Mass.: Harvard University Press, 1971).

As competition has evolved, largely to the benefit of the majority, commissions have made special efforts to protect the disadvantaged.

Table 1-4 summarizes the performance goals. Performance goals amount to a report card by which deregulatory proposals may be judged. One reason that informed observers differ in their assessment of a market as competitive or noncompetitive is that they may have different goals. They may add or omit items, or prioritize the goals in different ways. A commissioner who emphasizes a reduction in regulatory costs will choose to deregulate a market at a much higher level of market concentration than a commissioner whose first priority is reasonable rates.

The chapters which follow describe how to define the scope of a market, how to measure market concentration, additional considerations, and how market structure relates to this performance report card.

TABLE 1-4  
PERFORMANCE CRITERIA FOR DEREGULATORY PROPOSALS:  
A REPORT CARD

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Production and allocative efficiency

- Price equals marginal cost
- Reasonable returns: zero economic profit
- Externalities compensated
- Low transactions or regulatory costs
- No wasteful expenditures

Progress

- Objective technological advances
- Product differentiation
- Quality maintained or improved

Full employment

Equity

- Procedural equity
- Stability
- Concern for disadvantaged, universal service

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Source: Drawn from the discussion in this chapter

CHAPTER 2  
STRUCTURE-CONDUCT-PERFORMANCE

In order to properly assess various deregulation and competition proposals, it is necessary to know what kind of a market is assumed. A deregulatory proposal such as price indexing, for example, would not work efficiently in a perfectly competitive market, but it might in other types of markets.

The purpose of this chapter is to examine several market models and to suggest a method for analyzing the competitiveness of telecommunications markets. The market models to be examined are perfect competition, pure monopoly, monopolistic competition, and two oligopoly models. An examination of the models available suggests the oligopoly model of a dominant firm with fringe competition is appropriate for describing many telecommunications markets. Accordingly, policies or proposals that reflect this market model should promote economic efficiency. (The reader who is fully familiar with basic economic theory may want to skip to chapter 3.)

A Brief Review of the Theory of the Firm and Market Organization

As noted in the introduction, economists have several basic models of market structure to explain and predict the performance of a market or industry. Perfect competition is held by most economists to be the theoretical ideal against which other forms of market organization such as pure monopoly should be judged. Pure monopoly is shown to have harmful effects on market performance. Intermediate forms of market organization, however, suffer from this comparison as well and are labeled "imperfect." Indeed, the real world is imperfect when judged from the standpoint of theoretical models of perfection. The usefulness of these models is their ability to predict outcomes and explain behavior. Policy makers should not be advised to try to make reality fit a theory to attain some ideal.

Instead, these models should guide policy makers in understanding the reality of the market or industry they are examining and in fashioning appropriate policies. The assumptions of each of the models of market organization are explicitly stated and the consequences of these assumptions are discussed.

An economist assumes that economic agents (consumers or firms) are maximizers and/or minimizers. Consumers maximize the satisfaction they derive from a given income or minimize the expenditure to achieve a given level of satisfaction. Producers maximize profits, minimize losses, and minimize the costs of producing a given level of output.

In addition to these behavioral assumptions, one should recall the price and quantity relationships embodied in supply and demand models utilized by economists and the behavior of costs as output expands.<sup>1</sup> Increasing a price decreases the quantity demanded while lowering the price increases the quantity demanded. Equilibrium in a market is achieved when the quantity demanded equals the quantity supplied at a given price.<sup>2</sup>

Finally, the role of profits as an incentive needs to be discussed. An economist defines a zero economic profit as a return sufficient to attract and maintain capital in its current activity. This concept of profit includes the profit relative to other alternative employments. Positive economic profit is an above normal return and is assumed to attract the entry of new investments and employment in an industry. Negative economic profit, on the other hand, is assumed to encourage the exit of investment and employment from their current activities and into alternative ones. The efficacy of this profit mechanism as an incentive, however, depends on several other conditions that may prevail in an industry or market. Thus, the discussion turns to the basic models of market structure.

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<sup>1</sup> A good introductory text is Stanley Fischer and Rudiger Dornbusch, Economics (New York: McGraw Hill, 1983).

<sup>2</sup> In a competitive market, an increase in the price increases the quantity supplied, too.

## Perfect Competition

The perfectly competitive market is an important model of business behavior, but is an exacting concept. The popular conception of competition is what an economist would call rivalry among business firms (suppliers) and buyers. With rivalry, firms and/or buyers recognize their competitiveness vis-a-vis one another. With competition, on the other hand, the impersonal forces of supply and demand determine the allocation of resources and the distribution of income. There are so many wheat farmers, for example, that one is not affected by decisions of his neighbor--they are both negligible compared to the market overall. Clearly, these circumstances do not describe competition in telephone markets which is characterized by advertising and claims of differences in the quality of service. Consequently, impersonal market forces are unlikely to be the guiding force directing market outcomes in telecommunications markets.

Four important conditions define perfect competition. First, each buyer and firm in a market is so small relative to the market that they cannot exert a perceptible influence on the market price. Any one firm will lose all of its sales if it raises its price above that of the market and gains nothing by lowering the price. Furthermore, any one seller's decision to produce or not to produce will not affect the market price.

The second condition is that all firms produce a homogeneous product. This condition ensures that buyers are indifferent from whom they purchase. Stated differently, all products are perfect substitutes, and there is no product differentiation.

The third condition is that all resources are perfectly mobile and there are no barriers to market entry and exit of firms. This means that investments are not specialized, there are no patents or copyrights, and investments are perfectly and instantaneously mobile geographically and among alternative uses. For labor, this condition suggests that skills are few and easily acquired. Free mobility of resources and the total absence of barriers to entry and exit are probably not realized in practice, particularly in the telecommunications field.

The fourth and final condition requires perfect knowledge on the part of buyers, sellers, and resource owners. They not only have perfect

knowledge of the market, but perfect knowledge of alternative employments and of the future.

These four conditions, together with the general assumptions discussed earlier about economic behavior, define perfect competition.<sup>3</sup> An economist would be quick to point out that the validity of a theory should be tested against its conclusions, not its assumptions. Theories are abstractions and not perfectly descriptive of the real world. As a theoretician fashions his assumptions to fit reality closer, he sacrifices generality of his theory. Consequently, the value of the model of perfect competition is that it has permitted the accurate prediction of a variety of real world phenomena.

These four assumptions imply that all firms in the industry are identical. With all economic agents having perfect knowledge, one would expect each producer to adopt the most efficient technical means of production. Furthermore, the absence of barriers to entry such as copyrights and patents would imply that the most efficient technical means of production is readily available to all firms in an industry and any potential entrant. It is unlikely that such a situation would occur in the real world. Consequently, the assumptions of perfect knowledge and absence of barriers to entry are relaxed later and the general properties of the equilibrium results are examined and restated.

The first major result of the model of perfect competition is that the price automatically reflects marginal costs. Since each firm is so small relative to the market, it takes the market price as given. Being a profit maximizer, each firm determines the quantity it will supply to the market by equating the market price to its marginal costs. If regulators set an industry-wide price and the model of perfect competition applies to the situation, each firm will produce the level of output at which marginal cost equals the market price. Consequently, marginal-cost pricing is achieved. However, a regulated price may generate excess supply or excess demand, because there is no guarantee that supply equals demand.

The second major conclusion of the model of perfect competition is that the market supply curve is the horizontal summation of each firm's marginal

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<sup>3</sup> See also C.E. Ferguson, Microeconomic Theory, (Homewood, IL: Richard D. Irwin, Inc., Third Edition, 1972).

cost curve. Producers contemplate all possible prices that may emerge from the market. They equate those possible prices to their marginal costs to determine the quantity they will supply. To compute the market supply, one then adds up the quantities supplied by all firms at each possible price.

The actual price that emerges from the market is determined by the interaction of market supply and demand. In the short run, firms simply accept this price as given to them and determine the amount they will supply. Each firm may earn positive economic profits, negative economic profits (losses), or zero economic profits in the short run. The long-run adjustment of the industry to the short-run situation occurs through the entry or exit of resources to or from the industry depending on what the profit situation is.

If positive economic profits are being earned in the industry, entry of new investment, other resources, and new firms will occur. As this entry occurs the supply to the market at all possible prices increases and the equilibrium market price will begin to fall. As the price falls, the positive economic profits begin to disappear. Long-run equilibrium for the market is established when all firms in that market are earning zero economic profits.

If the firms are making losses, investments, other resources, and firms will exit from the industry. As exit occurs, the supply to the market at each possible price decreases and the market equilibrium price will rise. As the price increases, the negative economic profits are eliminated. Again, long-run equilibrium for the market is established when all of the identical firms are earning a zero economic profit.

As one can see, long-run equilibrium of an industry is characterized by zero economic profits being earned by all of the firms in the industry. The primary assumption that drives this result is the free mobility of resources and the absence of barriers to entry and exit when taken together with the other three assumptions describing perfect competition. The long-run equilibrium has some interesting and desirable properties. Each firm is an optimal size and producing output at the lowest feasible cost per unit given the technology and resource markets.

Perfect competition in all markets results in the maximum possible economic welfare for society as a whole. However, as mentioned, the

assumptions that lead to this result are exacting and rarely met in the real world.

Suppose two of the four basic assumptions for the model of perfect competition are relaxed. First, economic man does not have perfect knowledge but is merely rational, operating on the basis of the information he has available to him concerning the market, the industry, and his alternative activities. Second, entry barriers are assumed to exist in the form of proprietary technologies resulting from patents or copyrights, but there is sufficient technological diversity of technologies so that there is still a large number of firms in the industry with each firm small relative to the market. The direct consequence of relaxing these two assumptions is that all firms are no longer identical, and this fact changes the character of the long-run equilibrium for the industry.

Firms in the industry now may be categorized as most efficient, least efficient, or of average efficiency depending on the technology each uses. The marginal cost curve above the average variable cost curve is still the firm's supply curve in this scenario and the market supply curve is still determined in the same manner. Each firm would maximize profits by producing that output at which the given market price equals marginal costs. However, long-run equilibrium for this industry would be characterized by zero economic profits for the least-efficient firms and positive economic profits for the most-efficient and average-efficient firms. The positive economic profits in the industry cannot be displaced because more efficient technologies are not available to entrants. The situation creates favorable incentives for technological development and increased efficiency of organization to produce more effectively and realize long-run economic profits. Such a situation may not maximize economic welfare in the short run, but one may conclude that the possible temporary loss of economic welfare is worth the incentive to technological innovation and increased efficiency of organization.

#### Pure Monopoly

Pure monopoly is at the opposite end of the concentration continuum from perfect competition. With pure monopoly, there is only one seller in the market. Pure monopoly has deleterious effects on the efficiency of a

market. The competition that exists with monopoly is indirect because there are no perfect substitutes for the monopolist's output. However, all commodities compete for the consumers' dollar and the possession of a monopoly does not guarantee success in business. It only means that the monopolist can take maximum advantage of whatever demand conditions exist. Another source of indirect competition is from imperfect substitutes for the monopolist's output. For instance, the mail, travel, and telegrams are imperfect substitutes for long-distance and local telephone services. Still, the substitutability of these alternative sources of supply is weak. Finally, potential competition from possible entry of new firms into the market may present a moderating influence on the monopolist's price for his output. Potential competition is a particularly strong influence where a monopolist's control of a market is local or regional in nature and firms outside of his geographical area may be inclined to enter if it becomes profitable enough to do so. Thus, if potential competition is strong, a monopolist must serve his market well or attract entry. In the discussion that follows, monopoly power is defined as control over price.

### Barriers to Entry

Monopoly may arise as a result of barriers to entry by potential competitors. Barriers to entry may arise in several ways. First, the dominant firm may enjoy an absolute unit cost advantage due to a technologically superior production process or economies of scale in production, distribution, purchasing, capital raising, and/or promotion which is not possible by firms in the competitive fringe. Economies of scale occur when a proportionate increase in all inputs results in a more than proportionate increase in output.<sup>4</sup> Consequently, long-run average total costs decline as output expands. Minimum optimal scale for a plant is the point at which the long-run average cost curve reaches its minimum point and equals long-run marginal costs. A multiplant firm can experience

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<sup>4</sup> Similarly, diseconomies of scale occur when a proportionate increase in all inputs results in a less than proportionate increase in output and, consequently, long-run average costs increase.

constant costs by duplicating minimum optimal scale plants. In doing this the long-run average and marginal costs curves may be equal to each other for a substantial range of output and, as a result, long-run average total cost will not be increasing or decreasing. Ultimately, the long-run average cost curve will begin to increase because managerial, communications, or resource coordination problems will arise. Successive increments in output then become more costly than previous ones. The behavior of costs in the long run is important to the analysis of the competitiveness of markets and of an industry.

Economies of scale, as a source of monopoly, occur when the minimum optimal scale of production is experienced at a rate of output sufficient to supply the entire market and generate revenues that cover the total costs of production. The market is called a natural monopoly because it is the natural outcome of market forces. Table 2-1 shows the minimum optimal regional scale for several markets. An MOS plant share of 20 (beer brewing) means that the regional market can support at most 5 firms at efficient levels of output. This situation was believed to exist for telephone and has justified the public utility regulation that deregulatory proposal seek to undo. Whether or not economies of scale exists in any or all of the telecommunications markets is an important empirical question that analysts and policy makers should ascertain. If economies of scale do exist, competition may not be viable in the long run. However, its existence is dependent on the technology used to serve the market, and what may be true at one moment may not be true with technological advances.

A second barrier to entry is legal protection because of a patent or an exclusive franchise. The government may create a monopoly by granting an exclusive franchise to a firm to serve a specific market. In turn, the government obtains concessions from the business to control certain aspects of its business enterprise. In the case of public utilities, public utility commissions regulate the prices charged for various services and require the utility to serve all customers on a nondiscriminatory basis. The use of the franchise is said to allow the utility to achieve all possible economies of scale and pass the benefits on to the consumers within its jurisdiction.

TABLE 2-1

## THE IMPACT OF REGIONALIZATION ON MOS\* PLANT MARKET SHARES

Industry	Approx. no. of regional markets in continental U.S.	MOS plant share per average market
Beer brewing	6	20.4
Paints	5	7.0
Petroleum refining	5	9.5
Glass bottles	9	13.5
Cement	24	40.8
Steel works	4	10.4
Storage batteries	6	11.4

\* Minimum Optimal Scale.

Source: Scherer, Industrial Market Power, p. 98

Third, the monopolist may possess product differentiation advantages whether real or perceived. This advantage would be similar to a unit cost advantage because it acts as a wedge between the monopolist's price and unit costs. Potential entrants could only dilute this advantage through extensive advertising expenditures. Fourth, the monopolist's presence in a market might discourage entry and expansion by engendering expectations of an unprofitable entry or expansion. The entrant might expect a retaliatory price cut in response to its entry, driving prices below the entrant's average total cost.

#### Price and Output Under Monopoly

What price and output relationships can one expect from a monopolist? In general, the price will be higher and the quantity supplied lower than under perfect competition. The extent of this market power, as mentioned earlier, depends on the market demand, especially on the elasticity of the market demand curve. Elasticity is a measure of the responsiveness of the

quantity demanded to a change in price. It tells one the corresponding percentage change in quantity demanded resulting from a one percent change in price. A value of one for the elasticity of demand implies that a one percent change in price results in a one percent change in the quantity demanded. If the value is greater than one, demand is referred to as elastic. In this case, the percentage change in quantity is greater than the percentage change in price. If the value is less than one, demand is inelastic. The elasticity of demand varies all along most formulations of demand functions.<sup>5</sup> The relationship between elasticity of demand is as follows:

When the elasticity of demand is elastic, marginal revenues are positive;

When the elasticity of demand is inelastic, marginal revenue is negative;

When the elasticity of demand is equal to one, marginal revenue has the value of zero.

There are two notable characteristics of monopoly equilibrium. First, a profit-maximizing monopolist will always operate in the elastic portion of the market demand curve. Otherwise, the monopolist could increase price, reduce output, and still increase total revenue. The monopolist produces to the point at which the marginal revenue equals marginal cost. Since marginal revenue is always less than the price he charges, prices do not equal marginal costs when monopoly exists. Second, there is an inefficient allocation of resources, because the price exceeds marginal cost.

Comparisons of pure monopoly with perfect competition are risky because a pure monopoly does not have a supply curve in the same sense a perfectly competitive market does. However, if one assumes that the monopolist's marginal cost curve is the same as the market supply curve, one may conclude that a monopolist will produce a smaller output and charge a higher price than what would prevail under perfect competition. Price is greater than

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<sup>5</sup> One exception to this rule is the constant elasticity of demand formulations of the demand function. Most demand functions that have been submitted in testimony by AT&T Communications have been of this form.

marginal costs for a pure monopoly while it equals marginal costs under perfect competition. The monopolist exercises his monopoly power by constraining output.

A single plant monopolist will not necessarily produce output in the long run at the point at which long-run or short-run average total costs are minimum. If this does occur, it is mere coincidence. A multi-plant monopolist distributes production among his multiple plants so that each plant is producing close to minimum optimal scale. Thus, for a multi-plant monopolist, these cost-output relationships resemble those of perfect competition. The difference is that the monopolist will have less production capacity than would exist under perfect competition. For a multi-plant monopolist output is produced at the minimum average total cost, but the benefit is not passed on to consumers. Since a monopolist produces a smaller output, the multi-plant monopolist has fewer plants than would exist in perfect competition.

#### Price Discrimination and Pure Monopoly

Up to this point, the monopolist has been assumed to charge a single price for its single output. Suppose now that a monopolist can segregate its customers into two or more groups according to the elasticity of demand (and prevent resale of its output or services among these groups). In these circumstances, it may practice price discrimination to augment its profits. Price discrimination occurs when different prices are charged for the same commodity in these different submarkets.

The single attribute that distinguishes these separate markets is the elasticity of demand. Thus, each submarket has its own marginal revenue curve. To maximize its profits the price-discriminating monopolist determines the overall output by equating its marginal costs to the aggregate marginal revenue. However, in setting prices in the submarkets, he allocates the sale of this overall output by equating the common marginal cost to the marginal revenue in each of the submarkets. It then charges the maximum price consumers are willing to pay for the output in each of the submarkets. It must be able to prevent resale from the low price market to the high price market for this scheme to work. Otherwise, maximizing consumers would purchase output in the low price market and sell it to

customers in the high price market. If resale is prevented, he can greatly increase the profit he realizes by practicing price discrimination.

Commissioners and commission staff often hear testimony regarding the incentives for a telephone company to practice price discrimination with monopoly markets subsidizing the competitive endeavors of the telephone company. A cross-subsidy occurs if one market is priced below its marginal cost, while other markets are priced above their marginal costs. The pricing proposals criticized as being discriminatory typically propose pricing the competitive service at its marginal cost and recovering the common costs completely from the monopoly services. The first problem with this line of argument is that the common costs are, in theory, includable in marginal costs.<sup>6</sup> The practical problem is that the causal link between the common costs and the service is difficult to discern, and several reasonable methods for assigning the cost of, for instance, headquarters are often possible. This choice is judgmental, and consequently labeled arbitrary. If these costs are not included in the estimate of marginal cost, however, the service priced at this estimate of marginal costs is indeed priced below its actual marginal cost. Thus, a cross-subsidy would be present.

The primary source for the prescription to price services at marginal costs is welfare economics. Welfare economists view rate-base regulation of a pure monopoly as a problem in which the goal of regulators is to maximize economic welfare. If economies of scale are not present, this formulation results in price being set at marginal costs. If economies of scale are assumed to exist, pricing at marginal costs will not cover the revenue requirement. In this case the revenue requirement must be recovered, but deviating prices from marginal costs is labeled a "second-best" pricing solution. Welfare economists generally recommend a taxation scheme to cover the total costs, while adhering to their prescription that prices stay at marginal costs. No state has ever implemented such a scheme. In lieu of

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<sup>6</sup> Alfred E. Kahn, The Economics of Regulation: Principles and Institutions, Volume 1 (New York: John Wiley & Sons, Inc., 1970), p. 78.

this scheme, most economists recommend Ramsey pricing.<sup>7</sup> This pricing scheme minimizes the loss of economic welfare by looking to the elasticity of demand to price the services. Ramsey prices raise prices most for customer groups or services that have the fewest alternative source of supply available. This approach to recovering the revenue requirement from, for instance, regulated and competitive services of a telephone company may not seem equitable to some parties involved in a rate case. Ramsey pricing is, however, the most economically efficient manner for prices to depart from marginal costs. It is definitely a version of price discrimination if a homogeneous product is involved.

Comparing the two theoretical extremes economists, in general, favor competition over monopoly because of the efficient allocation of resources and maximum economic welfare. However, most real world markets lie between the two theoretical extremes. What can one expect from these markets? The models of monopolistic competition and oligopoly help provide the needed insight.

#### Monopolistic Competition

The theory of monopolistic competition was developed by Edward H. Chamberlin<sup>8</sup> and Joan Robinson<sup>9</sup> who recognized that there are few monopolists because there are few commodities for which close substitutes do not exist, and there are few commodities that are entirely homogeneous among producers. Thus, the assumption of a homogeneous product is dropped. Product differentiation becomes a mechanism by which each firm in a market tries to create some aspect of monopoly for its output. In this case competition becomes personal and firms have corporate banners attached to their products. Product differentiation may be based on such factors as a

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<sup>7</sup> See Frank Ramsey, "A Contribution to the Theory of Taxation," Economic Journal, March 1927, 37, pp. 47-61, and William Baumol and David F. Bradford, "Optimal Departures from Marginal Cost Pricing," American Economic Review, June 1970, pp. 265-283.

<sup>8</sup> E.H. Chamberlin, The Theory of Monopolistic Competition 6th Ed., (Cambridge, Mass.: Harvard University Press, 1950).

<sup>9</sup> Joan Robinson, The Economics of Imperfect Competition (London: Macmillan & Co., Ltd., 1933).

convenient location, advertising outlays, differences in packaging, design, brand name, and other tactics to make the firm's output unique. The concept of an industry is no longer clearly defined, as producers are supplying only closely related products to the market rather than a homogeneous product.

The immediate analytical consequence of introducing product differentiation is that each firm in a product group faces a downward sloping demand curve. In other words each producer obtains some control over price or monopoly power. As with monopoly, the profit maximizing price is not equal to marginal costs. Instead, the profit-maximizing firm produces that output at which marginal revenue equals marginal costs and sets the price he charges for his output by looking to the firm's demand curve.

The firm's demand curve is different from the market demand curve and tends to be more elastic than that of the market. The reason the firm's demand curve is more elastic than the market's demand curve is based on the perception of the monopolistic competitor. If it lowers its price and competitors do not follow its price cut, the firm's sales will increase more relative to what the market demand curve would indicate. Similarly, if the firm increases its price and competitors do not follow the price rise, the firm's sales will decrease more relative to what the market demand curve would indicate. The responsiveness of the firm's demand curve relative to that of the market depends primarily on the number and size distribution of firms in a product group. If the number of competitors is large and each is small relative to the market, a firm may anticipate that its price cuts will go unnoticed by rivals. Thus, the anticipated or perceived demand curve that the monopolistic competitor confronts would be more elastic than that of the market.

Product differentiation implies that the cost curves of monopolistic competitors may differ. Quality differences between commodities or services suggest that the costs of production may differ. Varying expenditures for advertising among monopolistic competitors also implies the marginal costs and average total costs of production may vary among firms in a product group. Thus, in the absence of barriers to entry and to the free mobility of resources, the most one can say about the long-run profit situation of monopolistic competitors in a product group is that the least profitable

firm will earn only zero economic profits, while the most profitable will earn positive economic profits.

There are two prominent differences between monopolistic competition and perfect competition which make comparison difficult. First, each monopolistic competitor has its own downward sloping demand curve that is different from the market demand curve. Second, a supply curve, such as exists under perfect competition, does not exist. Consequently, the main components for a comparison at the market level are missing. One can note that each firm in monopolistic competition has control over its price, and it charges a price greater than its marginal costs. This implies there is a loss of economic welfare when compared to that achievable under the theoretical ideal of perfect competition.

Economist have asserted that this welfare loss is not as bad as it might seem because society benefits from differentiated products rather than the homogeneous products of perfect competition. Chamberlin argues that product heterogeneity is desirable and the costs of product differentiation are valid social costs.

C.E. Ferguson summarizes the social welfare aspects of monopolistic competition in the following manner.<sup>10</sup>

In short, the social welfare aspects of monopolistic competition are ambiguous. From a very microscopic standpoint, each firm produces less than the socially optimal output. On the other hand, if each firm were somehow forced to produce this seemingly desirable level of output at marginal-cost price, private enterprise would no longer represent a viable economic system. ... Thus while the theoretical analysis of monopolistic competition is quite clear, the welfare implications of this analysis are not. Micro- and macroeconomic welfare criteria are not consistent and/or reconcilable.

The real issue is how competitive a market or product group is and what might one expect if it lies nearer to pure monopoly on the concentration continuum than to perfect competition.

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<sup>10</sup> C.E. Ferguson, Microeconomic Theory, p. 332.

## Oligopoly

Oligopoly exists when there are few sellers in a market. In these circumstances, one can no longer assume that firms in an industry or product group act independently in their pricing, output, and investment decisions as was true with perfect competition, monopolistic competition, and pure monopoly. Instead, each firm recognizes that its best policy depends upon the policies adopted by its rivals. Each firm must make assumptions about its rivals' decisions and reactions.

Economists have developed several models of oligopolistic behavior that mirror the array of behavioral patterns actually observed in oligopolistic industries. Oligopolies can have prices similar to those that would emerge under pure monopoly, or it can result in outright price warfare. Economists have identified several conditions that facilitate oligopolistic coordination and the joint maximization of collective industry profits. When conditions are favorable for oligopolistic coordination, firms may find it much easier to coordinate by means of tacit collusion such as price leadership. When conditions are not favorable, oligopolists may coordinate their policies by means of illegal overt or covert price fixing agreements.

In the next section the conditions that facilitate and inhibit oligopolistic coordination are presented and discussed. Following this exposition, the oligopoly model of a dominant firm with fringe competition is presented. This particular model of oligopoly provides the most accurate description of the structure of many telecommunications markets.

### Conditions Facilitating Oligopolistic Coordination

The number and size distribution of firms in a market is the structural dimension of a market. As the number of firms in a market increases, it becomes more difficult for oligopolists to maintain price above average total costs, other things being equal. F.M. Scherer cites a rule of thumb: "...if evenly matched firms supply homogeneous products in a well-defined market, they are likely to begin ignoring their influence on price when

their number exceeds 10 or 12."<sup>11</sup> When the size distribution is highly skewed, generalizations such as this need several qualifications regarding the rate at which smaller firms can expand sales through price cutting.

Product homogeneity implies that the outputs of rival sellers are virtually alike in all significant physical and subjective respects. In these circumstances oligopolists find it easy to coordinate policies because price is essentially the only dimension along which they must agree either directly or tacitly. With product differentiation or a heterogeneous product, the rivalry among oligopolists becomes multidimensional and the firms must somehow agree on price differentials. If the quality differences are dynamic, due say to technological advancements, any pricing discipline is upset and must, if possible, be realigned. The extreme of product differentiation is custom-made orders in which no two outputs may be identical. In this case even overt or covert price agreements may be impossible to allow oligopolistic firms to maximize collective industry profits. Thus, the extent of product homogeneity or heterogeneity is an important factor determining the potential for oligopolistic coordination of pricing, output, and investment policies.

Frequent, small, and regular purchases by consumers facilitate the opportunities for tacit collusion because the opportunities for rivals to retaliate to a price cut are often and immediate. Any decision by a firm to undercut the price he and his rivals have tacitly concurred on must be balanced against the probable gains and losses. When purchases are lumpy and infrequent, a firm may gain substantially from offering price breaks to purchasers. Thus, in examining a market for the likelihood of effective price competition, one must investigate the nature of the product and consumer purchases of the product.

Posted prices, price lists, or posted tariffs by an industry are conducive to tacit collusion, because the prices charged by rivals are known to everyone. Whenever prices maximize the collective industry profits rather than each individual firm's profits, the temptation to undercut the price of rivals is particularly compelling if the price cut can be kept

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<sup>11</sup> F.M. Scherer, Industrial Market Structure and Economic Performance, Second Edition (Boston: Houghton Mifflin Company, 1980), p. 199.

secret. When industry members post their prices, the likelihood of granting buyers secret price concessions is low and retaliation is likely.

Most industries have a social structure which consists of formal and informal contacts of industry members. Trade associations, conventions, and common membership in social clubs offer industry leaders and employees an opportunity for contact. In telecommunications, one need only recognize the existence of the United States Telephone Association (USTA) and the Competitive Telecommunications Association to discover the opportunities for formal contacts. Often members of these associations take common stands on regulatory policies regarding price proposals before commissions. The recent divestiture of AT&T has left the local operating companies and AT&T with an understanding of each other's views and practices. Local Bell Operating Companies have many pricing practices and tools developed in common by Bell Communications Research. At NARUC meetings of the Committee on Communications or Subcommittee on Communications, industry members may informally exchange views on costs and price policies. Although this is not the material of economic analysis, one might conclude that the informal social structure of the telephone industry is presently strong, and this mutual understanding may carry over to tacit collusion in competitive markets.

The factors that facilitate oligopolistic coordination are present in long distance, switched telecommunications service markets. The size distribution of firms in telephone markets is highly skewed with regulated carriers having the majority of the relevant market.<sup>12</sup> Product homogeneity is present as well. Under equal access, toll services are generally indistinguishable among carriers. For nonequal access services, quality differences are present and real. Services such as WATS and 800 services are harder to make determinations about product homogeneity, but one could

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<sup>12</sup> See infra chapter 6 which contains a summary of an FCC report on AT&T's share of the interstate switched market. This report indicated AT&T's market share in the second quarter of 1987 was at least 73.7% of all minutes of use. The report also indicated that the growth rate of sales for competitors has averaged well above that of AT&T indicating a declining future market share. These relative growth rates probably reflect the implementation of equal access for interLATA carriers.

speculate that these services would be similar and near perfect substitutes across competitors. When one examines the market for local services the picture is less clear. Emerging competition in this market consists of PBX and CENTREX competition and competition for operator services. The competition in the PBX and CENTREX market is largely for custom-built switching systems. As noted above, custom-made orders are not conducive to tacit collusion. The competition for operator services is largely between AT&T and the local operating companies. These services are largely homogeneous. Customer purchases of most telephone services tends to be frequent, small, and regular which is a condition favorable to tacit collusion. The existence of posted tariffs for nearly all telephone services compounds the conditions already present for tacit collusion.

In the case of private lines and private networks the conclusions are reversed. Sales are large and infrequent, the product is heterogeneous, and most sales prices are on an individual case basis (ICB), even for regulated telephone companies. These conditions suggest greater competition is likely in private line services than in switched services.

#### A Condition Facilitating Price Competition

If firms in an industry are characterized by high overhead costs relative to variable costs, price competition or even price warfare may occur when firms experience excess capacity.<sup>13</sup> In these circumstances, the temptation to break the price discipline of the tacit collusion is strong. Firms in the industry can reoptimize prices individually and increase profits. The high overhead costs are spread over more units of output and each firm individually can maximize its profits.

The emerging competition in some telecommunications markets might be characterized as having excess capacity as major players enter by installing or upgrading nationwide or statewide long-distance networks. Losses and writeoffs coupled with the excess capacity are conducive to strong price

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<sup>13</sup> See Scherer's discussion pp. 205-212. See also Carl Hunt, Jr., "Market Criteria to Evaluate Lessening Telecommunications Regulation," (Washington, D.C.: NARUC, March 10, 1987), pp. 4-5.

competition. However, such competition may be short-lived, and the industry may eventually fall into a pattern of price leadership. Whether or not this factor mitigates the other conditions conducive to tacit collusion is an empirical question only disclosed with actual competition.

#### A Dominant Firm with Fringe Competition

Which model of oligopoly is appropriate? With the presence of dominant carriers such as AT&T and the local operating companies, the model of a dominant firm with a competitive fringe is the most appropriate. F.M. Scherer indicates that a dominant firm exists when it controls roughly 40 percent or more of its industry's output and is faced with the actual or potential competition of fringe rivals that are too small to exert an appreciable influence on price through their individual output decisions.<sup>14</sup> According to this model, if the product is homogeneous, fringe competitors take the dominant firm's price as given and determine their profit maximizing output by equating it to their short-run marginal costs. If the products or services are differentiated, the fringe competitors' price is the dominant firm's price plus or minus some differential. The real issue here is how the dominant firm sets its price.

In formulating its pricing strategy the dominant firm weighs the gains and losses of pursuing short-run profit maximization rather than the long-run profit maximization. With a strategy of short-run profit maximization, the dominant firm calculates its own demand function and determines its short-run profit maximizing output and price by equating marginal revenue and marginal costs. Fringe competitors then take this price as given and determine their profit-maximizing output by equating it to their marginal costs. If fringe firms earn positive economic profits at this price, the

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<sup>14</sup> Scherer, Industrial Market Structure, p. 232. According to Scherer, the dominant firm theory was originally articulated by Karl Forchheimer in "Theoretisches zum unvollständigen Monopole," Schmollers Jahrbuch, 1908, pp. 1-12. Other citations include: A. J. Nichol, Partial Monopoly and Price Leadership, Philadelphia, Smith-Edwards, 1930, and Dean A. Worcester, "Why Dominant Firms' Decline," Journal of Political Economy 65, August 1957, pp. 338-47.

competitive fringe will increase in size through the entry of new firms and expansion of existing fringe capacity. This expansion and entry erodes the dominant firm's market share and reduces profits realizable when it re-optimizes output and prices in subsequent years. Consequently, if the barriers to entry are few and the dominant firm has no cost advantage, one would expect the dominant firm's short-run economic profits to decline to zero over time.

Contrast the short-run profit-maximizing strategy to one in which the firm attempts to maintain market share. Under this scenario the dominant firm reduces its price in this time period and all subsequent years to a level that discourages entry and expansion by fringe firms. This pricing strategy is known as limit pricing.<sup>15</sup> If barriers to entry are absent and the dominant firm does not have a unit cost advantage, its limit price will only yield zero economic profits in the current year and subsequent years. Pursuit of this strategy results in a lower aggregate profit in the current and all subsequent years. Consequently, in these circumstances, limit pricing does not pay because the costs outweigh the gains realized.

In general, the long term profit-maximizing price for a dominant firm falls between the short run profit maximizing price and the limit price. The optimal price strategy maximizes the present discounted value of the stream of future expected profits.<sup>16</sup> It depends on several parameters. First, the discount rate used by the dominant firm to discount future earnings is important. If the dominant firm discounts the future heavily, a dollar in profits today is valued more highly than a dollar in profits in future years. Consequently, the dominant firm may pursue a strategy of short-run profit maximization. Second, the rate at which entry and expansion of the competitive fringe occurs determines the rate at which profits decline over time when the dominant firm pursues a strategy of short-run profit maximization. This rate of expansion, in turn, depends on the height of any barriers to entry and any unit cost advantage enjoyed by

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<sup>15</sup> See Scherer, p. 234. Scherer also lists a number of references on limit pricing in footnote 14 on page 235 of his book.

<sup>16</sup> An important article in this area is Darius Gaskins, Jr., "Dynamic Limit Pricing: Optimal Pricing Under Threat of Entry," Journal of Economic Theory 3 (September 1971): 306-22.

the dominant firm over the competitive fringe. As barriers to entry increase, the limit price approaches the short-run profit maximizing price. Thus, the role of barriers to entry in this model is central.<sup>17</sup>

Unless there are substantial barriers to entry (cost advantage, patent, exclusive franchise, control of a necessary input), the long run profit maximizing strategy for the dominant firm often is to price above cost and gradually lose market share. Scherer<sup>18</sup> notes the market share decline of U.S. Steel, American Viscose, and others, in which the long run profit maximizing strategy involved a price above costs. Other dominant firms (IBM, Alcoa, International Nickel, and GM) pursued limit pricing profitably for several decades before losing market share.

These circumstances illustrate a difficulty involved in price regulation of a dominant firm. Suppose the most efficient firm is fully regulated, while the firms of less efficiency are new unregulated entrants. How does the regulator price the dominant firm's output? If it sets the price equal to the marginal or average cost of the dominant firm, the others are driven from the market. If it sets the price at the cost of the fringe firms, the dominant firm will make an "unreasonable" profit. There is no easy solution. In interstate switched services the FCC sets AT&T's price according to AT&T's costs. MCI and Sprint may support deregulation of AT&T for two reasons. First, AT&T's costs may be lower than those of MCI and Sprint. Second, the market conditions favor tacit collusion. That is, if AT&T is deregulated, it may set a market price at which even less efficient firms are profitable.

The pricing strategies pursued by a dominant firm cannot generally be predicted with certainty. However, if a common or a similar technology is employed, the dominant firm may be able to predict the entry limiting price for the competitive fringe with some accuracy. A dominant firm that has a unit cost advantage or image advantage has latitude in pricing, output and investment strategies that is not available to actual and potential competitors.

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<sup>17</sup> The role of barriers to entry is likewise central to the contestability theory.

<sup>18</sup> Scherer, Industrial Market Power, pp. 239-243.

The performance aspects of oligopoly are generally not favorable. Prices deviate from marginal costs whether products are differentiated or not. If there are barriers to entry, firms may enjoy positive economic profits. When the size distribution of firms in an industry or product group is skewed, one might expect an even poorer performance than when it is evenly distributed. In the extreme with a dominant firm and fringe competition, one may expect results approaching the monopoly welfare losses. If conditions are favorable for tacit collusion, price rigidity is the outcome. Price leadership, the most common form of tacit collusion, can result in swings in the demand being absorbed by inventories at first, if possible, and then in employment rather than price unless the downswing in demand is sustained. If the business slump is sustained, one might witness price reductions to stimulate sales. In general, oligopolistic performance rates poor, except in one area. Economists generally agree that an oligopolistic industry structure creates conditions and profits favorable for research and development. Whether this fact mitigates oligopoly's indictment on other counts is difficult to judge.

#### Contestable Market Theory

Contestable market theory<sup>19</sup> is a model of oligopoly behavior in which market power depends on barriers to entry. It focuses on the role of potential competition in limiting the range of market behaviors available to firms in an industry or product group. According to this theory, the structure of the market is unimportant as long as there are no barriers to entry and exit. Firms pursuing their profit-maximizing goals will quickly be forced to earn only a zero economic profit through the effects of entry by competitors or forced to limit price such that they earn only a zero

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<sup>19</sup> William J. Baumol, "Contestable Markets: An Uprising in the Theory of Industrial Structure," American Economic Review (March 1982): 1-15. The theory of contestable markets was derived from work at Bell Laboratories during the 1970s. At first the theory focused on the sustainability of natural monopoly and was used to justify the continuation of restrictions on entry by competitors into AT&T's markets. See J.C. Panzar and R.D. Willig, "Free Entry and the Sustainability of Natural Monopoly," The Bell Journal of Economics, Vol. 8, No. 1, Spring 1977, pp. 1-22.

economic profit to deter entry. The assumptions of the model of perfectly contestable markets are at least as stringent, if not more so, as the assumptions of the model of perfect competition.

A perfectly contestable market is delineated by three basic assumptions. First, there are no barriers to entry. Potential entrants to a perfectly contestable market are assumed to face no disadvantage vis-a-vis incumbent firms. This means that incumbent firms receive no subsidies that are not available to potential entrants, potential entrants have the least-cost, feasible technology available to them, they receive the same input prices as incumbent firms, no legal restrictions or special costs of entry are borne by potential entrants that were not borne by incumbent firms, and consumers have no preferences among firms except those arising directly from price or quality differences. Second, firms are assumed to respond to profitable opportunities for entry. Finally, it is assumed that potential entrants are not deterred by the prospects of retaliatory price cuts by incumbent firms in response to their entry.<sup>20</sup>

However, in the real world entry and exit of firms is not frictionless and barriers to entry are most often present, particularly in telecommunications. Any firm going into business faces start-up costs such as legal and marketing expenses as well as the costs associated with the establishment of its production facilities. The presence of a dominant firm in a market such as exists in telecommunications markets tends to heighten these risks. In telephone services the common ownership of local exchange facilities and long-distance services was thought to create a "bottleneck" that impeded the development of viable competition in long distance service. When barriers to entry exist, markets are not "perfectly" contestable. Incumbent firms can impede entry and secure long-run positive economic profits.

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<sup>20</sup> This perspective is slightly different from a criticism leveled at the theory of perfectly contestable market by Carl E. Hunt, Jr. of the Colorado Public Utilities Commission. In a manuscript prepared for NARUC, "Market Structure Criteria to Evaluate Lessening Telecommunications Regulation," he writes (p. 20), "The theory assumes that the incumbent firm is so sluggish in response to entry that it is unable to respond in any way to deter entry until the entrant has secured a viable sustainable market share."

In summary, the theory of perfectly contestable markets seems inappropriate for markets, like telecommunications, with substantial barriers to entry.

### Structure-Conduct-Performance Review

Structure-conduct-performance analysis considers how market processes direct the activities of producers in meeting consumer demands, how these processes may break down, and how they may be adjusted through government policy to improve performance. The links from market structure to conduct to performance are not known with precision but some statements are possible.

#### Structure

There are several dimensions to market structure: (1) the number and size distribution of firms; (2) product differentiation; (3) barriers to entry of new firms; (4) cost structure; (5) vertical integration; and (6) conglomerateness.

This chapter presents several market structures: perfect competition, pure monopoly, monopolistic competition, an oligopoly model of a dominant firm with fringe competition, and perfectly contestable markets. One function of structure-conduct-performance analysis is to examine how the assumptions of these models are met and, consequently, to determine which model best predicts the performance for a specific market.

Conglomerateness refers to diversification by a firm into product lines unrelated to the primary product of the firm. Both vertical integration and conglomerateness raise the possibility for economies of scope. As noted earlier, economies of scope arise from a complementary relationship in production such as the sharing of a common input. The closer the product lines of a firm are related to one another, the greater the possibility for economies of scope.

## Conduct

Market structure to a large degree determines the range of market conduct in which a firm may engage. A firm in a perfectly competitive market has no discretion in pricing strategy. It accepts the market price as given and produces until its marginal cost equals the price. Depending on the barriers to entry, a dominant firm has numerous pricing strategies available to further its goal of profit maximization. Firms compete in other ways too: advertising, research and innovation, and investment in capacity. The timing and location of investments in plant and equipment can be used as a mechanism to heighten the barriers to entry of new firms. A firm with monopoly power may hold excess capacity as a threat to potential entrants. Finally, a firm may use legal tactics to impede entry and dampen competitiveness of other firms (see appendix A). If these various strategies prove successful, conduct can affect market structure.

## Performance

Four major characteristics of performance are efficiency, progress, full employment, and equity.

### Efficiency

Productive efficiency means that firms in an industry produce output at the least cost possible. Allocative efficiency means that society's resources are allocated so that consumers derive the maximum possible satisfaction from scarce resources. This price-equals-marginal cost criterion is achieved under the stringent assumptions which characterize perfect competition. Monopoly power is an ability to maintain price above marginal cost in the long run.

The level of economic profits depends on the existence and height of barriers to entry for monopoly, monopolistic competition, and oligopoly market structures. Under perfect competition, zero economic profits occur because there are no barriers to entry and exit. Positive economic profits provide an incentive for entry and expansion.

Under perfect competition, firms produce at the minimum average total cost. However, even a pure monopolist produces at the minimum average total cost if it is a multi-plant operation. The monopolist, though, produces less than a perfectly competitive industry would.

Most models of market structure assume technical efficiency is achieved, but wasteful expenditures are more likely in a monopoly or oligopoly protected by substantial barriers to entry. Firms in any market structure do not concern themselves with compensating externalities. To achieve this goal, the government must intervene.

### Progress

In general, competition leads to faster product development. In telecommunications, the FCC's support of competition led to Northern Telecom's introduction of digital PBXs and central office switches in the U.S. A monopoly has some incentive to innovate or to maintain quality due to potential competition. A monopoly may also be able to conduct basic research profitably, because it controls the entire market.

### Full Employment

The achievement of full employment depends on price rigidity in the output and resource markets. Perfect competition assures full employment by the adjustment of resource and output markets to equilibrium. As market concentration increases, price rigidity often increases as well. During business cycles or secular declines in demand, adjustments are first observed in production and employment. With prolonged declines in demand, prices adjust to establish a new equilibrium.

### Equity

None of the models of market behavior address equity directly. As noted in the introductory chapter, economists and political scientists have developed various notions of equity. A competitive environment permits procedural equity--equal opportunity for all market participants, actual or potential. The impersonal forces of market competition and the rivalry of

monopolistic competition are conducive to this version of equity, and artificial barriers of entry are not.

It is difficult to assess which market structure best promotes equity. None of the market structures explicitly addresses the public policy concerns regarding groups such as the poor, elderly, or rural citizens.

### Conclusion

This chapter presents several models of market structure. The model that seems appropriate for many telecommunications markets is that of a dominant firm with fringe competition. The basic conditions in telecommunications markets also facilitate tacit collusion. In addition, the existence of significant common costs is important for regulatory commissioners.

One issue not addressed so far is the practical definition of the scope of a market and the concentration of firms. A large body of literature and practice on this issue has come from antitrust law and is discussed in the next chapter.

CHAPTER 3  
COMPETITIVE STANDARDS IN ANTITRUST LAW AND TELECOMMUNICATIONS

Many states have passed legislation permitting deregulation of telecommunications. Ultimately the decision to deregulate, however, is generally left with state utility commissioners. Chapter 2 showed that one must look closely at the market to decide whether deregulation will lead to a competitive or noncompetitive performance.<sup>1</sup> There is no magic formula. Fortunately, state telephone regulators can draw upon the experience of antitrust authorities to some extent. This chapter reviews the standards which antitrust authorities use to evaluate competition. It shows that, compared to other industries, many telecommunications markets are highly concentrated, and it summarizes the lessons learned from antitrust history.<sup>2</sup>

Antitrust: Collusion, Monopolization, and Merger Policies

Antitrust law, like regulation, evolved at the end of the 19th century, but, unlike regulation, it focused on markets which could be made more competitive, markets without natural monopoly characteristics. The Sherman Act of 1890, the Clayton Act of 1914, and the Federal Trade Commission Act

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<sup>1</sup> An excellent discussion of this is in Carl E. Hunt, Jr., "Market Structure Criteria to Evaluate Lessening Telecommunications Regulation," National Association of Regulatory Utility Commissioners, March 20, 1987.

<sup>2</sup> This section focuses on the distinction between competitive and noncompetitive markets. For a discussion of antitrust in electric power regulation, see Paul L. Joskow, "Mixing Regulatory and Antitrust Policies in the Electric Power Industry: The Price Squeeze and Retail Market Competition," in Antitrust and Regulation, ed. Franklin M. Fisher (Cambridge, Mass.: MIT Press, 1986), pp. 173-240. For additional antitrust lessons which might be useful to regulators, see Robert E. Burns, "Antitrust Doctrines: A Touchstone for Regulators of Public Utilities," in Proceedings of the Fourth NARUC Biennial Regulatory Information Conference, ed. Raymond W. Lawton (Columbus, Ohio: NRRI, 1984), pp. 1281-1292.

of 1914 empowered the U.S. Department of Justice, the Federal Trade Commission, and private parties to go to court to: (1) stop collusion among firms to fix prices or restrain trade in other ways, (2) restore competitive conditions in established near-monopolies and tight oligopolies, and (3) prevent mergers which lessen competition.<sup>3</sup> There are lessons for telecommunications regulators from each of the three efforts.

### Collusion

Antitrust law prohibits price fixing through Section 1 of the Sherman Act and various sections of the Clayton Act. Several court decisions<sup>4</sup> established that explicit price fixing is illegal per se--there are no extenuating circumstances.

Firms seldom meet to set prices, however, when conditions permit tacit collusion. Conditions in telecommunications may encourage such cooperation: posted (tariff) prices, frequent sales which are small relative to the total revenue of each firm, and the presence of a dominant firm, a price leader.<sup>5</sup> Consequently, the collusion sections of antitrust law give telecommunications regulators little guidance for promoting price competition in a deregulated market.

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<sup>3</sup> William G. Shepherd and Clair Wilcox, Public Policies Toward Business, Sixth Ed. (Homewood, Ill: Richard D. Irwin, 1979), p. 98, and generally, chapters 4-9. The works cited here represent the conventional perspective on antitrust. A minority opinion rejects most antitrust intervention, contending that firms usually merge or grow to dominate a market based on superior efficiency. See Robert H. Bork, The Antitrust Paradox. (New York: Basic Books, 1978).

<sup>4</sup> For a summary of litigation against collusion, see Shepherd and Wilcox, Public Policies Toward Business, chapter 7. The precedent-setting cases include U.S. v. Trenton Potteries, 273 U.S. 392 (1927) and U.S. v. Socony-Vacuum Oil Co., Inc., 310 U.S. 150 (1940).

<sup>5</sup> For "conditions facilitating oligopolistic coordination," see Scherer, Industrial Market Structure, chapter 6, pp. 169-198.

## Monopolization

Regulators must decide whether a market is competitive enough to deregulate. Antitrust authorities face similar questions: Is the market structure so concentrated that it is no longer competitive? Is the market performance so poor that divestiture is appropriate?

Section 2 of the Sherman Act does not define competitiveness. Rather, it prohibits "monopolization", stating that: "Every person who shall monopolize, or attempt to monopolize or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several states, or with foreign nations, shall be deemed guilty of a misdemeanor...."

In interpreting Section 2, the Supreme Court adopted a "rule of reason" in most cases.<sup>6</sup> To violate Section 2, a firm must (a) possess monopoly power and (b) have willfully acquired or maintained that power, "as distinguished from the growth or development of superior product, business acumen or historic accident."<sup>7</sup> Some economists, such as Shepherd and Wilcox, feel the Supreme Court interpretation of monopolization "enervated antitrust for several decades," because it placed the burden of proof on the government. Few divestiture decisions are made solely on market share criteria, and fewer still clearly state what the market share criteria might be.

The 1945 Alcoa decision was an exception. In that case, the government alleged the share of the aluminum market held by Alcoa was 90 percent. Alcoa argued that the true market definition should include secondary (recycled) as well as primary aluminum. Depending upon the way secondary aluminum was included, Alcoa's market share was either 64 or 33 percent. In a famous side comment, the presiding judge wrote that 90 percent "is enough

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<sup>6</sup> Standard Oil of New Jersey v. U.S., 221 U.S. 1 (1911) set the precedent.

<sup>7</sup> U.S. v. Grinnell, 384 U.S. 563, 570-571 (1966). For a discussion of Section 2 and its inadequacy in promoting the wheeling of electric power, see Robert E. Burns, "Legal Impediments to Power Transfers," in Kevin Kelly, ed. Non-Technical Impediments to Power Transfers (Columbus, Ohio: NRRI, September 1987), pp. 83-89.

to constitute a monopoly; it is doubtful whether sixty or sixty-four percent would be enough; and certainly thirty-three percent is not."<sup>8</sup>

In the cases after Alcoa, the courts sometimes found monopolization at lower market share levels and other times reverted to the rule of reason,<sup>9</sup> so there is no clear market share at which a firm has monopoly power. In the AT&T complaint,<sup>10</sup> for example, the government pointed to a series of predatory practices in which AT&T engaged, not simply its dominant share of the terminal equipment and long distance markets or its ability to engage in predatory acts. After the Modified Final Judgment became effective, however, the court said the Regional Bell Holding Companies must no longer have the ability to restrict competitors' use of the local "bottleneck" before it would relax its restrictions. Evidence that they refrained to use that ability is not enough.

Another difficulty with antitrust enforcement is dispute over the correct market definition. The broader the market definition, the larger the denominator on the market share ratio; hence, the smaller the market share. Alcoa, DuPont,<sup>11</sup> and IBM<sup>12</sup> are three prominent cases in which market share has been debated.

In short, decisions in monopolization cases provide neither clear guidance as to what a competitive market structure is nor assurance that antitrust enforcement can correct telecommunications markets which are prematurely deregulated.

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<sup>8</sup> U.S. v. Aluminum Co. of America et al., 148 F. 2d 416, 424 (1945).

<sup>9</sup> Scherer, Industrial Market Structure, pp. 531-540.

<sup>10</sup> U.S. v. American Tel. & Tel. Co., United States District Court, District of Columbia., Civil Action No. 74-1698, Filed Nov. 20, 1974.

<sup>11</sup> U.S. v. E.I. du Pont de Nemours and Co., 118 F. Supp. 41 (1953), 351 U.S. 377 (1956). See also an analysis in G.W. Stocking and W.F. Mueller, "The Cellophane Case and the New Competition," American Economic Review 45 (March 1955): 29-63.

<sup>12</sup> The IBM case and market share definition difficulties are discussed in Franklin M. Fisher, John J. McGowan, and Joen E. Greenwood, Folded, Spindled, and Mutilated: Economic Analysis and U.S. v. IBM (Cambridge, Mass.: MIT Press, 1983), chapters 3-4.

## Merger Policy

Over the past 15 years several significant telecommunications mergers, acquisitions and joint ventures have occurred: General Telephone and Telenet, General Telephone and Sprint, Sprint and United Telecom, IBM (and SBS) and MCI, General Telephone and Siemens. Others, like Contel and Comsat, have failed. Usually the appropriate regulatory agency, the FCC, reviews the proposed merger, and sometimes the Department of Justice may choose to review it, too. In any case merger policy in antitrust law offers some good lessons for telecommunications deregulators.

In evaluating mergers, antitrust authorities must differentiate between competitive and noncompetitive markets. Mergers can be favorable or neutral in their effect on competition. Yet to prevent firms from merging to reduce competition, Section 7 was included in the Clayton Act in 1914 and strengthened with the Celler-Kefauver Amendment in 1950. The law does not explicitly state which levels of market concentration are illegal. It merely forbids mergers which "substantially...lessen competition or...tend to create a monopoly in any line of commerce in any section of the country."

The courts set the ultimate standards by which mergers are evaluated. In a series of decisions after Celler-Kefauver <sup>13</sup> the Supreme Court rejected horizontal mergers in which the combined market shares of the firms was much lower than those set in Alcoa for divestiture. For example, the court overturned the merger of Von's Grocery, the third largest food chain in the Los Angeles area, with Shopping Bag, the sixth largest. Yet Von's post-merger market share was only 7.5 percent, concentration was declining in the area, and there were no barriers to entry.

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<sup>13</sup> U.S. v. Bethlehem Steel Corp., 168 F. Supp. 756 (1958), Brown Shoe v. U.S., 370 U.S. 294 (1962), and U.S. v. Von's Grocery Co., 384 U.S. 280 (1966).

While apparently strict on mergers, the court is not always predictable.<sup>14</sup> To help firms contemplating a merger know whether it might be challenged the Justice Department developed more explicit merger guidelines in 1968. The guidelines, most recently revised in 1986,<sup>15</sup> do the following:

1. Define the scope of the relevant market.
2. Set market concentration standards, indicating mergers which are likely to be challenged.
3. List nonstructural factors which the Justice Department considers.

The guidelines define a market as a set of products and the relevant geographic area such that a hypothetical, profit-maximizing monopolist could impose a five percent increase in price above prevailing or likely future levels. Within this market a real firm has market power if it can increase its price by five percent for one year without significant loss of customers. The guidelines, while helpful, are not sufficiently clear to prevent the disputes about market definition or market power.

One way of telling whether a merger will produce significant market power is by looking at market concentration. Though not known with precision, the link between market structure and performance is generally acknowledged.<sup>16</sup> The Justice Department uses the Herfindahl-Hirschman Index to measure concentration.<sup>17</sup> The index is the sum of the squared market shares of the firms in the market:

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<sup>14</sup> In the General Dynamics case, for example, the court allowed a merger among firms producing coal in Illinois, in which the share of the top four firms rose from 43 to 63 percent from 1957 to 1967. The court argued that the relevant market was broader and that other market conditions must be considered. See U.S. v. General Dynamics Corp., 341 F. Supp. 534 (N.D. Ill. 1972), affirmed, 415 U.S. 486 (1973). For a summary of merger history, see Shepherd and Wilcox, Public Policies Toward Business, chapter 6.

<sup>15</sup> U.S. Department of Justice Merger Guidelines [1984], reprinted in Antitrust & Trade Reg. Rep. (BNA) No. 1169 (Spec. Supp. June 14, 1984).

<sup>16</sup> Franklin M. Fisher, "Horizontal Mergers: Triage and Treatment," The Journal of Economic Perspectives 1 (Fall 1987): 30-31 and, generally, Scherer, Industrial Market Power.

<sup>17</sup> For a discussion of alternative indexes and the level of concentration in various markets, see Scherer, Industrial Market Power, pp. 56-74.

$$HHI = \sum S_i^2$$

where  $S_i$  is the market share of the  $i$ -th firm and  $N$  is the total number of firms in the market. This index ranges from 0, a perfectly competitive market, to 10,000, a perfect monopoly ( $100^2$ ). In calculating the index the Department includes not only existing domestic competition, but potential entrants and foreign competitors.

The guidelines consider the increase in concentration due to the merger as well as the level of concentration. This increase equals two times the product of the market shares of the merged firms.<sup>18</sup> In effect, the guidelines imply the use of table 3-1 in evaluating mergers. To illustrate the HHI, NRRI developed two diagrams. Figure 3-1 shows the relationship of the HHI to the number of firms in the industry, assuming that all firms have equal size.<sup>19</sup> The figure shows the minimum number of firms necessary for each level of the HHI. For an HHI of 2000, for example, there must be five equal firms. If the firms are not of equal size, there must be more than five. Figure 3-2 shows the other extreme. It assumes that there is one

TABLE 3-1

JUSTICE DEPARTMENT MERGER GUIDELINES: CHALLENGEABLE LEVELS OF CONCENTRATION

<u>Increase in HHI</u>	<u>Concentration Levels</u>		
	<u>Low</u> <u>(Below 1000)</u>	<u>Moderate</u> <u>(1000-1800)</u>	<u>High</u> <u>(Above 1800)</u>
Below 50	Accept	Accept	Accept
50-100	Accept	Accept	Challenge
Above 100	Accept	Challenge	Challenge

Source: Derived from the text in U.S. Department of Justice Merger Guidelines [1984], reprinted in 2 Trade Reg. Rep. (BNA) No. 1169 (Spec. Supp. June 14, 1984), p. 5

<sup>18</sup> Let  $HHI = a^2 + b^2 + \dots$ , where  $a$  and  $b$  are the market shares of the two firms which wish to merge. Then after the merger the HHI will be:  $(a+b)^2 + \dots = a^2 + b^2 + 2ab + \dots$ , so the increase in the HHI is  $2ab$ .

<sup>19</sup> If there are  $N$  equal firms, the market share for each is  $100/N$ .  $HHI = N(100/N)^2 = 10,000/N$ .

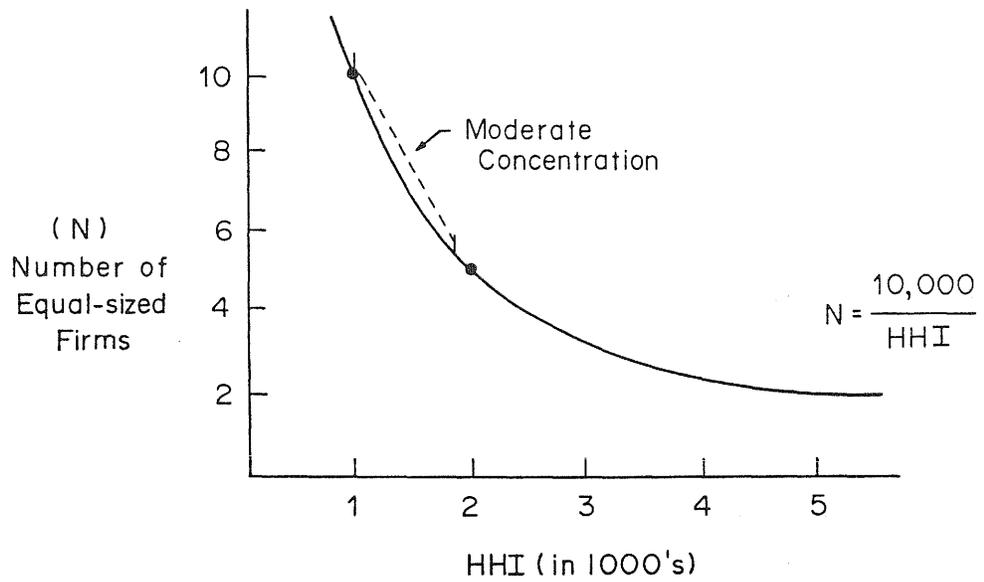


Fig. 3-1. Minimum number of firms for each level of concentration

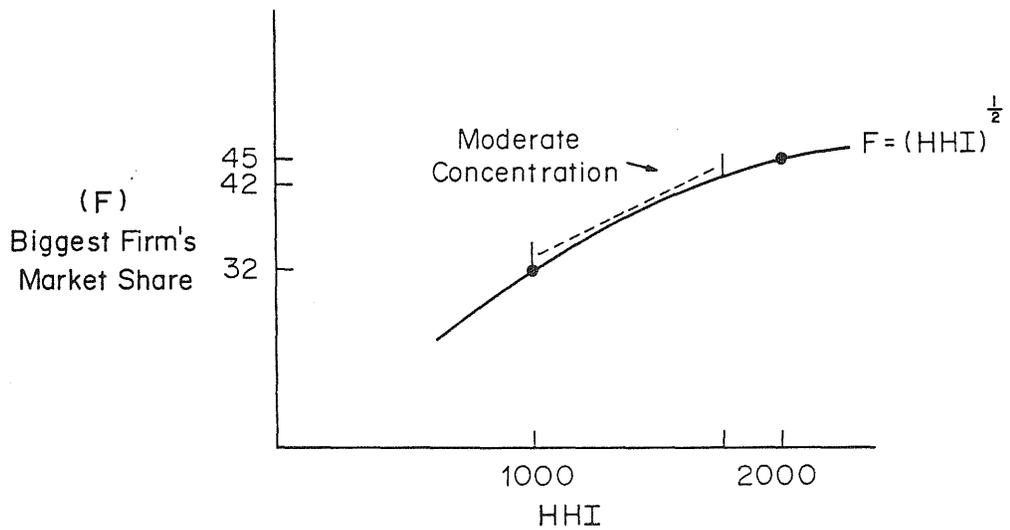


Fig. 3-2. Maximum market share for dominant firm for each concentration level

dominant firm in the market with hundreds of small fringe firms. The figure shows, for each level of HHI, the maximum size of the dominant firm.<sup>20</sup> To reach an HHI of 2000, for example, the dominant firm can hold no more than 45 percent of the market. If each of the fringe firms is not negligibly small, the dominant firm's share must be smaller than 45 percent to obtain the same HHI. The local exchange carriers would fail such a test for basic local and intraLATA services, and AT&T would fail it for interLATA service.

The HHI can also be compared with the four-firm concentration ratio (CR4), used in the 1968 guidelines. CR4 is the combined market share of the top four firms. Lawrence White, one of the authors of the Department of Justice guidelines, conducted an empirical study<sup>21</sup> and found that HHI = 1000 corresponds roughly to CR4 = 50, and HHI = 1800 to CR4 = 65.

The Justice Department uses the concentration test in table 3-1 to determine the mergers it may challenge, but it recognizes that market analysis can not be quantified simply. White concedes that "to some extent the Guidelines may be likened to the drunk who, though he thinks he probably lost his keys in the middle of the road, spends most of his time looking for them on the sidewalk 'because the light is better there.'"<sup>22</sup>

When a merger fails the concentration test, the guidelines indicate further, more subtle considerations. These include barriers to entry, efficiencies associated with the merger, and the sale of a failing firm or division. Entry is considered easy if enough competing capacity could be developed within two years to make a hypothetical five percent price increase unprofitable.

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<sup>20</sup>  $HHI = a^2 + b^2 + b^2 + \dots$ , where  $a$  is the share of the dominant firm and  $b$  is the share of each of the fringe firms. If  $b$  is negligibly small, then  $HHI = a^2$ .

<sup>21</sup> Lawrence J. White, "Antitrust and Merger Policy: A Review and Critique," Economic Perspectives 2 (Fall 1987): 17.

<sup>22</sup> Ibid.

Most economists<sup>23</sup> agree that this two stage merger analysis is sensible and effective, so perhaps regulatory authorities should adopt a similar two stage analysis of the competitiveness of telecommunications markets.

#### Concentration in Telecommunications and Unregulated Markets

As discussed above, market concentration (the number and size distribution of firms) is an important indicator of the amount of competition likely in a market. In general, a market with a low Herfindahl-Hirschman Index or four firm concentration ratio is likely to exhibit more competitive behavior than one with high concentration, if other factors are the same.

Table 3-2 shows concentration for a range of industries from the most recent Census of Manufactures.<sup>24</sup> One can see that some of the most competitive telephone markets (telephone apparatus and switching) have higher concentration than most unregulated markets. In an intrastate interLATA toll market if AT&T had a 75 percent market share and faced a perfectly competitive fringe market, the HHI would be double the most concentrated one on the table. The concentration level for basic local service is probably close to the perfect monopoly HHI (10,000).

Some recently deregulated industries are not on table 3-2 and are concentrated. In the trucking industry the top six less-than-truckload (LTL) firms account for 60 percent of LTL shipments and 90 percent of all LTL profits (LTL shippers are big, national hub-based trucking firms). In the railroad industry, mergers have reduced the number of large rail-freight carriers from 13 in 1978 to 6 in 1987. The remaining six carry 83 percent

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<sup>23</sup> For instance, The Journal of Economic Perspectives (published by the American Economic Association) contains a symposium on horizontal mergers and antitrust. See articles by Steven C. Salop, Lawrence J. White, Franklin M. Fisher, and Richard Schmalensee, (Fall 1987): 3-54.

<sup>24</sup> The industries in Table 4-9 are the ones chosen in Scherer, Industrial Market Power, p. 72. NRRI updated Scherer's (1972) table, deleting a few industries for which the 1982 census did not provide HHI's (e.g. passenger cars and cereal breakfast foods) and deleting a few for simplicity (e.g. screw machine products). For a discussion of 1977 data and concentration ratios generally, see Fischer and Dornbusch, Economics, pp. 214-216.

TABLE 3-2

CONCENTRATION IN SELECTED INDUSTRIES, 1982  
(ranked by the Herfindahl-Hirschman Index)

SIC* Code	Industry	HHI	CR4**	Number of Companies	Value of Shipments (\$M)
3632	Household refrigerators, freezers	2,745	94	39	2,471
36611	Telephone switching and switchboard equipment	2,690	80	(NA)	4,569
3661	Telephone and telegraph apparatus	(D)	76	259	13,394
3331	Primary copper	2,673	(D)	7	(M) 440
2111	Cigarettes	2,623	(D)	8	12,127
3511	Turbines and turbine generator sets	2,602	84	71	3,676
2082	Malt beverages	2,089	77	67	11,183
3334	Primary aluminum	1,704	64	15	5,037
3011	Tires and inner tubes	1,591	66	108	9,340
3523	Farm machinery and equipment	1,468	53	1,787	10,743
3873	Watches, clocks, and watchcases	1,432	51	227	1,187
3721	Aircraft	1,358	64	139	28,024
36512	Television receivers	1,351	67		3,386
2841	Soap and other detergents	1,306	60	642	9,167
2284	Thread mills	1,060	61	60	579
3691	Storage batteries	989	56	129	2,431
3221	Glass containers	966	50	41	5,217
3574	Calculating and accounting machines	944	54	65	1,487
2822	Synthetic rubber	935	49	63	3,156
3573	Electronic computing equipment	793	43	1,520	36,767
3411	Metal cans	790	50	168	11,133
3562	Ball and roller bearings	724	47	109	3,149
3312	Blast furnaces and steel mills	650	42	211	(M) 11,763
2211	Weaving mills, cotton	645	41	209	3,972
2041	Flour and other grain mill products	551	40	251	4,933
3621	Motors and generators	476	36	349	6,060
2051	Bread, cake, and related products	410	34	1,869	13,143
2911	Petroleum refining	380	28	282	199,356
3143	Men's footwear, except athletic	378	28	129	2,261
2834	Pharmaceutical preparations	318	26	584	18,997
2851	Paints and allied products	222	24	1,170	9,162
2651	Folding paperboard boxes	212	22	457	3,902
3552	Textile machinery	200	22	511	1,059

TABLE 3-2 (continued)

CONCENTRATION IN SELECTED INDUSTRIES, 1982  
(ranked by the Herfindahl-Hirschman Index)

SIC* Code	Industry	HHI	CR4**	Number of Companies	Value of Shipments (\$M)
2711	Newspapers	193	22	7,520	21,276
2026	Fluid milk	151	16	853	18,736
2512	Upholstered household furniture	118	17	1,129	3,505
2421	Sawmills and planing mills, general	113	17	5,810	10,065
2086	Bottled and canned soft drinks	109	14	1,236	16,807
2335	Women's and misses' dresses	24	6	5,489	4,623
3273	Ready-mixed concrete	18	6	4,161	8,163

Key:

- \* Standard Industrial Classification
- \*\* Four firm concentration ratio - the percentage of the industry value of shipments accounted for by the four largest firms.
- (D) Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
- (NA) Not available
- (M) Value added by manufacture is shown for this industry rather than value of shipments because the latter contains a substantial and unmeasurable amount of duplication.

Source: U.S. Bureau of Census. "Concentration Ratios in Manufacturing," 1982 Census of Manufactures MC-82-5-7, Washington, D.C., tables 5-6.

of the rail-freight and earn 93 percent of the profits.<sup>25</sup> Following Lockheed's withdrawal in 1981 only two U.S. builders of large jet aircraft remain: Boeing and McDonnell-Douglas.<sup>26</sup> Comparison of these industries to telecommunications service markets is misleading, however. First, there is substantial intermodal competition between trucking and railroads. If the two are considered one market, the level of concentration falls. Second, the aerospace industry is subject to competition from foreign producers, unlike most telecommunications service markets in the U.S. Third, although the 4 or 6 firm concentration ratios are high, the size distribution among the firms is more even than in telecommunications services. Fourth, several conditions in the trucking, railroad, and aerospace industry promote price rivalry: large, infrequent sales, bidding as opposed to list prices, and so on.

In short, the evidence suggests that competition in deregulated telecommunications markets may not be sufficient to restrain prices, relative to competition in other markets.

#### Lessons for Telecommunications Deregulation

1. Antitrust law, while strict and effective against explicit price fixing, is generally ineffective against price leadership, which is more common among communications services. Antitrust law is also often ineffective in breaking up near-monopolies. It is unlikely to protect the public interest if deregulation is premature.

2. Antitrust law does not contain specific standards for judging the competitiveness of markets. As a result, courts and the enforcement agencies consider a variety of information, not just market concentration.

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<sup>25</sup> The trucking and railroad data come from Business Week, December 22, 1986, p. 52.

<sup>26</sup> "Aerospace & Air Transport," Standard & Poor's Industry Surveys, May 14, 1987, pp. A/15-49.

State regulatory commissions probably require the same flexibility in assessing competition in their markets.

3. Although antitrust laws are vague about permissible concentration levels for divestiture and for merger, the enforcement agencies have written explicit guidelines for mergers, but not for divestiture. Concentration resulting from mergers is given more scrutiny than concentration acquired through internal growth. The Justice Department merger guidelines warn business about the concentration levels which may lead it to contest a merger, but are flexible enough to accommodate other considerations. State commissions might similarly decide that concentration in a telecommunications market must fall below a certain level before further consideration of deregulation will be made.

4. The level of market share required for a successful divestiture suit is substantially higher than that necessary for the government to block a merger. For divestiture, the line between competitive and noncompetitive markets is somewhere between 66 and 90 percent; for merger, the threshold is approximately 10 to 30 percent. It may be easier to block a merger because that does not disrupt the market as much as divestiture of a large firm would. In setting standards for telecommunications deregulation, commissions similarly must weigh the gains of deregulation against the costs of market disruption at the time of deregulation and the market disruption if reregulation is later appropriate.

5. In assessing potential competition the merger guidelines are more stringent than those applied by Huber<sup>27</sup> for telecommunications. Huber discusses competition which may develop in the local loop in the next two decades. The guidelines consider only entry which is likely to occur within

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<sup>27</sup> See Peter Huber, The Geodesic Network, prepared for the Department of Justice, 1987. For a brief discussion of the Huber report, see chapter 5, infra.

two years in response to a small (5%) price increase. The courts<sup>28</sup> in particular, recognize a difficulty with Huber's analysis--namely, that market forecasts in an area of technological improvement often go awry. The problem may be that technology does not improve as rapidly as forecast or that demand for the new product does not materialize, as was the case, for example, with AT&T's Picturephone in the 1960's. Deregulation, like mergers, has immediate effect, which may well be anticompetitive, so the potential competition should be equally imminent.

6. Barriers to entry should be eliminated as much as possible. The merger guidelines, for example, state that concentration is not as troublesome if entry is easy. Similarly, in the Modified Final Judgment (MFJ) of the AT&T antitrust case, the courts compelled the Bell Operating Companies to provide equal access facilities for long distance competitors. The MFJ also emphasized that the local bottleneck monopoly must be gone before it would permit the BOCs to enter competitive markets, for fear that they would use the local bottleneck to restrict entry into those competitive markets. Likewise, the FCC is developing an Open Network Architecture (ONA) which is intended to make entry into information services fair. Table 1-1 in chapter 1 documented other efforts by the FCC and the courts to make entry easier. This policy is the first stage that regulators may want to pursue in seeking the benefits of competition.

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<sup>28</sup> See Judge Harold Greene's triennial review of the Modified Final Judgment of the AT&T divestiture: United States v. Western Electric, U.S. District Court, 82-0192, September 10, 1987.



CHAPTER 4  
COMPETITIVE OUTCOMES

The several proposals currently before state legislatures and state regulatory commissions to deregulate, either in whole or in part, currently regulated services provided by jurisdictional telephone utilities have as one of their primary aims the substitution of the competitive marketplace for economic regulation. In this chapter, what can be learned from airline deregulation and telephone company diversification is discussed. Also presented are data on certain industries that have never been subject to commission-based economic regulation. The purpose of both examinations is to provide regulatory policy makers with useful benchmarks which they can use to forecast likely outcomes of specific deregulation proposals. The benchmarks are important because little direct historical data are available on which to base forecasts of the possible outcomes of the various telecommunications deregulation proposals.<sup>1</sup>

Under the current regulatory framework, state commissions exert considerable effort to protect residential customers. In a totally unregulated market the residential consumer, instead, relies for protection on the presence of viable and independent competitors who want the customer's business.

As noted earlier in the report, competitive markets not only do things differently, but have different goals. No matter how well or how poorly deregulated telecommunications markets act, the essential point is that they will behave differently than the previously regulated telecommunications industry. For regulators the dilemma is knowing when the behavior is "just different" versus behavior that is anti-competitive or harmful to legislatively established regulatory goals. Firms in competitive markets,

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<sup>1</sup> Some data do exist and are examined in chapter 6 of this report. The economic principles presented throughout the report offer a basis for qualitative forecasts of the possible outcomes of alternative proposals.

for example, when faced with either a declining or less than desired demand, act to protect their profit margin by closing their least profitable operations. Allowing actions like this by unregulated telecommunications firms could threaten important social goals such as affordable universal service and the elimination of monopoly profits.

### Results of Airline Deregulation

Over the past decade several large, primarily transportation, industries, having some or all of the features of a monopoly, have been deregulated. In each the profitability, prices charged, quality of service, and the structure of the industry have changed as a result of the deregulation (among other factors). Some of the other factors include technological change, consumer demand, and the extent of competition that emerged.<sup>2</sup>

#### Profitability

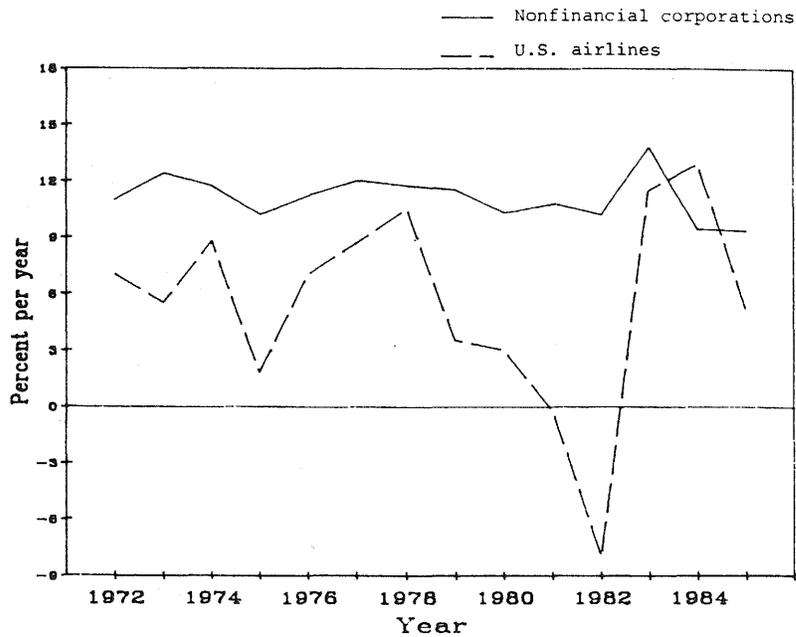
Prior to 1976, the airline industry was largely regulated by the U.S. Civil Aeronautics Board (CAB). In the Carter administration, the CAB began administratively deregulating certain industry practices and in 1978 the Congress voted to abolish the CAB. In the first two years of administrative

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<sup>2</sup> Some parallels exist between the issues involved in telecommunications deregulation and those surrounding the deregulation of other industries. For example, a major study of the transportation industry published in 1959 concluded:

1. Transportation activities of all kinds were becoming increasingly competitive because of technological, demographic, and other structural changes.
2. Competition made government regulation of the industry increasingly cumbersome and outdated so that regulation impeded rational allocation of resources in the industry.
3. Regulatory insistence on a continuation of highly uneconomic cross subsidies, whereby income from profitable services was used to make up losses elsewhere, had become untenable...[Meyer, John R.; M.J. Peck; C. Zwick; and J. Stenason, The Economics of Competition in the Transportation Industries (Cambridge, Mass.: Harvard University Press, 1959) p. vi].

deregulation the industry made record profits. This profitability has been attributed to deregulation, a strong economic climate, and declining energy prices. From 1978 to late 1982, airline profitability declined dramatically, as shown in figure 4-1 below. Factors affecting profitability during this period included inflation in energy prices, unexpectedly early retirement of obsolete and fuel inefficient aircraft, back-to-back U.S. recessions (1980 and 1981-82), high interest rates that greatly increased the cost of purchasing energy efficient aircraft, and the PATCO-strike.



Source: Federal Reserve Board, "Flow of Funds Accounts," various years. Moody's Transportation Manual, various years.

Fig. 4-1. Pretax return on investment: Airlines vs. non-financial corporations, 1972-1985

By late 1982 and early 1983, the fare wars permitted by deregulation were thought to have hurt profitability.<sup>3</sup> Observations of the performance of the deregulated airline industry are somewhat mixed. However, it does appear that one significant change in the industry has been the direct and unmuted impact of economic forces on the supply and demand for airline service. Previously, these forces had been somewhat muted by the regulatory policies of the CAB. Under CAB there was no easy entry into the market and airlines did not go bankrupt. While the entry of new firms into the market will be the first trend regulators will observe, the direct and immediate responsiveness to short-term market forces by telecommunications firms will be the second and, in many ways, the most important difference noticed if viable competition emerges in telecommunications markets.

#### Selected Results of Airline Deregulation<sup>4</sup>

##### Price

1. Passenger airfares, particularly for routes over 500 miles, are lower on average.
2. Average fares have been reduced, with 70 percent of all passengers flying on some sort of a discount fare by 1984.
3. Airline fares have declined, adjusted for inflation, on average 13 percent since deregulation.

##### Cost

4. Productivity, as measured by aircraft utilization and load factors, has increased.
5. Costs per available seat mile have not escalated as fast as factor input prices.
6. Costs per revenue passenger mile have generally declined.

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<sup>3</sup> John R. Meyer and Clinton V. Oster, Jr., eds. Deregulation And The Future Of Intercity Passenger Travel (Cambridge, Mass.: The MIT Press, 1987), pp. 12-13.

<sup>4</sup> All items listed, except item 3, are taken from John S. Strong, "Airline Financial Performance Since Deregulation," in Deregulation And The Future Of Intercity Passenger Travel, eds. John R. Meyer and Clinton V. Oster, Jr. (Cambridge, Mass.: The MIT Press, 1987), pp. 13-16.

7. Employment in the airline industry appears to have increased, although new employees have received less pay.
8. Some consolidation of carriers has occurred, along with the emergence of a number of commuter and long-distance carriers.
9. Airlines have modified their equipment financing practices to include the use of equipment trusts and leasing.

#### Quality Of Service

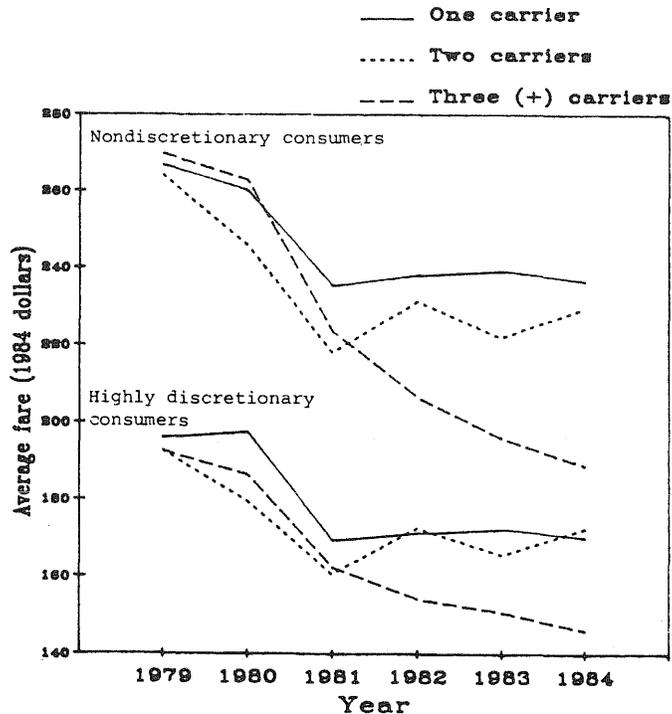
10. Full fare business travelers may be worse off where load factors have increased under deregulation, resulting in more crowded planes and less availability of last minute reservations.
11. Congestion and flight delays, particularly for big city departures are more common.
12. Many smaller towns and cities now receive more direct nonstop service to their nearest hub.
13. Flight frequencies have increased in most markets, corrected for recession effects.
14. Airline safety has not degraded.

#### Price Discrimination and Competition

Airlines have extensively employed discount fares to attract non-traditional travelers and to increase their load factors. In figure 4-2 Strong (1987) has compared the fares for discretionary and nondiscretionary consumers in markets that ranged from having only one carrier to those that had three or more carriers.<sup>5</sup> His data show that average fares for nondiscretionary consumers have declined since deregulation, and have had the greatest decline in those markets with three or more carriers. Highly discretionary fliers have also seen fares decline since deregulation and have had their greatest declines in those markets served by three or more carriers. Interestingly, his data reveal that nondiscretionary travelers have had a slightly greater fare decrease than the highly discretionary

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<sup>5</sup> The figures shown here have been adjusted for inflation. A nondiscretionary traveler is defined as one unable to meet minimum stay requirements, or a seven day advanced purchase policy. Discretionary fliers are able to meet the above restrictions.



Source: Strong, John S., "Airline Financial Performance Since Deregulation," in Deregulation And The Future Of Intercity Passenger Travel," John R. Meyer and Clinton V. Oster, Jr., eds., Cambridge: The MIT Press, 1987, p. 110.

Fig. 4-2. Fare changes by type of market and type of consumer, 1979-1984

traveler. In the cited study it is believed that the nondiscretionary traveler is primarily the business traveler.

The availability and size of the discount fares offered appears to vary by the size of the market served. The airports with the greatest traffic volume had the largest number of discounted fares, as well as the largest discounts offered. Further, service changes as measured by the number of flights also varied by the size of the market, although there has been significant variation over time. In the 1976-1981 period, the medium-sized markets experienced the greatest growth. In the 1981-1984 period, the largest and smallest markets had the greatest growth in terms of the number of flights. The number of flights servicing an area will continue to change over time in response to various market forces (Strong, 1987, pp. 110-112).

The experience in the airline industry seems to support the idea that fares or prices will be lowest in areas where there is viable competition. Also that vigorous competition is attracted to those airports (equivalent to urban population centers for telecommunications purposes) and routes with the greatest volume. The differential impact over time regarding the number of flights serving a given size airport seems to be a function of the consolidation, entrepreneurial, and hub-based strategies pursued by various carriers. For the telecommunications industry this variation over a fairly short period of time is suggestive and may indicate that we should expect to see various interim structures and patterns as the markets develop.

#### Quality Of Service

On November 10, 1987, the U.S. Department of Transportation released its first monthly report on certain quality of service indicators for the fourteen largest airlines for their flights to and from the 27 busiest airports. The report includes numerous comparisons such as the number of passenger complaints by airline, average on-time arrival percentages, and the best and worst on-time arrival flights and times by airport and by route. Usually, airlines are on time with overall on-time arrivals ranging from a high of 84.5 percent to a low of 67.4 percent. Specific routes, however, often have poor records--seventy-two specific flights were late at least 85 percent of the time. Passenger complaints ranged from a high of 17.78 per 10,000 to a low of 1.52. In October 1987, 3,606 passenger complaints were filed, down 36 percent from September 1987, but triple those of October 1986.<sup>6</sup>

Interpretation of the customer complaints is difficult. On one hand, air travel is up and air fares (adjusted for inflation) are down. On the other hand, in an effort to provide profitable services on high volume routes and for peak time periods, airlines scheduled flight arrivals and departure times that were not realistic in an attempt to avoid losing customers to rivals that were willing to schedule the flights at that time

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<sup>6</sup> USA Today, Nov. 11, 1987, p. 8A.

and for that route. Whatever the reason for the complaints and service quality problems, it seems likely that disruptions may arise just from the different operating procedures engaged in by unregulated telecommunications firms and that this will be accompanied by an increase in consumer complaints. The viability, contestability, and sustainability of any deregulated telecommunications markets that may emerge, will directly influence the way these consumer complaints are handled. If the markets are truly competitive, then rational profit-maximizing firms will act to provide the services desired by the complaining customers.

### Consolidation

Airline deregulation gave rise to three distinct types of airline companies: national, regional, and commuter airlines. Freed from the requirement to serve lower density routes, national carriers abandoned certain routes, making them available for regional and commuter airlines to pick up. Accordingly, the first several years of airline deregulation saw a dramatic increase in the number of airlines, primarily regional and commuter.

In 1986 and 1987 this trend changed significantly. Since 1986, ten national carriers have been acquired or targeted for acquisition. By 1987 the number of major airlines had been reduced from twelve to ten, with more consolidations expected. In 1986, the top ten airlines accounted for 96.1 percent of passenger traffic, versus 80.6 percent in 1985.<sup>7</sup> The consolidation has been driven by the carriers' need to offer national service and has been largely implemented through a "hub-and-spoke" routing system. The success of the airline hub-and-spoke strategy has caused many regional and commuter airlines to be consolidated and/or acquired as feeder airlines serving the hubs of the national carriers.

Smaller airlines benefit by being included in the larger airline's scheduling and reservation system, sharing gates at lower prices at the larger airlines' hubs, and being the preferred carrier for either initiating or terminating the trips for some of the customers of the larger airline.

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<sup>7</sup> "Aerospace & Air Transport Industry Surveys," Standard & Poor's Industrial Surveys (March 14, 1987): 29.

For the larger airlines, it improves the value of their hubs at minimum cost to them, and by coordinating scheduling and other operations with the smaller airline, the major airline need not provide full support services for the last leg of the trip. Remaining independent airlines may be in an untenable financial position unless they can offer a cost or service advantage to potential customers who are otherwise effectively tied up by the mega-carrier's ability to control the flow of information. The number of regional and commuter airlines has declined through bankruptcy and consolidation from 246 in 1981 to 179 in 1985.

The ability to build a hub-based network gives the largest firms a significant "decreasing" cost advantage over its non-networked rivals. Costs in a hub-based network are seen as decreasing costs because of the economies that occur due to the optimizing of routes, the sharing of facilities, and the large base over which advertising, sales, R&D, administrative support services, and management are supported.

The wave of consolidations has caused some to predict that the industry will become "...dominated by six or seven 'mega-carriers,'<sup>8</sup> with a few sizable airlines serving certain regions and routes, complimented by a fairly large number of commuter carriers serving smaller cities and less heavily traveled routes."<sup>9</sup> This level of market concentration is comparable to that in the trucking, railroad, and aerospace industries.<sup>10</sup>

The consolidation and hub-based networks of the airlines present a possible scenario of what might happen in a deregulated telecommunications industry. Telecommunications depends on networks, whether hierarchical or geodesic. The physically interconnected distribution system is thought to be one of the key features of natural monopolies. It may be, however, that a firm may still design an economically efficient and attractive network that

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<sup>8</sup> Mega-carriers own their own hub-based national networks and have acquired regional and commuter airlines to provide service out of the hubs to smaller markets.

<sup>9</sup> "Aerospace & Transport Industry Surveys," Standard and Poor's Industrial Surveys (May 14, 1986): 28.

<sup>10</sup> For information on concentration in the trucking and railroad industries, see Business Week, December 22, 1986, p. 52. For information on the aerospace industry, see Standard and Poor's Industrial Surveys (May 14, 1986), "Aerospace & Air Transport Industries Surveys," p. 16.

is not physically interconnected--such as the mega-carrier airlines and the LTL trucking firms have successfully done with their hub-based networks--and end up with all the same advantages that a natural monopoly achieves with a physically interconnected distribution system.

Strong countervailing forces exist in the telecommunications market that make it difficult to assess if an unregulated telecommunications market would be structured in a hub-based, or geodesic, or hierarchical network. The Huber report predicts a non-bottleneck system with all customers having an almost unlimited number of vendors to choose from in meeting their telecommunications needs. Huber does, however, predict that there will be a market shakeout, resulting in a few large firms providing comprehensive, end-to-end service. The success of the ISDN and open network architecture (ONA) regulatory initiatives may directly affect the geodesic or open nature of future telecommunications networks.

On the other hand the bottleneck concepts contained throughout the AT&T divestiture agreements and orders, strongly imply that a modified hierarchical or hub-type telecommunications network is likely to continue for the near-to-medium term. Stand-alone microwave facilities, under this scenario, would not be sufficient to overcome the economic attractiveness of a RBOC operating company's full service and ubiquitous network. The aggressive modernization efforts of the local operating companies (LEC), both in switching and in the installation of glass fiber cable, may result in the LEC's having the most efficient telecommunications network. This could have the effect of squeezing out small service providers such as has happened in the airline industry. Furthermore, as Judge Green's September 10, 1987 order states, the incentives to engage in anticompetitive behavior exist for the BOCs to the same extent as they did for the old Bell system.

Data do not exist sufficient to predict which type of a telecommunications network will emerge. However, there does seem to be a preference by customers served by the trucking and airline industries for firms that can provide comprehensive, end-to-end services. This preference is one of the reasons for Huber's prediction of the emergence of a telecommunications oligopoly.

### Relative Profitability of Telephone Diversification

AT&T had a net income of \$139 million in 1986, a drop from the \$1,557 million it reported in 1985. The drop is due to a number of factors: resizing and restructuring, accounting changes that increased depreciation charges, and a writedown of assets and inventory.<sup>11</sup> In its effort to enter the computer market, AT&T is thought to have lost \$1 billion to date, although it expects to be able to earn a profit by the end of 1988.<sup>12</sup> The charges against these factors totaled \$3.2 billion in 1986. AT&T long distance sales were up 9.9 percent (due primarily to the rate reductions stemming from a reduction in access charges paid by AT&T to local telephone companies), whereas its sales of unregulated business communications products and computers, and certain network equipment declined 9.4 percent.<sup>13</sup> In contrast, the RBHCs have also had their best financial performance from their telephone operations,<sup>14</sup> as can be seen in table 4-1, below.

As can be seen from the above information, AT&T and the RBHCs have made most of their money from their traditional telephone business. This is in sharp contrast (so far) to the predictions made by some observers at the time of the MFJ that the key area of future growth for AT&T lay in its non-traditional business areas, such as computers.

The applicability of this example for state regulators is indirect at best. If clear accounting separation or organizational separation and insulation of subsidiaries is achieved, the economic performance of unregulated parts of jurisdictional utilities is not necessarily a concern of regulators. As a minimum, this example suggests how much more efficient a company may be if it builds upon its traditional areas of strength.

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<sup>11</sup> 1986 AT&T Annual Report, pp. 15-16.

<sup>12</sup> The Economist, Oct. 17., 1987, p. 3.

<sup>13</sup> Rental revenues declined 17.1 percent, although they continued to be the most profitable sector for AT&T. The cost of telephone services as a percent of revenues was 46.9 percent, for products it was 70.7 percent, and for rentals it was 32.5 percent (1986 AT&T Annual Report, pp. 15-17).

<sup>14</sup> The lucrative yellow pages have in many instances been transferred from the telephone operations to the unregulated subsidiaries. Yellow Page revenues account for a substantial part of the net profitability of the unregulated subsidiaries.

TABLE 4-1

1985 FINANCIAL PERFORMANCE OF REGIONAL COMPANIES' REGULATED  
TELEPHONE UTILITY OPERATIONS WITH THEIR NON-TELEPHONE  
SUBSIDIARIES AND AFFILIATES ENGAGED IN COMPETITIVE ENTERPRISES  
(In Millions of Dollars)

	Income From Telephone Operations	Income Or Loss From Competitive Subsidiaries
Ameritech	\$1,820	\$ -65
Bell Atlantic	1,828	-59
Bell South	2,435	-4
NYNEX	1,776	-79
Southwestern Bell	1,630	-36
Pacific Telesis	1,799	-47
U S West	1,684	-180

Source: Reported in United States v. Western Electric Company, Inc., et al., Civil Action No. 82-0192, September 10, 1987, p. 159.

#### Write-offs by Telcos

Write-offs of losses is a standard, although infrequent, practice for unregulated firms. Recently, for example, Proctor and Gamble wrote off \$800 million and U.S. banks wrote off \$12.5 billion. Over the last year the leading long distance companies, US Sprint, MCI, and AT&T, have felt the financial strain resulting from their rapid modernization and extension of facilities. Since 1986, US Sprint has reportedly spent more than \$2.5 billion on optic and digital facilities and has written off (in 1986) more than \$356 million, before taxes. MCI reportedly also spent approximately \$2.5 billion since 1985 and has written off losses of \$448 million attributed to reorganization and modernization. AT&T spent \$2.5 billion in 1987, modernizing and upgrading its facilities. By the end of 1986 it will write off \$3.2 billion to cover "...32,000 redundancies, resulting from

savings in manpower that new equipment allows, and to cover a corporate reorganization and scrapping of some old equipment."<sup>15</sup>

For regulators the financial health of unregulated telcos is important only as it affects the services received by those customers served by regulated telephone utilities. Accounting separations and the use of separate subsidiaries are designed to protect against cross-subsidies flowing from the monopoly customer to the unregulated portions of jurisdictional utilities. The quality of service as well as the contestability of certain markets may be directly affected by the financial health of the competing firms. To the extent that the regulated utility retains an obligation to serve as a carrier of last resort to pick up unhappy or service-denied customers, current monopoly customers may have to pick up the cost of having the excess capacity required to meet these uncertain future needs. This may affect the quality of service of current customers.

#### Competitive Outcomes in Selected Unregulated Industries

One of the most important aspects of a competitive market is the ability of firms to enter and exit the market at will. The ability to leave an unprofitable (for that firm) market, or to enter a new market, is a significant force in producing long-term price equilibrium near the marginal cost of production. For those parts of the currently regulated telephone market that become deregulated, it is thought that those competitive markets that emerge will be characterized by a visible number of firms entering and exiting the market.<sup>16</sup> While this feature is not normally a concern for policy makers in other competitive markets, regulatory policy makers may have concern about the impact of these entering and exiting firms on quality of service, cost, and prices. Said another way, one reason for the regulation of utilities is the consensus that exists that the services

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<sup>15</sup> The Economist, "Telecommunications Survey" (insert), Oct. 17, 1987, p. 10.

<sup>16</sup> Some deregulatory proposals currently before state legislatures have some degree of entry and exit restrictions, and this may affect the emergence of competition in these markets.

provided are "necessities" that the unregulated market has previously been unable to provide at affordable and nondiscriminatory prices and in a ubiquitous manner across an entire political jurisdiction. The turnover in firms experienced in an economically efficient, competitive market may not necessarily provide the kind of telecommunications services desired by policy makers.

In tables 4-2 and 4-3 below two indicators of the potential range of exit behavior are presented. The data below are meant to be suggestive and to reaffirm the expectation that some percentage of firms will fail.

In table 4-3 the percentage of all business failures by age of firm and industrial sector are presented for 1985. Of those business firms that fail, 56 per cent do so by their fifth year. This industry-wide average may function as an early indicator of the competitiveness of the market. In table 4-4 the bankruptcy rate by industry is shown for 1985. The bankruptcy rate is generally around 1.5 percent per 10,000 firms.<sup>17</sup> The industries in the listing that are the most relevant for comparative purposes to telecommunications are listed below in table 4-2.

Based on the experience across all types of industry, it is reasonable to expect business failures and to have the greatest failure rate occur within the first five years. No directly comparable data exist for specifically forecasting the failure and exit rates for unregulated telcos.

TABLE 4-2

FAILURE RATES PER 10,000 LISTED BUSINESSES

Comparable Industries	Failure Rate For 1984	Failure Rate For 1985*
1. News services	3.04%	2.05%
2. Computer and data processing	1.27	1.43
3. Communication	0.87	1.23

\* All figures are preliminary figures for 1985 data.

Source: Dunn and Bradstreet, The Failure Record, 1985, pp. 1-8

<sup>17</sup> Not all firms that exit a market do so through declaring bankruptcy, so the rate of exit should be significantly higher.

TABLE 4-3  
 FAILURES BY AGE OF BUSINESS BY INDUSTRY

	Total 5 Years or Less	Total 6 Years to 10 Years	Over 10 Years	TOTAL
Agriculture, Forestry & Fishing	32.1%	23.4%	44.5%	100.0%
Mining	62.1%	20.1%	17.8%	100.0%
Construction	44.2%	30.0%	25.8%	100.0%
Manufacturing	52.2%	23.9%	23.9%	100.0%
Transportation & Public Utilities	54.6%	24.5%	20.9%	100.0%
Wholesale Trade	52.2%	25.1%	22.7%	100.0%
Retail Trade	62.7%	21.8%	15.5%	100.0%
Finance, Insurance & Real Estate	54.9%	22.6%	22.5%	100.0%
Services	62.9%	21.3%	15.8%	100.0%
TOTAL	56.3%	23.5%	20.2%	100.0%

Source: Dunn & Bradstreet, The Failure Record, 1985.

TABLE 4-4  
BANKRUPTCY RATES BY INDUSTRY, 1985

Industry	Total Number	Total Liabilities	<u>% Change from 1984</u>		<u>Failure Rate Per</u> <u>10,000 listed concern</u>
			Number	Liabilities	1985
United States	57,067	33,375,867,961	9.6	14.0	114
Transp. & Public Utilities	2,516	1,841,133,026	10.1	-8.3	150
Personal Services	1,035	\$ 196,495,266	8.2%	71.0%	79
Business Services	6,020	3,512,337,628	61.0	200.0	218
Miscel. Services	9,267	3,193,431,794	16.1	22.6	94
Public Admin.	11	2,803,299	-31.3	-72.2	---
Durable Goods	3,126	2,078,568,828	0.3	74.8	106
Nondurable Goods	1,687	819,316,153	-4.4	-65.6	94
Wholesale Trade	4,813	2,857,884,981	-1.4	-18.8	101

TABLE 4-4 (continued)  
 BANKRUPTCY RATES BY INDUSTRY, 1985

Industry	Total Number	Total Liabilities	<u>% Change from 1984</u>		<u>Failure Rate Per</u> <u>10,000 listed concern</u>
			Number	Liabilities	1985
Agriculture, Forestry & Fishing	2,695	\$1,023,941,404	35.6%	15.2%	197
Mining	794	\$2,058,078,295	6.7%	-6.9%	193
Construction	6,956	\$2,028,222,630	0.3%	22.8%	108
Manufacturing	4,856	\$5,593,548,550	-3.2%	49.4%	119
Miscellaneous Retail Trade	3,190	\$ 481,078,169	4.2%	3.0%	90
Retail Trade	13,418	\$2,838,327,744	-2.7%	19.0%	108
Finance, Insurance & Real Estate	2,658	\$7,491,367,410	11.1%	-12.4%	62

Source: Dunn & Bradstreet, 1985.

If none of the unregulated subsidiaries of jurisdictional utilities fail, it may be an indication of either cross-subsidization or that effective and sustainable competition has not emerged. If, on the other hand, an unspecified but "healthy" rate of failure is observed that corresponds to other relevant industries, then this failure rate may serve as an unobtrusive indicator of the strength of competition in the particular market. The "depth of their pockets" will determine how long subsidiaries of utilities and unregulated firms will sustain losses in order to gain effective entry to a market. If the extent of the financial resources available is very considerable, there could, of course, be a much lower than expected failure rate.

#### Conclusion

Competitive markets are different from regulated markets in terms of structure, performance, and outcomes. Successful firms in a competitive market need (and largely have the freedom) to arrange any and all parts of their firm's resources in order to maximize profits and to ensure long-term survival. Regulated utilities are more restricted in terms of their ability to manipulate their resources, but are correspondingly protected from many economic forces. Regulated utilities hover around a relatively stable range of profitability and quality of service. Unregulated firms in competitive markets experience much wider swings, over a significantly greater range of profitability and quality of service. It is thought that over time, in a perfectly competitive market, marginal prices will equal marginal cost and that the range of profitability and quality of service will be much more narrow. It is during the initial transition period that the greatest dislocations will occur as economic inefficiencies are phased out in a recently deregulated, competitive market.

CHAPTER 5  
THE ROLE OF REGULATION

In various markets public officials scrutinize prices, entry, pollution, and safety (for consumers and workers).<sup>1</sup> This chapter focuses on regulation of prices and entry. It will show: (1) regulation of true natural monopolies can improve performance, (2) regulation of competitive markets is often either harmful or ineffective, and (3) it is difficult to regulate a firm which serves both monopoly and competitive markets, especially if the firm has substantial joint and common costs. It concludes with guidelines for commissions seeking to promote competition and to discern whether competition has truly taken hold.

Market Structure and Regulation

Monopoly

Chapter 2 discussed the poor performance of a natural monopoly market left unregulated. The price exceeds both marginal and average total cost. The firm earns monopoly profits, but from society's perspective it produces too little of the good product or service. A structural remedy is sometimes appealing: break the monopoly into several smaller competing firms. In the case of a natural monopoly, however, divestiture leads to excessive costs because none of the smaller firms can take advantage of economies of scale, the benefits of large size. Duplication of local distribution networks is costly.

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<sup>1</sup> For a history, see Jonathan R. T. Hughes, The Governmental Habit (New York: Basic Books, 1977). Two readable texts of current regulation are: Douglas F. Greer, Business, Government, and Society (New York: Macmillan, 1983) and William G. Shepherd Public Policies Toward Business (Homewood, Ill.: Richard D. Irwin, 1985).

Public ownership is the remedy chosen by most countries for most public utilities.<sup>2</sup> In the United States, however, public ownership is rare, aside from municipal electric utilities and the Tennessee Valley Authority (TVA). Since they chose not to alter the market structure and were reluctant to assume ownership, authorities in the United States established regulatory commissions to restrain prices. It has been a workable arrangement. Figure 5-1 shows that regulators held telephone rate increases close to costs, well below overall consumer price increases.

In holding prices to costs regulators face the dilemma of choosing either the efficient price, based on marginal cost, or the zero profit price, based on average total cost. Figure 5-2a shows the relationships when the average total cost curve rises before intersecting the demand curve.<sup>3</sup> In this case the efficient, marginal cost price ( $P_E$ ) is less than the monopoly price ( $P_M$ ) but greater than the zero profit, average total cost price ( $P_Z$ ). If the average total cost curve declines as it intersects the demand curve (figure 5-2b), both the monopoly price and the zero profit price exceed the efficient price. In that case efficient pricing causes the firm to lose money, so a government subsidy is required.

Though Congress encouraged state commissions to consider marginal cost pricing for electric utilities,<sup>4</sup> regulators generally apply either average total cost (fully distributed cost) prices or value of service pricing for telephone companies.<sup>5</sup> This is because marginal cost is not easily

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<sup>2</sup> William G. Shepherd and Clair Wilcox, Public Policies Toward Business (Homewood, Ill.: Richard D. Irwin, 1979), chapters 16, 18.

<sup>3</sup> For an elaboration, see Wesley J. Yordon, "Telephone Rates: Economic Theory and Current Issues," in Telecommunications: An Interdisciplinary Text, ed. Leonard Lewin (Dedham, Mass.: Artech House, 1984), chapter 6.

<sup>4</sup> Public Utility Regulatory Practices Act (PURPA) of 1978, Section 115-(a)-(2).

<sup>5</sup> See David Chessler and Li Kung Ferng, "On the Limited Use of Marginal Cost Pricing in Telephone Regulation" in Issues in Regulating Imperfectly Competitive Telecommunications Markets, ed. Jane L. Racster (Columbus, Ohio: NRR, November 1986), pp. 43-94. For a discussion of regulatory pricing, see William G. Shepherd and Clair Wilcox, Public Policies Toward Business (Homewood, Ill.: Richard D. Irwin, 1979) chapter 11. Expert witnesses for AT&T often criticize fully distributed cost allocations. See, for example, William J. Baumol, Michael F. Koehn, and Robert D. Willig, "How Arbitrary is 'Arbitrary'?--or, Toward the Deserved Demise of Full Cost Allocation," Public Utilities Fortnightly, September 3, 1987, pp. 16-21.

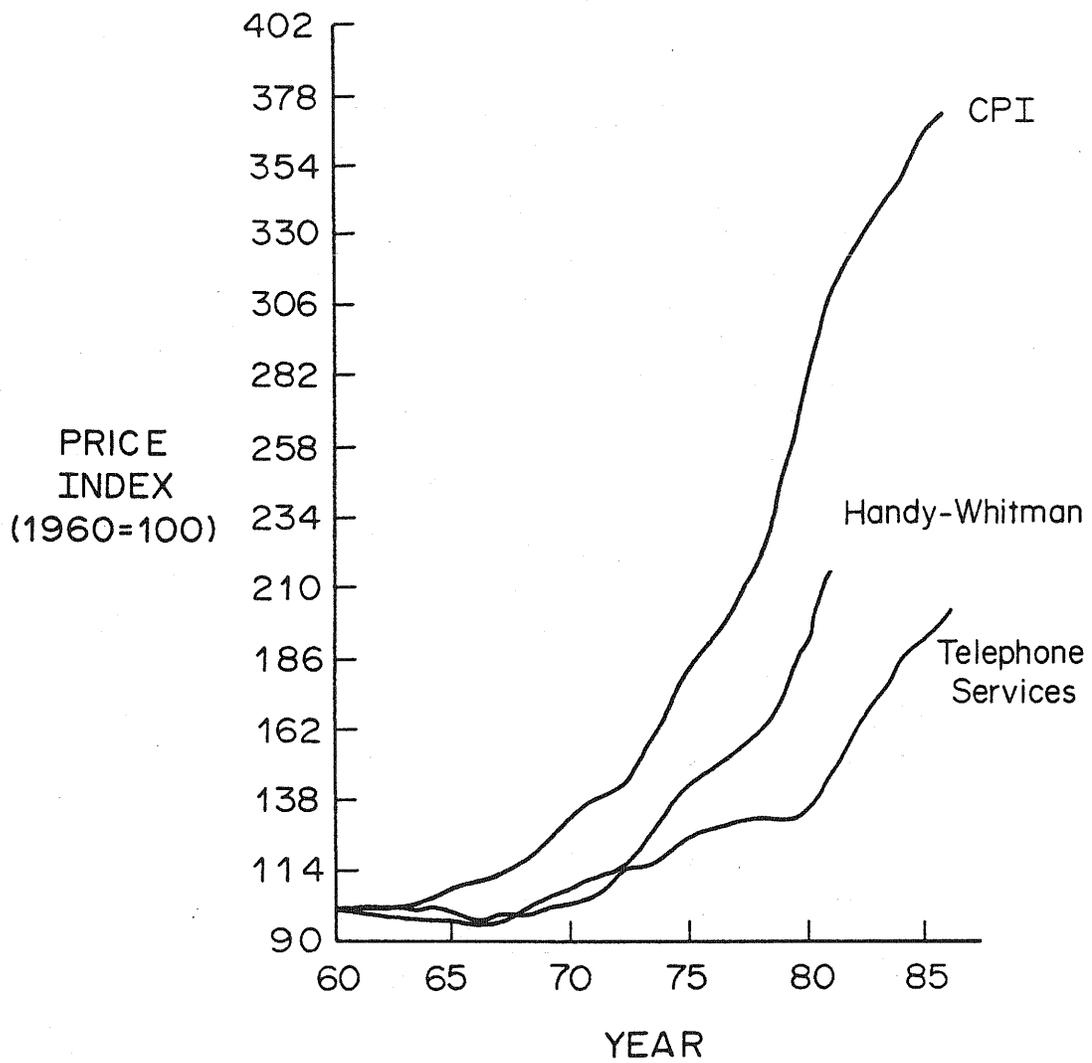


Fig. 5-1. Telephone rates, costs, and the Consumer Price Index, 1960-1986

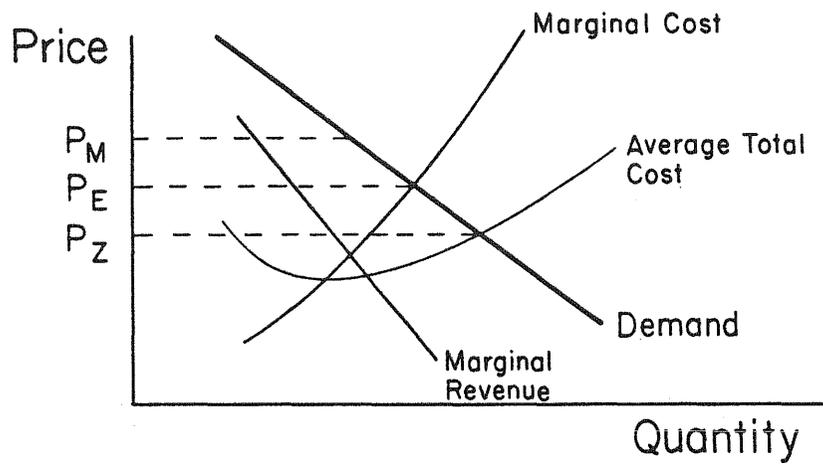


Fig. 5-2a. MC pricing in increasing cost activity

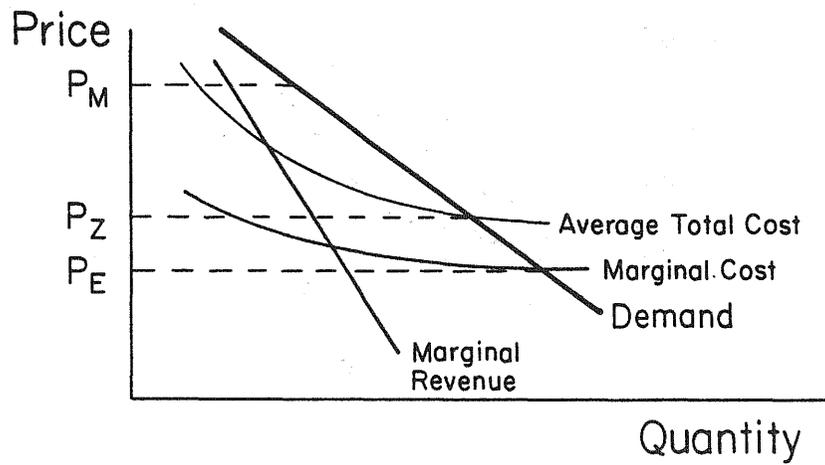


Fig. 5-2b. MC pricing in decreasing cost activity

identifiable in telecommunications, and because an inefficient monopolist (or predatory dominant firm) has an incentive to attribute its losses to pervasive economies of scale.

With respect to the rest of the performance criteria report card, a regulated monopoly generally performs better than an unregulated one. The goal of operating at minimum average total cost is less important than efficiency or zero profit. A regulated firm may have an incentive to acquire excess capital,<sup>6</sup> but an unregulated monopoly is also often inefficient.<sup>7</sup> Regulated monopolies are more likely to offset external costs (e.g., pollution) or benefits (e.g., telephone service) than are unregulated monopolies. Similarly regulators have a concern for the disadvantaged. Whether for equity or externality reasons, regulators promote universal telephone service with several programs: lifeline rates, Link Up America, the Universal Service Fund, and the Rural Electrification Administration telephone loan program. Regulation improves both procedural equity and market stability relative to unfettered monopoly. By holding telephone prices close to costs, regulation promotes full employment in two ways: (1) it increases demand and employment in the telephone industry and (2) it reduces the costs of business users of telecommunications service, making them more competitive in international markets. State commissions protect service quality by monitoring customer complaints, and the REA has supported further improvements: buried cable, single party service, and modern central office switches.<sup>8</sup>

A drawback is that a regulated monopoly may have less incentive to conduct research because it cannot charge as much as an unregulated monopoly in recouping its costs. Some contend that an unregulated monopoly (or tight

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<sup>6</sup> Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," American Economic Review 52 (December 1962): 1052-69.

<sup>7</sup> Harvey Leibenstein, "Allocative Efficiency vs. X-Efficiency," American Economic Review 56 (June 1966): 392-415.

<sup>8</sup> See, for example, Rural Electrification Administration, "25 Years of Progress," U.S. Department of Agriculture (Washington, DC: GPO, 1974).

oligopoly) is better able to conduct research.<sup>9</sup> Finally, the regulatory process itself generates some costs. Society must pay for the public utility commission, its staff, and, ultimately, the regulatory lawyers and lobbyists for the firm. The NTIA estimates the direct cost of all state and federal regulation to be \$1.1 billion dollars, less than one percent of the \$120 billion in industry operating revenue for 1987.<sup>10</sup>

There is no precise way to compare the items on the performance report card. All countries have weighed the advantages and disadvantages of unregulated monopoly provision of telecommunications service and concluded that some form of public ownership or regulation is preferable.

### Competitive Markets

The conditions for perfect competition are stringent: hundreds of firms, each with a negligible market share. Agricultural markets exhibit these characteristics, but there are two additional market types which are effectively competitive: (1) markets with no substantial barriers to entry (such as economies of scale), and (2) natural monopoly markets which are subject to intermodal competition.

Several telecommunications markets meet the first criterion: customer premises equipment, long distance resale services, and consulting services. Foreign imports even provide competition in central office switching market in the U.S. In the 1970s the deregulatory trend outside of telecommunications focused on markets without substantial barriers to entry: trucking, airlines, and domestic oil and natural gas production.

Criterion two is trickier. A railroad serving a town may appear to have a monopoly, since the capital requirements make it unprofitable for a second railroad to enter the market. Yet competition from other modes of transportation constrains the market power of the railroad. Trucks compete

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<sup>9</sup> See, for example, Joseph Schumpeter, Capitalism, Socialism, and Democracy (New York: Harper Colophon, 1975). For a discussion, see Scherer, Industrial Market Power, chapter 15.

<sup>10</sup> National Telecommunications and Information Administration, NTIA Regulatory Alternatives Report. U.S. Department of Commerce: Washington, D.C., July 1987.

for its shipping customers, while buses and personal automobiles provide alternatives for its passengers. Likewise, a cable television monopoly is constrained by other options: off-the-air television, video cassette and theater movies, books, and so on. The local telephone company may "monopolize" Centrex, but face competition from many private branch exchange (PBX) vendors. In short, it is as important for regulators to correctly define the effective market as it is for antitrust authorities (see chapter 3).

While regulation of a monopoly market is beneficial overall, regulation of an inherently competitive market is costly. As noted in chapter 2, a competitive market reaches an equilibrium where supply equals demand, at price  $P_E$  in figure 5-3. Each firm produces an output such that the market price equals the firm's marginal cost, so, barring externalities, production is efficient. The marginal firm makes zero economic profit, producing at the minimum point of the average total cost curve. Progressive firms reap profit by differentiating their products or by cost-cutting improvements, forcing the price down and driving inflexible firms from the market.

Price regulation is costly because it disrupts the market equilibrium. If the price is set too high ( $P_1$  in figure 5-3), there is a surplus--firms produce more than consumers buy. The price can only be maintained if the government restricts entry (as with customer premises telephone equipment prior to the 1970s) or buys the unsold goods (as with some agricultural products). If the price is set too low ( $P_2$  in figure 5-3), there is a shortage--firms produce less than consumers want to buy. Price controls exacerbated the shortage of domestically produced oil and natural gas in the 1970s. Without them, prices would have risen faster inducing an increase in drilling and a reduction in consumption. Price regulation in competitive markets distorts incentives for research and product differentiation, and it misdirects employment among markets.

The benefits of price regulation lie with equity. Price regulation can make competitive markets more stable. Galbraith, for example, argues that agricultural price maintenance is good, because the enhanced price stability

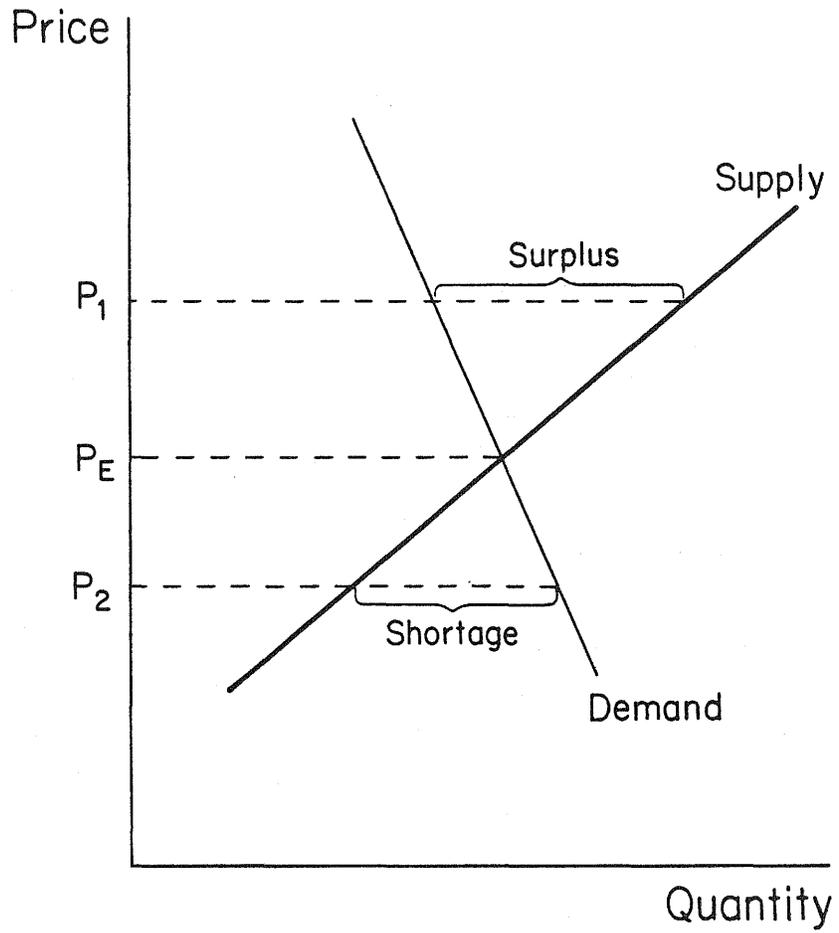


Fig. 5-3. Equilibrium, surplus, and shortage

enables farmers to purchase equipment, improving long term productivity.<sup>11</sup> Price floors may make the transition away from a declining industry less abrupt. Price ceilings may protect disadvantaged people from shocks in the prices of necessities. Nevertheless most economists oppose price controls and entry barriers, whether applied to domestic production or foreign imports. Price controls, for example, prolong recessions because they force firms to adjust by cutting production and employment,<sup>12</sup> not by cutting prices. The government can subsidize disadvantaged groups directly through retraining and placement services, rather than intervening in the market price. In any case price regulation of a competitive market often fails because there are too many firms to regulate.<sup>13</sup>

#### Firms in Both Monopoly and Competitive Markets

All Regional Bell Holding Companies (RBHCs) and many independents serve both monopoly and competitive markets. Regulators encounter two main difficulties in such cases. First, the regulated firm can assist its competitive subsidiaries by denying or delaying the the use of its monopoly services to its competitors and their customers. Second, the regulated firm has an incentive to include costs from its competitive enterprises in its monopoly rate base. By doing so, it increases its revenues from its monopoly services and enables its unregulated services to undercut its competitors.

Regulators have several methods for preventing predatory activities: (1) divestiture, (2) technical standards, (3) separate subsidiaries, (4) accounting separations, (5) price caps, and (6) peak responsibility cost allocation. Each is discussed in turn.

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<sup>11</sup> John Kenneth Galbraith, A Life in Our Times (Boston: Houghton Mifflin, 1981), pp. 102-103.

<sup>12</sup> Scherer, Industrial Market Power, chapter 13.

<sup>13</sup> See, for example, John Kenneth Galbraith, A Theory of Price Control (Cambridge, Mass.: Harvard University Press, 1980), 25-26, for an argument that the prevalence of oligopoly facilitated price control during World War II.

(1) Divestiture: By splitting the Bell System into new firms, one (AT&T) for potentially competitive industries and seven (the Regional Bell Holding Companies) for natural monopoly services, the courts eliminated the incentive for predatory collusion. State regulators could request further divestiture of emerging competitive branches of the RBHCs, in order to focus on regulating the remaining natural monopoly services. One problem with this approach is its dependence on the courts. Another is common costs. The AT&T divestiture made the simplest split. Future ones would deal with competitive services, like Centrex, which are produced by the (natural monopoly) central office. Economies of scope--the benefits of one producer providing many services--are a reason why some commentators opposed the divestiture.<sup>14</sup>

(2) Technical Standards: Regulators can establish technical criteria for fair interconnection of competitive products to the natural monopoly network. In the 1970s, for example, the FCC developed a registration plan for customer premises equipment. In the 1980s it attempted to create an open network architecture (ONA) plan for information services. The Modified Final Judgment (MFJ) in the AT&T divestiture ordered the BOCs to offer equal access facilities to interexchange carriers at medium and large BOC central offices. Several factors make it difficult for state commissions to develop technical interconnection standards for emerging competitive services. First, through his authority in the AT&T case, Judge Harold H. Greene, not state regulators, sets many of the restrictions on BOC competitive ventures. Second, fair technical standards address the interconnection provisioning problem but not the cross subsidy from monopoly to competitive services. Third, to preclude a multiplicity of standards, they should be developed for the nation, rather than state-by-state.

(3) Separate Subsidiaries: Until 1986 (Computer Inquiry III) the FCC ordered regulated firms to provide competitive services only through a fully separate subsidiary. This approach works well in exposing losses by the competitive subsidiary, but it results in some unnecessary costs: the

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<sup>14</sup> Alamarin Phillips, "Humpty Dumpty Had a Great Fall," Public Utilities Fortnightly, October 2, 1986, p. 24.

competitive and regulated services could more effectively have one sales force, rather than two separate ones.

(4) Accounting Separations: In 1986 the FCC proposed a set of accounting criteria for allocating costs, instead of insisting on separate subsidiaries. Specifically, the FCC prescribed cost allocation standards, required telephone companies to adhere to cost manuals, and required annual independent audits. In response to a request from Congress, the General Accounting Office (GAO) studied the FCC proposal. The GAO agreed in general with the proposal, but added: "The level of oversight FCC is prepared to provide will not, in GAO's opinion, provide telephone ratepayers or competitors positive assurance that FCC cost allocation rules and procedures are properly controlling cross-subsidy."<sup>15</sup> It stressed the importance of periodic FCC audits and noted that despite the higher audit demands, the FCC budget request for fiscal year 1988 would cut 3 of its 15 auditors.<sup>16</sup> FCC Chairman Dennis Patrick responded that the FCC is reorganizing its accounting and audits division and implementing a new computer system. He expects to have "more than 30 experienced people involved with oversight of our cost-allocation rules."<sup>17</sup> In short, state commissions might use similar procedures to control the cross-subsidy if they have sufficient audit and travel funds. An accounting solution will not prevent predatory actions, however. That is, by denying or delaying the use of its monopoly services to competitors and their customers, a regulated firm can assist its competitive subsidiaries.

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<sup>15</sup> U.S. General Accounting Office, "Telephone Communications: Controlling Cross-Subsidy Between Regulated and Competitive Services," October 1987, 3.

<sup>16</sup> Ibid., p. 4. The difficulty may lie out of the FCC's hands. It had requested additional auditors for the past two years, but the requests did not survive the budget review of the Office of Management and Budget. Ibid., p. 5. One user group questioned "the FCCs commitment to making the new accounting rules work." See Karyl Scott, "GAO Assails FCC Reporting Rules," Network World, November 16, 1987, 55.

<sup>17</sup> Ibid., p. 55.

(5) Price Caps: With price cap regulation of monopoly prices, as proposed by the FCC, the NTIA, the RBHCs and AT&T,<sup>18</sup> the incentive to cross subsidize competitive services is reduced. The monopoly service price rises only with changes in some index, so the firm cannot attempt to use competitive service costs to increase its revenue requirement (and hence its monopoly rates). Yet this proposal may be difficult to implement effectively,<sup>19</sup> and, again, does not inhibit predatory interconnection practices.

(6) Peak Responsibility Cost Allocation: This variant of the accounting solution allocates costs among monopoly and competitive services on the basis of their use during peak periods.<sup>20</sup> NRRI plans to document a case study of this method in 1988.

In short, state commissions have several methods for coping with predatory practices and cross-subsidy. The choice among them is made difficult because some of them have never been implemented, and none of them addresses both problems completely.

#### Guidelines

This chapter, combined with information from earlier chapters (especially chapter 3), shows that regulators can make a socially costly mistake by continuing to regulate a competitive market or by deregulating a non-competitive one. The criteria for distinguishing between competitive and non-competitive firms, on the spectrum of market structures, are

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<sup>18</sup> See John Haring and Evan Kwerel, "Competition Policy in the Post-Equal Access Market," 2 FCC Rcd Vol. 5, 1488, Kathleen B. Levitz, "Loosening the Ties That Bind: Regulating the Interexchange Services Market for the 1990's," 2 FCC Rcd Vol. 5, 1495, and Notice of Proposed Rule Making, 2 FCC Rcd Vol. 5, 5208. See also National Telecommunications and Information Administration, NTIA Regulatory Alternatives Report. U.S. Department of Commerce: Washington, D.C., July 1987.

<sup>19</sup> See Douglas N. Jones, A Perspective on Social Contract and Telecommunications Regulation, Columbus, Ohio: National Regulatory Research Institute, June 1987, 17-24.

<sup>20</sup> For a discussion the peak responsibility method, see William Pollard, J. Stephen Henderson, Mohammad Harunuzzaman, and Ross C. Hemphill, Cost-of-Service Methods for Intrastate Jurisdictional Telephone Services, National Regulatory Research Institute, April 1985.

unavoidably difficult to determine precisely. Further, once the competitive and noncompetitive services of a telephone company are discerned, it is hard to eliminate predatory practices and cross-subsidy that may accompany them.

This report identifies a seven step process for deregulation:

(1) Set prices according to some cost criteria. The criteria may be marginal cost or fully distributed cost. Prices which do not reflect costs lead to welfare losses by consumers. High priced services discourage usage which would benefit consumers more than the cost incurred by society, while services priced too low encourage usage when the costs to society exceed the benefits of users.

(2) Eliminate unnecessary barriers to entry. Remove regulatory prohibitions on entry and promote equal opportunity, especially in interconnection to the dominant carrier. This enables commissions to observe whether the market is actually competitive. Open entry also reinforces step 1, because entry is especially likely when prices do not reflect costs. This is sometimes called "cream skimming," but the derogatory connotation is unnecessary.

(3) Observe market concentration. Concentration takes into account the number and size distribution of firms. It depends on an accurate definition of the relevant market. The commission could informally establish a concentration threshold, similar to the Department of Justice merger guidelines. Unless market concentration fell below the threshold (e.g., a Hirschman-Herfindahl index of 4000 or a dominant firm market share of 65), the commission would not consider deregulation.

(4) Observe whether price is maintained above cost. No matter how many firms there are, there is no effective competition if the price is noticeably above average cost. The terminating common carrier line charge, for example, is nearly four times the originating CCL, though the costs are the same for each. Originating access faces more private line (special access) competition, than does terminating access.

(5) Observe the characteristics of the product. Deregulation will be more beneficial if the product characteristics discourage tacit collusion. As noted in chapter 2, these characteristics include: (a) the absence of a dominant firm, (b) product heterogeneity, (c) infrequent, large purchases by consumers, (d) absence of posted prices, and (e) a high ratio of fixed to

variable costs. Commissions should require greater evidence of competition before deregulating markets whose characteristics facilitate tacit collusion.

(6) Look for competition from seemingly dissimilar sources when determining the relevant market definition. It is helpful to measure the responsiveness of demand for one service (e.g., Centrex) to the price of another service (e.g., PBX). The higher the cross-price elasticity, the more competition between the services.

(7) Adopt a method for controlling cross-subsidies from the monopoly to the competitive services of the regulated firm. The FCC accounting approach may work for commissions with adequate auditing resources. The separate subsidiary approach may be better for commissions with a smaller budget. The price cap approach is promising in reducing the cross-subsidy, but has other substantial limitations. There is no single optimal method, so commissions need to monitor the results in jurisdictions which adopt differing methods. They must also be alert to predatory actions by the monopoly carrier.

In general, commissions should facilitate competition, but insist upon evidence of current competition before deregulating the dominant carrier's service. Deregulation today, based on projections of future technological improvement and competition, is inadvisable. It is not possible to establish rigid criteria for determining whether a market is competitive or not. Just as courts and the Department of Justice have flexibility in analyzing the competitiveness of markets under antitrust law, so should commissions be free to establish and later change their criteria without being bound by state legislation. Compared with state legislatures, regulatory commissions are better able to judge whether there is effective competition.<sup>21</sup> Commissions can also adapt to changes and unforeseen problems in deregulation better without legislative interference.<sup>22</sup>

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<sup>21</sup> In a referendum, the people of Arizona rejected a proposal to restrict the jurisdiction of the Corporation Commission over telecommunications, evidently because of similar concerns. Sharon Bernstein Megdal, "The Political Economy of Telecommunications Deregulation: The Arizona Case," Public Utilities Fortnightly, June 25, 1987, pp. 20-26.

<sup>22</sup> For a discussion of the flexibility of regulators to changing conditions, see Douglas N. Jones, "What's Right With Utility Regulation," Public Utilities Fortnightly, March 6, 1986.

## CHAPTER 6

### STUDIES OF POST-DIVESTITURE TELECOMMUNICATIONS COMPETITION

Legislative proposals to deregulate some or all of the currently regulated telephone services have appeared in most states, and many have been adopted.<sup>1</sup> The legislative deregulation initiatives tend to fall into three categories: social contract, deregulation limited to specific services, and legislation authorizing state public utility commissions to deregulate services as they become competitive. As a variant of this third category, some states classify services into three groups: regulated, emerging competitive, and unregulated competitive. Those services in the emerging competitive category are subject to some form of reduced and/or flexible regulation.

These deregulatory initiatives mean that state regulators will be facing many difficult questions. Chief among them are "What is the impact of competition?" and "When is a market sufficiently competitive to justify deregulation?" This chapter will review some of the existing studies relevant to these questions. Few such studies exist, largely because few markets have had competition for very long. Competitive entry exists today primarily in the long distance markets, and in most cases only interLATA markets, in the deregulated customer premises equipment (CPE) market, and some specialized services such as coin phones and shared tenant services. Table 6-1 gives a summary of the status of competition for intrastate interLATA and intraLATA toll services.

With the exception of the customer premises equipment market, no telephone services have been deregulated or have been subject to open entry markets for a long enough time period to provide definitive analytical results regarding either the impact of competition or the viability of competition. As a rule, markets take time to develop to the point where

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<sup>1</sup> See table 1-3, chapter 1 for a summary of existing legislation.

TABLE 6-1  
STATUS OF COMPETITION

<u>State</u>	<u>Competition</u>		
	<u>InterLATA</u>	<u>IntraLATA</u>	
		<u>IX Carriers</u>	<u>Resellers</u>
Alabama	Yes	No	Yes
Alaska	n/a	Pending	Pending
Arizona	Yes	Pending	Pending
Arkansas	Yes	No	Yes
California	Yes	Partial (1)	No
Colorado	Yes	Yes	Yes
Connecticut	n/a	Pending (2)	Pending
Delaware	n/a	Pending	Pending
Florida	Yes	Partial (3)	Yes
Georgia	Yes	No	Yes
Hawaii	n/a	Partial (4)	No
Idaho	Yes	Yes	Yes
Illinois	Yes	Yes	Yes
Indiana	Yes	No	Yes
Iowa	Yes	Yes	Yes
Kansas	Yes	Pending	Pending
Kentucky	Yes	No	Yes
Louisiana	Yes	Partial (6)	Yes
Maine	n/a	Pending	Yes
Maryland	Yes	Yes	Yes
Massachusetts	Yes	Yes	Yes
Michigan	Yes	Pending	Yes
Minnesota	Yes	Yes	Yes
Mississippi	Yes	No	Yes
Missouri	Yes	Yes	Yes
Montana	Yes	Yes	Yes
Nebraska	Yes	Yes	Yes
Nevada	Yes	Yes	Yes
New Hampshire	n/a	No action	No action
New Jersey	Yes	No	Yes
New Mexico	n/a	No	Yes
New York	Yes	Yes	Yes
North Carolina	Yes	Yes	Yes
North Dakota	No action	No	Yes
Ohio	Yes	Yes	Yes
Oklahoma	Yes	No	Yes
Oregon	Yes	Yes	Yes
Pennsylvania	Yes	Yes	Yes
Rhode Island	n/a	No action	No action
South Carolina	Yes	Partial (10)	Yes

TABLE 6-1 (continued)  
STATUS OF COMPETITION

<u>State</u>	<u>Competition</u>		
	<u>InterLATA</u>	<u>IntraLATA</u>	
		<u>IX Carriers</u>	<u>Resellers</u>
South Dakota	n/a	No	Yes
Tennessee	Yes	Pending	Yes
Texas	Yes	Yes	Yes
Utah	n/a	No	Yes
Vermont	n/a	Yes	Yes
Virginia	Yes	No	Yes
Washington	Yes	Yes	Yes
West Virginia	Yes	Pending	Pending
Wisconsin	Yes	Pending	Yes
Wyoming	n/a	Pending	Yes

- (1) IntraLATA competition in California limited to T-1 data services
- (2) Connecticut IXC docket limited to private line and resold services only
- (3) IXC competition allowed between Florida's "miniLATAs"
- (4) Hawaii permits competitive private line data services only
- (5) Louisiana telcos can compete intraLATA but not facilities-based carriers
- (6) Limited to one carrier that began S.C. service before creation of LATAs

Source: State Telephone Regulation Report, September 24, 1987

accurate assessments can be made about whether competition has developed successfully. There are many reasons for this time lag between the opening of a market and the development of its long-term characteristics. Potential entrants generally have planning horizons that involve extensive market analyses to estimate entry feasibility, as well as time needed for acquiring needed investment funds and capital equipment. Even after entrants have entered the market, it will take time to develop firm customer bases and to define optimal pricing and marketing strategies. Finally, it is not unusual for new entrants to fail and other firms to attempt entry. Thus, a measure of market shares and the number of entrants in the initial years of a new market is not necessarily indicative of the market status that will be achieved in later years. A market that initially appears competitive may

ultimately become a tight oligopoly or a monopoly, just as a market that appears to be noncompetitive may, in time, become competitive.

Because of the time needed for markets to develop to some state of structural stability, there is only limited definitive information currently available on the state of telephone markets. Nevertheless, information that tracks the market development is important, and can provide useful insights for policy makers. The following section contains summaries and discussion of recent reports.

### State PUC Studies

There were several important studies of intrastate telecommunications competition by state public utility commissions in 1987. Chapter 7 incorporates information from a study by the California Public Utilities Commission.<sup>2</sup> A review of a study by the Virginia Commission follows.

#### The Virginia Study

In 1984 the Virginia State Corporation Commission deregulated AT&T and allowed competitive entry into the interLATA toll market, thus becoming the first entity to deregulate toll services. Because Virginia has the longest time period of open entry and deregulation, data on the Virginia experience is important for judging the impact of deregulation and competition.

A study of the impact of deregulation on prices for MTS/WATS services was undertaken by the commission staff in 1987.<sup>3</sup> The study reviewed price changes within the state and made comparisons with prices in other states with differing degrees of regulation.

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<sup>2</sup> California Public Utilities Commission, Competition in Local Telecommunications, May 1987.

<sup>3</sup> The Effect of Deregulation on AT&T Pricing in Virginia and a Comparison Survey of AT&T Pricing in Ten States Across the United States, The Division of Economic Research and Development and The Division of Communications, Virginia State Corporation Commission, July 1987.

## Study Procedures

A survey requesting pricing information was sent to fourteen states, selected with regard to the degree of regulation imposed on AT&T. Results were received from ten states: four with "relaxed" regulation of AT&T; three with two-tier regulation (in which only AT&T is regulated); and three with rate-base, rate of return regulation of AT&T. The survey asked for MTS/WATS rates effective at two points in time--January 1984 and March 1987. Bell Operating Company access charges and intraLATA rates for the same time period were also requested.

For comparison purposes for MTS rates, rates for a five minute call in each of twelve rate bands were computed. Five minutes was thought to be typical for a toll call in Virginia. The Virginia tariff as of December 1983 (immediately prior to divestiture) had 12 distance bands and the longest distance in each of the bands was picked as a distance standard for comparisons with other states. Since the distance bands vary among states, the Virginia study examined three broad bands: short, medium, and long.

In addition to company price changes, the Virginia staff was also interested in the extent to which changes in access charges are reflected in rate changes. For this purpose, a "price margin" was computed to give an indication of the spread between rates and access charges. The price margin is defined as:

$$\frac{\text{Price} - \text{Access}}{\text{Price}} = \text{Price Margin}$$

Thus, the price margin gives a quick view of the difference between rates and access charges.

The price comparisons were generally reported on the basis of short-, medium-, and long-haul distances. This means that four 5-minute calls are priced for each category. This, in turn, means that access costs for 20 minutes of conversation were computed. Access is charged on both originating and terminating ends and also for non-conversation time.

Therefore, each minute of conversation was determined to be equivalent to access minutes.<sup>4</sup>

### Study Results

Much interesting data was presented in the Virginia study. Since only overall results are reported here, readers interested in studying the impact of competition may want to secure the full report.

Over the time period under examination access rates in Virginia declined 23 percent. Daytime rates for medium and long-haul calls increased 10 percent and 15 percent, respectively. However, short-haul daytime rates increased 23 percent, rates for evening calls increased 53 percent, and night/weekend rates increased 85 percent. While there were many decreases in individual daytime rates, there was an average 5 percent increase in daytime rates for the eleven states (ten survey states plus Virginia). This average increase occurred primarily because of rate increases for mileage bands from 8 to 23 miles. Prices for evening and night/weekend calls increased in all but three states. The average decrease in access charges for the eleven states was 17 percent. This compares to an average 15 percent increase in rates when averaged across eleven states for all time periods and all rate bands. WATS prices decreased an average 4 percent for both 2,000 and 5,000 MOU.

### Discussion of Study

The Virginia study contains much interesting data. For example, it appears from the study data that changes in access charges are not being fully passed on to customers and that the biggest beneficiaries of the changing price structures are the customers that make medium to long-haul

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<sup>4</sup> The factor of 2 was used to account for measuring both ends of the conversation, and the factor .177 to allow for dialing time, failed attempts, etc. Total access charges were computed by multiplying the access charges per minute by 2.177 times 20 minutes. A length of haul of 10 miles was used for determining local transport charges, since 10 miles represents the middle value of the observed local transport distances.

daytime calls. These results raise the possibility that the MTS markets are not truly competitive, since prices are not falling in response to changes in costs (access charges). Further, they suggest that any competitive benefits may not be available to particular submarkets--namely, the evening and night/weekend traffic, and short-haul daytime traffic, since these prices have, in general, increased.

When the Bell System had a monopoly on long distance service, the business, daytime users were perceived to have inelastic demand, while the residence, night/weekend demand was more elastic.<sup>5</sup> Competition, to the extent that it focuses on high volume business users, has made the demand facing AT&T more elastic than the total market demand. As the Virginia study indicates, AT&T tried to hold its day rates down, relative to its night rates. However, it is difficult to draw conclusions about the level of intrastate, interLATA competition, because the change in rate period charges also reflects the effect of the divestiture of the Bell System on cost allocations.

Prior to divestiture, the local Bell Operating Company (BOC) provided the entire local and intrastate service, while AT&T Long Lines served the interstate market. At divestiture in January 1984, AT&T was in effect a new company in each state, serving a new market (intrastate, interLATA long distance). In the rush to ensure it had valid tariffs, AT&T in most cases filed intrastate, interLATA tariffs which were identical to the complete intrastate tariffs already in effect for the BOCs. Once it was authorized to serve in each of the states, AT&T had time to reflect on its price margins. As shown in table 6-2, some of these margins were negative, particularly for short haul or night/weekend calls.

In any case, the incentives of AT&T and the BOCs had changed. Prior to divestiture the BOCs served the entire intrastate market. As a result, their charges for on and off-peak toll calls reflected the peakedness of local loop costs as well as long distance transport (POP-to-POP) costs. At divestiture, AT&T, the new intrastate, interLATA carrier, only had peakedness in its long distance transport costs, because its access costs in all states

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<sup>5</sup> See Lester Taylor, Telecommunications Demand: A Survey and Critique (Cambridge, Mass.: Ballinger, 1980), p. 135, and chapter 7 in this report.

TABLE 6-2

## INTRALATA TOLL CALLING PRICE COMPARISONS

Rate Period	AT&T in:	Short Haul		Medium Haul		Long Haul		Access Charges	
		Price	Margins	Price	Margins	Price	Margins	1/84	Current
		1/84	Current	1/84	Current	1/84	Current	1/84	Current
Day	Alabama	-20%	-6%	26%	23%	49%	32%	\$5.54	\$5.54
	Iowa	20	30	54	57	64	67	2.33	2.15
	Idaho	-9	38	50	68	63	74	*2.85	*2.85
	Illinois	-6	66	35	70	57	73	2.90	1.45
	Maryland	33	38	59	53	68	65	2.87	2.33
	Missouri	-12	13	43	56	61	70	3.64	2.50
	Miss.	18	39	46	55	58	57	5.25	3.25
	Nebraska	16	43	43	54	55	63	3.11	2.91
	New York	-27	28	44	50	59	59	3.22	2.24
	Penna.	-8	48	35	58	51	65	3.20	2.21
	Virginia	9	43	43	51	54	58	3.15	2.43
Evng.	Alabama	-85	-41	-14	-2	21	10		
	Iowa	-23	-9	30	33	45	50		
	Idaho	-41	25	36	62	53	69		
	Illinois	-41	54	13	61	43	65		
	Maryland	-3	11	37	32	50	50		
	Missouri	-41	-9	29	45	52	62		
	Miss.	-26	19	16	40	35	43		
	Nebraska	-40	4	4	22	25	39		
	New York	-96	3	13	34	37	46		
	Penna.	-67	31	0	44	24	53		
	Virginia	-51	24	5	35	23	44		
Nt/Wknd	Alabama	-201	-111	-85	-53	-28	-35		
	Iowa	-101	-76	-14	-9	11	18		
	Idaho	-113	3	3	50	29	60		
	Illinois	-77	43	-9	51	29	56		
	Maryland	-68	-24	-3	6	19	30		
	Missouri	-73	-34	12	32	40	54		
	Miss.	-104	-22	-36	10	-6	14		
	Nebraska	-110	-43	-43	-16	-13	8		
	New York	-219	-45	-41	0	-2	19		
	Penna	-171	14	-62	30	-23	42		
	Virginia	-128	5	-42	18	-15	30		

\* Idaho access charges are lower in the evening and night-weekend periods (\$2.21). Idaho access charges did not change from 1/84 levels.

Source: Virginia Study

(except Idaho) do not vary by rate period. In short, it was perfectly logical for AT&T to reduce its off-peak discounts after divestiture.

In many states AT&T's short haul and night/weekend prices still do not cover its payments to the local exchange carriers. Table 6-2 shows the price margin (over local access costs) increases with distance--from short to medium to long haul. This reflects the fact that AT&T's revenues (tariffs) are distance sensitive, but its access costs are not. Whether the increase in the margin properly corresponds to the cost of AT&T's POP-to-POP facilities is an open question.<sup>6</sup>

The states surveyed by Virginia represented three types of regulation. Relaxed regulation in some cases led to benefits for consumers. Yet the results again yield uncertain conclusions and indicate a need for continued data collection and research. For example, in all of the nine rate categories, the state with the second highest increase had relaxed regulation. Similarly, Virginia, the state with the longest experience with deregulation and open entry, was not the state with the biggest decrease in any of the 9 categories.

The Virginia study has made an excellent beginning in providing basic data on the impact of competition.

#### Federal Studies

The FCC released reports during 1987 which reflect the effect of divestiture on telephone prices and AT&T's interstate market share. In its study of regulatory alternatives to rate-of-return regulation, the National Telecommunications and Information Administration (NTIA) also reported some useful information. The reports are summarized below.

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<sup>6</sup> For discussion of the distance component of intraLATA long distance costs, see Jane R. Racster, John S. Horning, and Ana Burghalea, On Developing Route-Specific IntraLATA Toll Costs (Columbus, Ohio: NRRI, 1988).

## Telephone Price Indexes and Rate Levels

The FCC produced an excellent survey of the telephone components of the Consumer Price Index and the Producer Price Index.<sup>7</sup> Both indexes are calculated and published by the Bureau of Labor Statistics and reveal the direction of prices after divestiture. NRRI plotted the telephone components of the CPI using the December levels for each year from 1977 to 1986. The December 1983 dotted line on figure 6-1 approximates the 1/1/84 divestiture date. The dramatic reduction in interstate toll rates and increases in local rates reflect the shift from carrier access charges to subscriber line charges, initiated by the FCC, and possibly the effect of the equal access provision of the MJF on interstate toll competition.

### AT&T's 1987 Share of Switched Interstate Market

The FCC released a report<sup>8</sup> October 22, 1987 that identified the dominant carrier's (AT&T) share of the interstate switched telephone service market. As the dominant carrier both pre- and post-divestiture, AT&T's market share--and the rate of increase and decrease in its market share--is a basic feature of the extent of competition in the interstate, switched telecommunications market.

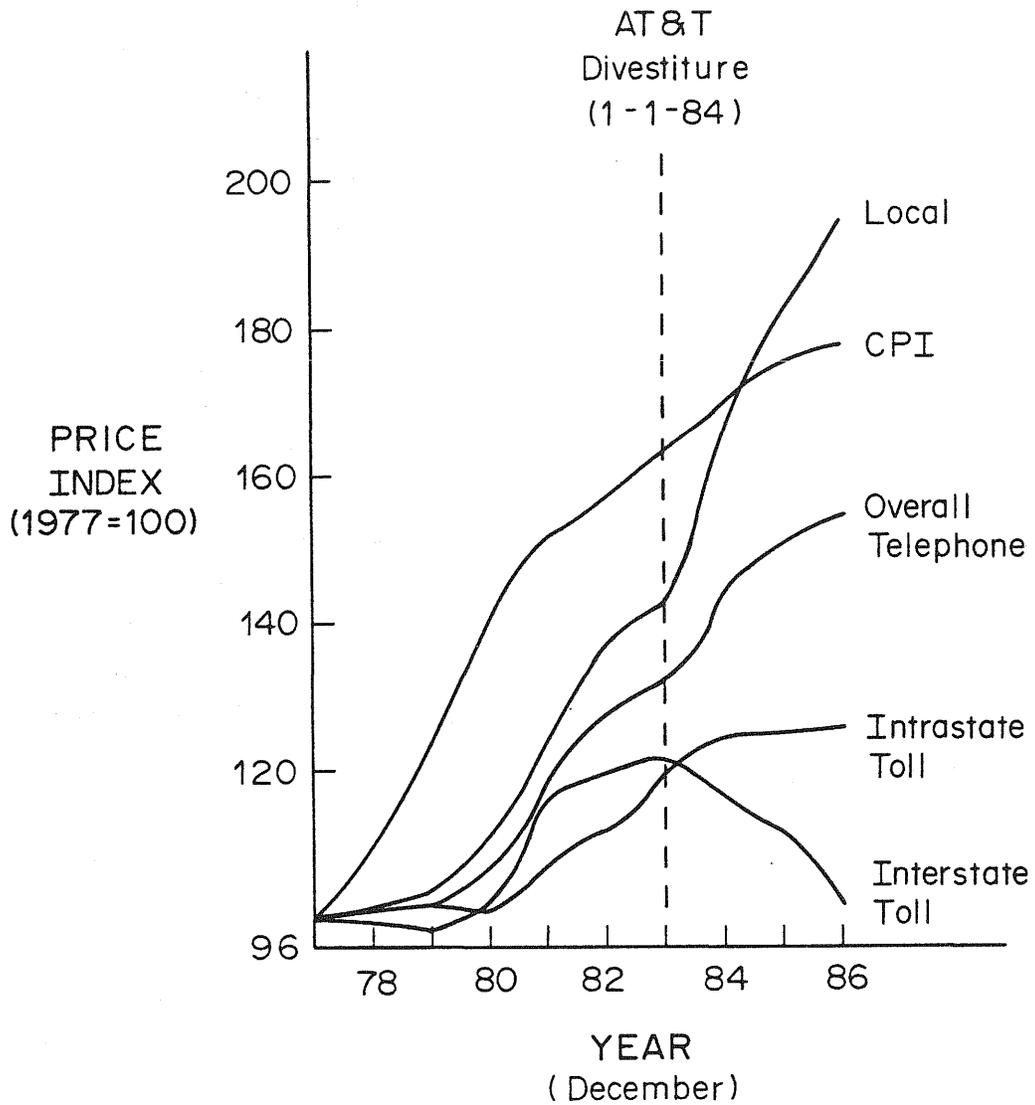
The FCC estimated that AT&T's (early) 1987 market share, based on interstate switched minutes of use, is approximately 73 percent. Its share of the premium (non-discounted) market is estimated to be approximately 78 percent. This means that AT&T is clearly the dominant carrier and has a proportionately slightly larger share of the premium traffic.

Because there are a number of alternative definitions of market share as well as different ways to calculate the market share, the appendix to that report (which describes these differences) is twice as large as the main body of the report. Each of these differences would individually drive

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<sup>7</sup> James L. Lande and Peyton L. Wynns, Primer and Sourcebook on Telephone Price Indexes and Rate Levels (Washington, D.C.: Federal Communications Commission, April 1987).

<sup>8</sup> Peyton L. Wynns, AT&T's Share of the Interstate Switched Market, (Washington, D.C.: Federal Communications Commission, October 1987).



Source: James L. Lande and Peyton L. Wynns, Primer and Sourcebook on Telephone Price Indexes and Rate Levels (Washington, D.C.: Federal Communications Commission, April 1987).

Fig. 6-1. Consumer telephone rates, 1977-1986

the AT&T market share up or down one-to-two percentage points; it is not clear what the accumulative effect would be of choosing all of the "up," or positive increase in market share choices would reveal. The FCC estimates that the effect of using different (and separate) choices in estimating AT&T's market share would be as follows: use of revised NECA data (may show a lower share of up to one percentage point),<sup>9</sup> deletion of international traffic (one-half to one percentage point drop), if reseller's sales are counted separately (two percentage points lower), calculating market share based on revenues rather than minutes of use (a one-to-three percentage point increase), including "foreign exchange" or FX minutes of use (increase AT&T share by 1.6 percentage points), eliminating interstate/intraLATA minutes (increase AT&T share by 3/4 of a percentage point), and treatment of WATS service (unclear what the change would be). *800 WATS*

Based on minutes of use the FCC report shows the decline of AT&T's market share over time (table 6-3). AT&T's growth rate over this period has been approximately 13 percent, whereas the annual growth rate for all other carriers has averaged 35 percent.<sup>10</sup> This growth in non-AT&T market share is attributable, in part, to the AT&T divestiture and related actions promoting competition over the period.

Two observations in the report are especially worth underscoring. First, market share is only one factor affecting market power. Second, any calculation of market share depends on how the market is defined. AT&T's share of specific inter-exchange markets differs from this interstate average. That is, AT&T's share of the intrastate-interLATA, rural-originating, 800, and operator services markets are likely to be much higher than 73%.

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<sup>9</sup> NECA and AT&T data often differ on a monthly basis. AT&T, for example, reported a sharp drop in carrier common line expenses in December 1985, whereas the NECA data showed no decrease in revenues.

<sup>10</sup> FCC, 1987, p. 4.

March 21, 1988

TABLE 6-3

AT&T SHARE OF THE INTRASTATE MARKET

	Quarter	Premium Minutes	All Minutes
1984	Third	98.7%	84.2%
	Fourth	94.3	80.0
1985	First	99.8	83.0
	Second	95.5	80.3
	Third	92.1	78.9
	Fourth	87.9	77.0
1986	First	88.0	79.6
	Second	84.8	77.7
	Third	82.7	76.7
	Fourth	78.8	74.0
1987	First	77.7	73.1
	Second	78.1	73.7

Source: Peyton Wynns, AT&T's Share of the Interstate Switched Market, 4th quarter 1987, Federal Communications Commission: Washington, D.C., October 21, 1987, p. 7.

4th quarter 1987  
 Fourth  
 72.9  
 69.6%  
 NTIA Regulatory Alternatives Report Segments  
 P. 6  
 March 21, 1988

In July 1987, the National Telecommunications and Information Administration (NTIA) released the results of its inquiry into alternatives to rate of return regulation for telephone utilities. Its report reviewed the shortcomings of rate of return regulation and evaluated several alternative approaches: marketbasket regulation, banded pricing, social contract, small telephone company deregulation, incentive regulation, and a rate stabilization and equalization plan. The report concludes by proposing that a form of the social contract replace the current use of rate of return regulation.

In the course of the report some data are presented that illustrate some of results of various competition and deregulation efforts by telcos. For example:

1. It appears that almost all of AT&T's interstate services are now subject to effective competition, with 561 carriers providing some form of MTS inter-state service.
2. By end of 1986 MCI had points of presence in 93% and Sprint in 80% of all LATAs.
3. Twenty-eight states have removed some or all of their price or entry restrictions for intraLATA toll service.

Most of the new data cited in the report deals with the interstate market.

### Modified Final Judgment (MFJ) Studies

#### The Huber Report<sup>11</sup>

This report was commissioned in response to a requirement of the Modified Final Judgment<sup>12</sup> that the court, at the end of three years, determine whether the restrictions contained in the MFJ were still necessary. Unlike the Virginia study whose purpose was to analyze the impact of competition, the Huber Report's primary goal was to analyze the extent of competition. Also, the scope of the Huber study was greater. Huber studied not only intrastate long distance services, but also central office switches, interstate long distance, PBXs and terminal equipment.

#### Study Procedures

A fundamental thesis of the Huber Report is that the network is developing into what could be described as a "geodesic dome" configuration, as opposed to the historical "pyramid" network design. Huber contends that with declines in the costs of switching there is, and will continue to be, a

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<sup>11</sup> Peter W. Huber, The Geodesic Network 1987 Report on Competition in the Telephone Industry (Washington, D.C.: U.S. Government Printing Office, January 2, 1987).

<sup>12</sup> United States v. Western Electric Co., Inc., et al, 569 F.Supp. 1057 (D.D.C. 1983) aff'd sub nom., California v. U.S., 464 U.S. 1013 (1983).

growing number of network nodes--switches and computers--interconnecting with shorter transmission links and at more points. Huber further contends that this evolving network configuration will ultimately lead to a market structure dominated by a small number of large, vertically integrated firms. Two of the reasons Huber suggests that this will happen are (1) the complexity of future network options will lead consumers to want integrated systems (and suppliers) and (2) vertical integration will yield increasing scale efficiencies. Huber adds that there may well be a place for small specialized firms.

The report identifies 16 different product or services markets for discussion. They are: the local exchange, interexchange communications, mobile radio services, data transmission and packet switching, information services, computerized databases and electronic publishing, public announcement services, electronic yellow pages, voice storage and retrieval, electronic mail, transactional services, alarm monitoring, central office switches, transmission equipment private branch exchanges, and terminal equipment. The format followed in discussing each market segment is essentially similar. In most cases this involves an identification and description of the suppliers of the particular product or service; a discussion of possible impediments to competition, usually under either the heading of "access" or of "market foreclosure"; and a discussion of costs including discussions of market factors and regulation.

The approach used is primarily descriptive rather than analytical. Much data is included in the report. The data in most cases is aggregate, nationwide, publicly available information as opposed to data resulting from analysis performed within the study. The data includes statistics on numbers of suppliers, revenues, numbers of customers, circuits capacity and traffic volume.

### Study Results

Of the 16 product and services markets examined, only two will be discussed here--the local exchange market and the interexchange market.

The Local Exchange Market. The review of the local exchange market begins with a description of the post-divestiture BOCs and the position of their networks in the "geodesic dome." The report then divides the

discussion of the local exchange market into two sectors, one on local switching and one on short-haul transmission. To indicate the extent of actual or potential competition in local switching, Huber looked at the number of entry level nodes, the switching capacity of the "more important" nodes, and economic and regulatory indicators. Table 6-4 contains this information. Switching capacity was illustrated by the number of lines of different types served by end offices, PBXs and mobile switching. Data on prices and pricing flexibility were also presented. Huber views the growth in PBXs to be significant and contends that the "rapid development of PBXs is...dispersing switching power and increasing the range of possible network paths between end points."<sup>13</sup>

With respect to economic and regulatory indicators, Huber looks at price discrimination, resale, and horizontal competition. The existence of price discrimination is viewed as evidence of market power, and Huber presents data on price discrimination in local exchange company switched lines. The existence of resellers is also viewed as evidence of price discrimination. Regarding horizontal competition, Huber presents a brief discussion of state regulatory actions with respect to local service competition.

Huber concludes that there is the beginnings of competition in local service markets but that it is "patchy." Most of the existing competitive alternatives exist for large users in urban areas.

The report presents evidence of price discrimination in the provision of switched and unswitched services by the Bell Companies (see table 6-5). Huber reports that nationwide, "the installed capacity of non-LEC short-haul, medium capacity point-to-point transmission alternatives now exceeds the in-use capacity of equivalent BOC services."<sup>14</sup> Huber further concludes these alternatives are price competitive. Overall, Huber concludes that for

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<sup>13</sup> Huber, p. 2.6

<sup>14</sup> Huber, p. 2.23. Note: A more informative comparison would be either installed capacity of both or in-use capacity of both. Comparing installed capacity of one with in-use capacity of the other is somewhat misleading.

TABLE 6-4  
CARRIER AND CUSTOMER-PREMISES NETWORK ENTRY NODES (1986)<sup>1</sup>

	<u>Number of Nodes</u>
LEC End Offices <sup>2</sup>	19,229 <sup>3</sup>
PBX Systems <sup>4</sup>	
100-400 lines	39,000 <sup>5</sup>
400 lines	14,000 <sup>6</sup>
Interexchange Carrier POPs	2,100
Two-Way Satellite Earth Stations <sup>7</sup>	8,600 <sup>8</sup>
Cellular Radio Systems <sup>9</sup>	128
Wireline	82
Non-Wireline	46
Public VAN Nodes <sup>10</sup>	1,932
Private VAN Nodes	3,600
Communications Processors <sup>11</sup>	95,000

<sup>1</sup> Sources include RBOC submissions and conversations with industry participants.

<sup>2</sup> Northern Business Information. Central Office Equipment Market 29 (1986) (1984 data). USTA estimates 20,096 LEC end offices serving 18,834 local exchange areas in 1986.

<sup>3</sup> The breakdown: Ameritech 1,151; Bell Atlantic 1,461; BellSouth 1,600; NYNEX 1,315; Pacific Telesis 788; Southwestern Bell 1,306; U S West 1,736; GTE 2,642; Other Independents 7,230.

<sup>4</sup> Eastern Management Group estimates.

<sup>5</sup> 1982 estimate: 23,000.

<sup>6</sup> 1982 estimate: 9,000.

<sup>7</sup> LINK Resources Corporation, Satellite Services at 24, table 11 (1985) (these are estimates for 1983 and 1986, and do not include the much larger number of receive-only earth stations). A more recent LINK study estimates 5,000 two-way data VSATs alone installed in 1986. LINK Resources Corporation, The Market for Very Small Aperture Satellite Earth Terminals (VSATs) at 11, table 2 (1986).

<sup>8</sup> 1982 estimate: 2,900.

<sup>9</sup> Cellular Business at 64-65 (Oct. 1986) (operating systems only).

<sup>10</sup> LINK Resources Corporation, U.S. Packet Networks: Capacities and Cost Structures at 9-19 (1986).

<sup>11</sup> IDC. The Data Communications Equipment Market at 49 (1985), assuming 66 percent of the worldwide installed base is in the U.S. The 1986 estimate is conservative as it does not include IDC's more recent, increased estimate of the worldwide installed base of IBM and compatible communications processors. When communications processors also are used in conjunction with VAN nodes or satellite earth stations, these node categories may not be mutually exclusive.

Source: Huber Report, table L.3.

TABLE 6-5

SHORT-HAUL TRANSMISSION ALTERNATIVES: SUMMARY OF  
CAPACITIES AND PRICES IN RBOC REGIONS

	Capacity (millions of voice circs.)		Price
	1982	1986	1986
SWITCHED LINES			
<u>Residential</u>	57	62	\$7-18/Line-Month (unmeas.) \$3-12/Line-Month + Usage (measured)
<u>Business</u>			
Switched Single Lines <sup>1</sup>	12	16	\$16-54/Line-Month (unmeas.) \$8-33/Line-Month + Usage (measured)
Centrex Lines	5.6	5	\$8-45/Line-Month
PBX Trunks	1.5	3	\$50-100/Line-Month
LEC UNSWITCHED LINES <sup>2</sup>	--	2.9	
Voice Grade			2.5-5 C/M.O.U.
T-1.5			1-3 C/M.O.U.
DS-3			Contract Rates
CELLULAR MOBILE	0.38	0.77	\$140/Line-Month (including \$90 of usage @ 0.35 c/min)
PRIVATE MICROWAVE	0.27	3.4	1-3 C/M.O.U. <sup>3</sup>
PRIVATE FIBER	0	250	0.5-2.5 C/M.O.U.
METROPOLITAN AREA NETWORKS	0	8	1-2 C/M.O.U.
SATELLITE EARTH STATIONS	0.40	0.80	

<sup>1</sup> Capacity of voice circuits in use. Prices are based on a distance of 2 miles.

<sup>2</sup> Capacity of voice circuits in use.

<sup>3</sup> At a distance of 2 miles.

Source: Huber Report, table L.23

short-haul transmission, as for local switching, there are growing sources of competition for large users, but few or no alternatives for small users.

Interexchange Communications. The data on the interexchange market development deals primarily with interstate and intrastate interLATA markets. The data are generally combined for the two jurisdictions so that the extent of competition in individual states cannot be estimated. Among the data included are various measures of market share, reproduced here as table 6-6.

By any measure in the table, AT&T continues to dominate the interexchange market. However, it should be noted that the data were derived from a variety of sources representing somewhat different time periods. It does not seem likely, though, that even if the data were adjusted for standardized definitions and time periods, AT&T's dominant position would change significantly.

TABLE 6-6  
CARRIER SHARES OF INTEREXCHANGE, INTERLATA MARKET (1985)

	Revenues	Business Customers	Residential Customers	Toll Minutes
		<u>Percentages</u>		
AT&T	80-85	88	95	84
Interstate 68				
Intrastate 22				
MCI	5-8	8	3.5	8
U S Sprint	4	4	1.5	3.5
Others	3-7	<1	<1	4.5
(Eliminations)	(2)			
		<u>Totals</u>		
	\$48 Billion	\$8 Million	\$84 Million	\$150 Billion

Source: Huber Report, table IX.2, p. 3.3

Huber views the interexchange market as "quite competitive today," in some markets but contends that the long run outlook is uncertain. He cites an FCC report that identifies 475 carriers in operation. Though only a few are nationwide facilities based carriers, five others serve 25 or more states, and another 12 serve 4 or more states. The many other carriers tend to buy access in one state only and act as resellers to serve the rest of the nation.

The report also discusses supplies, existing capacity, and pricing of unswitched access; pricing issues related to access charges, and bypass alternatives.

### Discussion of Report

The review of local exchange services presents an interesting overview of the nationwide market. It does not, however, provide much information regarding individual markets. The emphasis on the growing number of entry level nodes, while important, obscures the distinction between nodes providing ubiquitous public telephone service and nodes providing specialized, non-ubiquitous networks. While these specialized networks do provide competitive pressures, and their growth is an important market dimension, further analysis is needed to resolve questions regarding whether there is actual or potential competition for the ubiquitous network. The presentation of pricing data is useful, but cannot be used for definitive conclusions because of the absence of any cost analyses that would clearly indicate existing price/cost relationships.

Overall, the report contains a useful collection of data that illustrates some important current parameters of nationwide telephone markets. While this is not pertinent to analyzing markets in individual states, it does give useful perspectives on what might occur, and identifies some of the types of data that would be needed by individual states in order to assess the level of competition.

### Triennial Review of the MFJ

On September 10, 1987, after studying reports by Huber and others, Judge Harold H. Greene issued an order<sup>15</sup> in the triennial review of three restrictions placed on the Regional Bell Holding Companies (Regional Companies) from the AT&T divestiture, Modified Final Judgment (MFJ). His order denied motions to remove 1) restrictions<sup>16</sup> on the provision of interexchange services by Regional Companies, and 2) restrictions on the manufacture and provision of telecommunication products and customer premise equipment. The order removed the restriction on the provision of "any other product or service, except exchange telecommunications and exchange access service, that is not a natural monopoly service actually regulated by tariff."<sup>17</sup>

Judge Greene also announced his intention to lift the information services restriction (presumably) in a way that lets Regional Companies transmit information, but still restricts them from the information content side of the industry. To this end, he established a comment process that began in Fall 1987.

Judge Greene's order (and the original MFJ order) have established a major part of the basic structural features of the competition that will be allowed in a significant portion of the telecommunications industry. The direct impact, of course, is on the Regional Companies, the indirect impact is on those telcos that operate in the markets affected (and opened up by) the MFJ restrictions. The potential impact on competition and the rationale behind the September 10, 1987 order are described below.

The telecommunications industry, loosely described, includes both the provision of services, such as local calls and access to long distance carriers, as well as the sale of a wide array of equipment. The MFJ restricted the Regional Companies from participating in certain

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<sup>15</sup> United States v. Western Electric Company, Inc. et al., U.S. District Court, 82-0192, September 10, 1987.

<sup>16</sup> United States v. American Tel. & Tel. Co., 552 F.Supp. 131, 185 (D.D.C. 1982), aff'd sub mom. Maryland v. United States, 460 U.S. 1001 (1983).

<sup>17</sup> Other conditions regarding separation of subsidiaries, financing, monitoring were also repealed.

telecommunications markets, after the FCC and the courts (table 1-1) had opened these markets to entry by other companies.

Judge Greene's orders were based, among other things, upon the application of standards established in the MFJ decree to information submitted to his Court by industry and regulators. The standards are described in the following sections, and the results of the Court's analysis of the filed information are presented in the next section.

Standards for Removing Restrictions and for Evaluating Competition (and Deregulation Proposals)<sup>18</sup>

The MFJ contained restrictions on the manufacturing, interexchange, information services, and non-telecommunications activities of Regional Companies, as well as a standard to determine when the restrictions were to be removed. The standard (Section VIIIC) mandated removal

...upon a showing by the petitioning BOC that there is no substantial possibility that it could use its monopoly power to impede competition in the market it seeks to enter.<sup>19</sup>

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<sup>18</sup> The portion of the heading enclosed in the parentheses is an extrapolation of the use of MFJ standards that is not necessarily the intended use for the standards.

<sup>19</sup> Further, Judge Green writes, the BOC will not be relieved of a restriction if it (1) makes no showing at all, (2) demonstrates there is no certainty of anti-competitive conduct, (3) demonstrates there is no substantial possibility that it would use its monopoly power to act anti-competitively, or (4) demonstrates that its use of monopoly power will not entirely eliminate competition in a market it seeks to enter. Other arguments advanced and rejected by the court for testing the restrictions include positions that (1) market entry restrictions are inappropriate to address possible abuses of monopoly power, (2) MFJ restrictions never had a true basis in antitrust theory, (3) the treatment of information services as analogous to interexchange service was not "apt," (4) the trial record is not an appropriate basis for judging the DOJ recommendation, (5) the court had made no factual findings of regulatory commission impotence or insufficiency, (6) that since the parties to the MFJ decree have agreed to the elimination of the information services restriction, the court should implement the agreement without delay, and (7) that the restrictions are to be relaxed unless evidence affirmatively shows a substantial danger of anticompetitive effects.

The Regional Company must show it lacks the ability (and not just the intent) to use its monopoly power anticompetitively.

The application of Section VIII(C) by Judge Greene entailed a two-part analysis to determine:

1. whether the Regional Companies have retained monopoly control of an essential facility, the local switches and circuits, and
2. whether there is a substantial possibility that these Regional Companies have the incentive and ability to use the monopoly power to impede competition for a particular line of business.

The Court's examination of the first part revealed that the Regional Companies have retained their monopoly control of local switches and circuits. The Court found that 99.9 percent of all interexchange traffic, generated by 99.9999 of the nation's telephone customers is carried entirely or in some part by the Regional Companies (or their equivalents in the territory served by independents).<sup>20</sup> Further, Dr. Huber acknowledged in the proceedings that a "geodesic network," permitting significant bypass of the monopoly control of the local loop, does not now exist.

Taken together--the MFJ standards as well as the alternative standards considered and rejected by Judge Greene (see footnote 34)--the standards provide a useful framework to evaluate competition and/or deregulation proposals affecting BOCs. If the policy maker accepts the key premise of the MFJ (and subsequent orders), that the bottleneck monopoly control by the BOCs of local switches and circuits provides both the means and the incentive to engage in anticompetitive behavior, then the MFJ standards are applicable and useful for competition and deregulation proposals directly affecting the BOCs.

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<sup>20</sup> The DOJ found only 24 customers in the entire U.S. who managed to deliver all their interexchange traffic directly to their interexchange carriers, bypassing the Regional Companies. Similarly, Huber found that facilities bypass accounts for somewhat less than 0.2 percent of the 170 billion annual minutes of use carried by Regional Companies. Other parties noted that about 1,000 non-LEC circuits are used to connect customers to interexchange carriers versus the more than 100 million LEC-provided circuits.

In the next section the results of the application of the MFJ standards are presented.

### Specific Competition Findings

The 223-page text of Judge Greene's order contains many useful and specific items of information. In the proceedings, Judge Greene received comments from 170 parties, with about 300 briefs totaling some 6,000 pages filed in support of the positions of the parties. Given the public nature of the process,<sup>21</sup> regulatory policy makers can use the conclusions, rationale, and cited facts with confidence when addressing similar issues.

Below in table 6-7, the salient features of the Opinion are presented. Taken together, they directly support the manufacturing, interexchange, and "other services" orders of Judge Greene. Examined separately, they are at a level representative of the degree of specificity a commissioner is likely to encounter for a major issue in a rate case or other type of generic proceeding.

The basic premise that runs through all of table 6-7 is that local operating companies (and, hence, the Regional Companies<sup>22</sup>) through their bottleneck control of local switching have the power to engage in anticompetitive practices. Judge Greene finds this bottleneck control to

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<sup>21</sup> All parties had ample opportunity to examine the information and the rationale of each argument, and to bring the discrepancies and weaknesses of any party's position to the attention of Judge Green and all other parties. Further, unlike some other major regulatory conflicts in the past where a small, underfunded regulatory staff was pitted against the immense resources of the old Bell System, the parties on the different sides of the key issues were evenly matched. Also, since these were largely the same groups that had participated in the proceedings surrounding the original divestiture agreement, their familiarity with the data and issue positions of their allies and adversaries was uniformly high and sophisticated. Lastly, as the proceeding was at its heart a judicial one, embedded in and guided by relevant law and legal precedents, the parties had countervailing power to find judicial remedy in a higher court if the results were actionable.

<sup>22</sup> Regional Bell Holding Companies.

exist for the Regional Companies to the same extent as it did for the "old Bell System," and as capable of promoting the same anti-competitive practices.<sup>23</sup>

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<sup>23</sup> The Order contains much more systematic information than that shown in table 6-7. The purpose of presenting this information is to illustrate the range and depth of information cited in the Order. We make no representation that the decisions made by the Court turned on the examples cited in table 6-7, or that the Court would have selected these as the best or most representative examples.

TABLE 6-7  
A SUMMARY OF SOME CONCLUSIONS IN THE TRIENNIAL MFJ REVIEW

CONCLUSIONS	RATIONALE	INFORMATION
<p><u>Existence of Bottleneck</u> Regional Companies retain control of local bottlenecks, local switches and local circuits.</p>	<p>Regional Companies control (own and operate) the local switches and circuits needed to initiate and conduct calls.</p>	<p>99.9% of all interLATA traffic from 99.9999% of all customers use some part of the local bottleneck facility.</p>
	<p>No significant bypass, or transfer of control, or development of new technology has occurred since divestiture, sufficient to eliminate monopoly power similar to that enjoyed by the old Bell System.</p>	<p>Only 24 companies were found that were able to completely bypass the LEC.</p>
<p>No substantial competition presently exists in local exchange service.</p>	<p>Local exchange competition has failed to develop because the LEC--given current technology--appears to be a natural monopoly.</p>	<p>Almost all parties except the Regional Companies acknowledge the Regional Companies' monopoly power.</p>
	<p>PBXs, useful as they are for intra-business communications, are not alternatives to local switches and circuits controlled by Regional Companies.</p>	<p>Acknowledgement by U.S. DOJ and Dr. Huber that the "geodesic network" does not now exist.</p>
<p><u>Interexchange Service</u> Local exchange facilities are essential for any firm providing long distance service.</p>	<p>Interconnection to local switches and circuits is necessary to initiate or complete most (and for all residential) long distance calls.</p>	<p>Contained in rationale.</p>
<p>Not practical to lift part of interexchange restriction to permit each Regional Company to offer interexchange services outside but not inside its own region.</p>	<p>Because a national interexchange market exists, a regional company could not survive if it could only offer interexchange service in parts of the country.</p>	<p>Contained in rationale.</p>
	<p>Court oversight role would increase: a development not desired by the Court.</p>	<p>Technically difficult to monitor violations.</p>
	<p>Must show evidence that for technological or economic reasons competition is now feasible and has emerged on a substantial scale.</p>	<p>Investment in local loop required to duplicate present system, precluding any entry (given wire-based technology).</p>
	<p>Holding out the prospect of piecemeal waivers would encourage Regional Companies to resist equal access.</p>	<p><u>See United States v. Western Electric Co.</u>, 592 F.Supp. 846, 867-68 (D.D.C. 1984); see also Reply of Competitive Telephone Association at 5-8.</p>
<p>Court will not entertain applications for waivers that are predicated only upon changes in state or local regulation.</p>	<p>Court intends to phase out its oversight role; a position inconsistent with responding to waivers.</p>	<p>Contained in rationale.</p>

TABLE 6-7 (continued)  
A SUMMARY OF SOME CONCLUSIONS IN THE TRIENNIAL MFJ REVIEW

CONCLUSIONS	RATIONALE	INFORMATION
There is no basis under the decree for the removal of any of the restrictions on interexchange services.	FCC position did not meet Section VIII(c) standard for removal of restrictions.	Almost none of the 170 entities filing papers, except the BOCs and the FCC, supported the complete removal of the restrictions.
	With the exception of a minuscule amount of traffic, that bypasses the Regional Companies' facilities, their monopoly bottlenecks are as pervasive as they were when the decree was entered.	Contained in rationale.
	No information presented to change the decree conclusion that those who control the local bottlenecks have the incentive and the ability to use their monopoly power anti-competitively in the interexchange market.	Contained in rationale.
Rejects suggestions that changed circumstances support lifting of interexchange restriction (IX).	Reject idea that IX restriction made unnecessary by the more effective regulation by the FCC.	Not a new condition: mandated in decree.
	Reject idea that IX restriction made unnecessary by the existence of seven regional companies in lieu of one Bell System.	Bell System agreement to decree premised on existence of seven Regional Companies.  Bottleneck as pervasive as pre- divestiture.
	Reject idea that IX restriction made unnecessary by the substantial implementation of equal access.	Numerous notions before Court on Regional Company violation of equal access obligations make it (independently of the final resolution of these disputes) impossible for Court to assume Regional Company compliance.  Past Bell System discriminatory behavior, even under various judicial and regulatory mandates based on its monopoly bottleneck, illustrate the opportunity and incentives to engage in anti-competitive practices still exists.
	Reject idea that IX reduction made unnecessary by the GTE analogy.	Regional Companies lack standing to seek a modification of MFJ decree based on GTE decree.  GTE did not enjoy same bottleneck monopoly as Bell System.  GTE operations widely scattered; Bell Companies tended to be dominant carrier.
Reject idea that IX restriction made unnecessary by the possibility of new antitrust suits.		The decree restrictions were intended to be a prophylactic measure to prevent future antitrust violations.
The entry of Regional Companies is not necessary to give vitality to the competition that now exists in the interexchange market.		AT&T and some 530 long distance carriers exist, eight of which serve twenty-five or more cities.
Mobile services restrictions should not be lifted because they are interexchange services per Section II(D)(1) of decree.		Huber Report documentation of Regional Company actions to impede competition of providers of mobile services.

TABLE 6-7 (continued)  
 A SUMMARY OF SOME CONCLUSIONS IN THE TRIENNIAL MFJ REVIEW

CONCLUSIONS	RATIONALE	INFORMATION
<p><b>Manufacturing</b>            No changes have occurred that would warrant removal of the restriction on manufacturing; removal would extinguish or substantially curtail the healthy, competitive, domestic manufacturing market that has emerged since the decree.</p>	<p>The local monopoly is as central to the market as it is to the inter-exchange services market.</p> <p>The incentive and the ability to act anticompetitively have not been significantly altered by the division of the Bell System into seven Regional Companies by FCC regulation, or by any other factor.</p>	<p>Regional Companies still have an ironclad hold on local exchanges.</p>
<p><b>Non-Telecommunication Services</b>            Remove restrictions on any previous court-imposed conditions on the provision of any other product or service except exchange telecommunications and exchange access service.</p>	<p>BOC manufacturing would hurt a flourishing broad-based, innovative industry.</p> <p>If restriction was lifted, Regional Companies may be expected to act as did the old Bell System: they would buy all or almost all equipment from their own manufacturing arm.</p> <p>No measures, regulatory or otherwise, are available to counteract anticompetitive manufacturing practices.</p> <p>Finding that a Regional Company "could" impede competition is sufficient; Court under decree does not need to find that the Regional Company "would" do so.</p> <p>Little incentive and ability exists for Regional Companies to act anticompetitively through cross subsidization.</p> <p>The relative paucity of joint and common costs make it more difficult to cross-subsidize in an undetectable manner.</p> <p>Waiver process places a burden on the Court and Regional Companies.</p>	<p>Regional Companies account for an estimated 70% of the national output of telecommunications market.</p> <p>Decree explicitly envisioned seven Regional Companies and the manufacturing restriction. No change.</p> <p>DOJ and Huber report estimate that Regional Companies' in-house purchasing could foreclose a significant percent of the U.S. equipment market: a range of percentages large enough to raise antitrust concerns.</p> <p>Huber report indicates that each Regional Company could on average control a \$6 billion equipment market within its region.</p> <p>Filings by consumers, interexchange carriers, independent local exchange carriers, cellular carriers, manufacturers, suppliers, services, labor unions, and state regulators.</p> <p>Almost all of the filings concluded that there is no substantial risk that Regional Companies' participation in other businesses would permit leveraging of their exchange monopolies.</p> <p>Contained in rationale.</p> <p>Court received and granted 160 waivers.</p> <p>Contained in rationale.</p>

Source: NRRI Summary of United States of America v. Western Electric Company, Inc., et al., U.S. District Court, Civil Action No. 82-0192, September 10, 1987.

CHAPTER 7  
APPLICATIONS TO CURRENT POLICY PROPOSALS

This chapter applies four basic elements of market analysis developed in earlier chapters for analyzing market competitiveness:

1. Define the relevant market,
2. Assess barriers to entry,
3. Determine the number and size distribution of firms in the industry,
4. Assess the nature of the service.

This chapter first reviews the characteristics of telecommunications service markets in general. It then assesses the likely pricing results of deregulation of three segments: local, intraLATA toll, and interLATA toll. That is, given current market conditions, if the dominant carrier is deregulated, will competition restrain prices?

Characteristics of Telecommunications Markets

1. Market Definition: Community, Distance, Calling Area  
Dispersion, Volume

One dimension of a telecommunications market is geographic: the options available in a given community. Even though there are hundreds of local exchange carriers (LECs), there is no local service competition if each has an exclusive franchise in its area. A second dimension is calling distance. It is usually not possible to substitute a local call for a long distance one. Calling area dispersion, another dimension, refers to the number of locations typically called. It will be argued that a customer who calls only one location has more options than one who calls many locations. Finally, service to a high volume user differs significantly from service to a low volume user.

## 2. Barriers to Entry: Legal Restrictions, Economies of Scale and Scope

Chapter 1 (table 1-1 especially) and appendix A discuss the relaxation of legal barriers to entry into many telecommunications markets. Economies of scope refers to the ability of a single firm to produce several related services at a lower average cost than if each service were produced by a separate firm. Critics of the Modified Final Judgment believe the restrictions on the Regional Bell Holding Companies prevent the RBHCs from obtaining economies of scope.<sup>1</sup> Economies of scale mean that a large firm can provide a single service more cheaply than several small firms. In telecommunications the amount of usage between two points may well have a range in which it exhibits economies of scale.

In telecommunications services, customers with high volumes of traffic on a route or on segments of a route, or whose traffic can be easily bundled with other small customers, have more options because competitors of the dominant carrier can obtain sufficient size (the minimum optimal scale) to reap the economies of scale. Figures 7-1a and 7-1b illustrate local services, figures 7-2a, 7-2b, and 7-2c long distance. Any segment with enough traffic to justify a high capacity line has more potential for competition. A customer with a low volume of local calling to a dispersed set of locations invariably relies on the local telephone company to switch its local calls. A customer with a high volume of calling between two points, whether local or long distance, can often profitably replace switched service with private line service directly connecting the two locations. Several companies can provide private line circuits, but the dominant local and long distance carriers appear to get much of the private line customers, too.

A long distance customer, even with low volume and a dispersed calling pattern, may have some alternatives to the dominant carrier nevertheless, if he/she is in a moderately large city. If so, alternative switched

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<sup>1</sup> See, for example, "To Lift or Not to Lift? NARUC Says Yes, With Caveats; Consumer Rep Says No," State Telephone Regulation Report, July 2, 1987, p. 6.

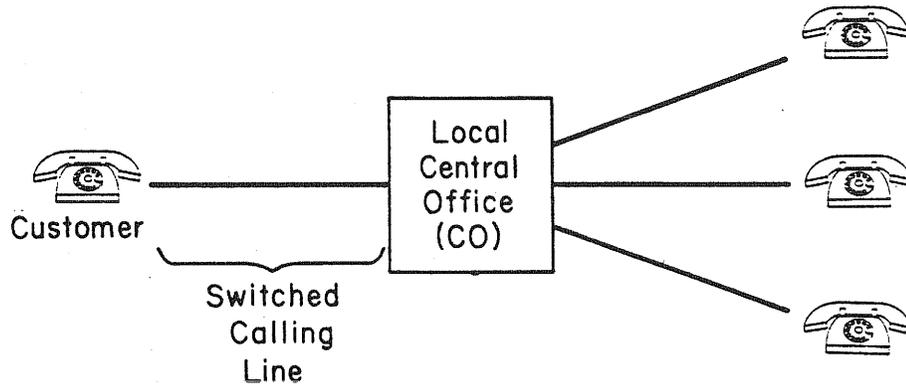


Fig. 7-1a. Low usage or dispersed high usage local calling

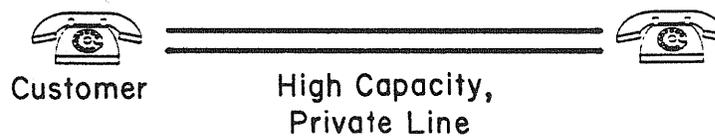


Fig. 7-1b. High usage local or long distance calling to a single location

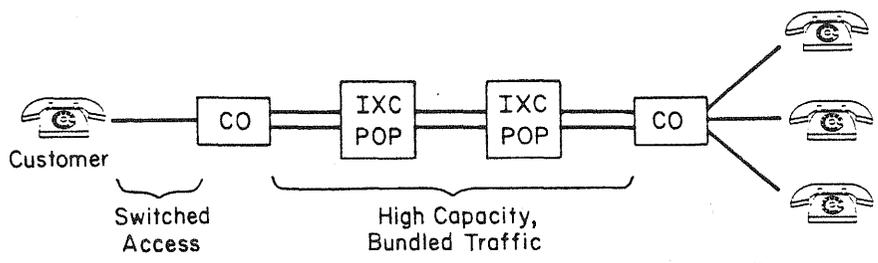


Fig. 7-2a. Low usage, dispersed long distance calling from an urban location (e.g., AT&T, MTS or MCI Basic Service)

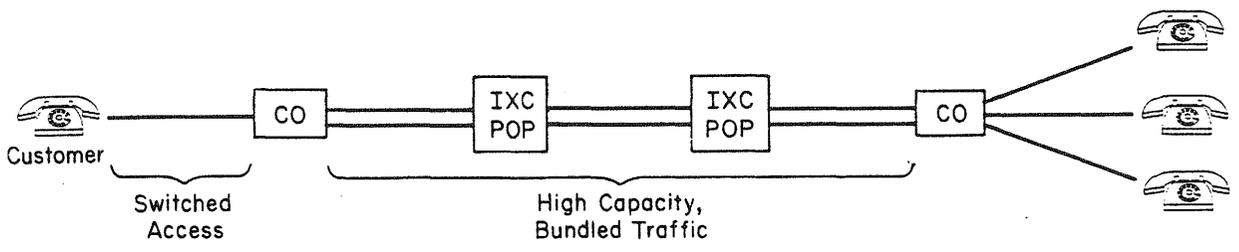


Fig. 7-2b. Medium usage dispersed long distance calling from an urban location (e.g., AT&T Pro, Reach Out, WATS, and 800 Services, and similar OCC services)

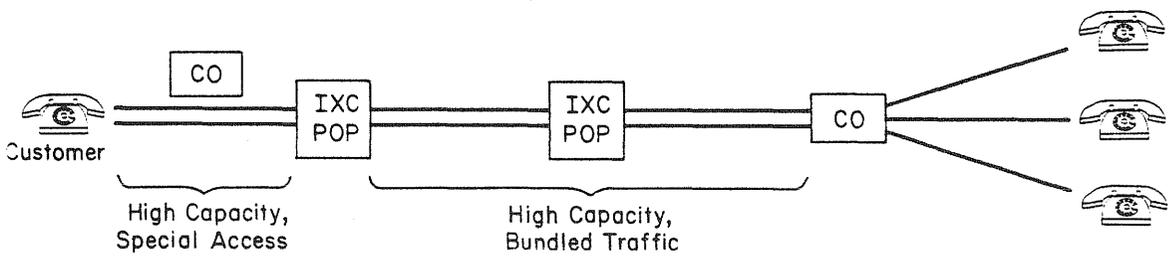


Fig. 7-2c. High usage long distance calling from an urban location (e.g., AT&T Megacom Services, MCI Prism)

interexchange carriers (IXCs) can bundle the small customers' traffic with others at the switch, obtaining enough traffic to justify building a point-of-presence (POP)<sup>2</sup> in the city (figure 7-2b). A long distance customer with moderate usage to or from dispersed locations has additional options from the dominant carrier (e.g., AT&T's Pro America, Pro "State" plans for business, Reach Out America and Reach Out "State" for residences, and WATS/800 lines for business locations with still more out or incoming calling) and, if located near a large city, from alternative carriers, too. These volume discount plans also rely on access switched at the local central office to reach the point-of-presence of the long distance carrier, although they require billing and other changes. The long distance carriers pay a usage sensitive charge to the local exchange carrier for this connection.

IXCs can offer even lower rates to high usage customers who purchase a high capacity<sup>3</sup> private line connection (special access) directly from the customer premises to the long distance carrier service node, bypassing the local central office switch, as shown in figure 7-2c. AT&T's Megacom services are one example. Special access is often purchased from the local telephone company, but, like other local private line circuits, may be purchased from other vendors if the LEC rates are exorbitant. The point is that a high capacity special access circuit costs a flat rate per month, regardless of usage, so there is a cross-over usage point beyond which it is cheaper for the long distance carrier to encourage a customer to replace usage sensitive switched access with usage insensitive special access.

Figures 7-1a,b and 7-2a,b,c not only distinguish the high volume segments, which are more likely to induce competitive entry, they also show

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<sup>2</sup> The IXC point-of-presence is not always an IXC service node or switch, but for simplicity this report uses the terms interchangeably.

<sup>3</sup> High capacity means 1.55 million bits per second (mbps) or 45 mbps. A 1.55 mbps line, often called a T-1 line, is usually a simple twisted copper pair with multiplexers at both ends. Its capacity is 24 simultaneous voice conversations. A 45 mbps line, sometimes called a T-3 line, is usually a fiber optic with more sophisticated multiplexers. Its capacity equals 24 T-1 lines or 672 voice grade circuits. A good, but dated, reference is Engineering and Operations in the Bell System (Murray Hill, NJ: AT&T Bell Laboratories, 1983).

that nearly all calls go through a local central office at the originating or terminating end. This is the local "bottleneck," worried about by the Department of Justice.

Finally, a long term commitment is necessary in order to recoup the fixed costs of high capacity private lines and multiplexing equipment. In short, two conditions must be met to overcome economies of scale as a barrier to entry in telecommunications services: high usage on a telecommunications link and stable locations at both ends of the link. These conditions are seldom met for all links of a telephone call, so competition often depends on enforcement of fair interconnection of competitors to local distribution networks.

### 3. Number and Size Distribution of Firms

In general, telecommunications markets, like other markets, have more firms and more equal size distribution among firms if they have lower legal and technological (e.g., economies of scale) barriers to entry. The discussion on barriers to entry suggests that the number and size distribution is likely to be greatest for interLATA long distance carriers and least for local service carriers.

### 4. The Nature of the Product

Another reason why switched services tend to be less competitive than private line services comes from the characteristics of the services. As explained in chapter 2, several conditions in long distance switched service markets promote tacit collusion: small, frequent sales; homogeneous product; a dominant, price leader; and posted prices. By contrast, private line services and networks represent large, infrequent sales of customized (heterogeneous) services through bids or priced on an individual case basis.

The sections below confirm that level of competition varies significantly in local, intraLATA toll, and interLATA (intrastate) toll markets. This suggests that deregulation requires market analysis of specific services in specific geographic areas, if consumers are to be protected from monopoly prices.

### Local Service

If one were to calculate the Herfindahl-Hirschman Index for local service, it would indicate extraordinary market concentration. For most business and all residential local calling, the LEC is the sole provider. According to 371 experts surveyed by the California Public Utilities Commission, only mobile services are currently competitive (table 7-1). There is no competition in residential local services now and little likely in the next three years. Competition in institutional local services and long distance access is expected to improve, but even in 1991 they will only be weakly to moderately competitive.

Centrex service is probably subject to more competition than other specialized central office services. In Centrex service, telephone

TABLE 7-1

NATIONWIDE SURVEY OF EXPERT OPINION ON LOCAL SERVICE COMPETITION

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	<u>1986</u>	<u>1991</u>
Residential	1.1	1.5
Institutional	1.5	2.5
Switched Access	1.6	2.5
Special Access	1.8	2.8
Specialized Central Office Svcs	1.2	1.9
Mobile Services	3.4	3.7

Ranking Code:

1 = not competitive

2 = weakly competitive

3 = moderately competitive

4 = very competitive

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Source: California Public Utilities Commission, Policy and Planning Division, Competition in Local Telecommunications: A Report to the Legislature, May 1987, p. 48 and appendix C. For further discussion of the survey, see chapter 6 above.

extensions in a large building are linked to one another at the LEC central office. Centrex faces competition from private branch exchanges (PBXs), in which extensions in a building are linked through a small privately-owned switch in the building. Centrex is preferable if a firm does not intend to stay in a location long (e.g., under 5 years), or does not wish to have its own telephone maintenance personnel. Given the rarity of network disaster, there are evidently economies in having the local exchange carrier provide most disaster recovery services. In the absence of legal restrictions on entry, coin telephone service--in restaurants, retail stores, gasoline stations, and hotels--exhibits characteristics of monopolistic competition.<sup>4</sup> That is, there could be many providers of coin service, distinguished by the convenience of their location.

Competition in basic switched local service may develop from two sources: cream-skimmers or full network providers. Cream-skimmers are firms which look for profitable niches. PBXs and shared tenant services (STS, also known as multi-tenant telecommunications services, MTTS) provide an option for large business locations with much intralocation and long distance calling but little other local calling. In effect, these competitors look for a concentrated community of interest, so the average loop length within the community of interest is much smaller than the typical local loop length. They may offer technical features unavailable with a standard local loop or they may permit long distance calls from several close locations to be bundled onto a high capacity special access line. Cream-skimming competitors rely on interconnection to the LEC for local calling ubiquity and often purchase rights-of-way or special access lines from the LEC. Peter Huber speculates that, as switching (computing) costs fall relative to line costs, companies will introduce more and more switching nodes to bundle and switch the traffic much closer to the customer, requiring fewer links, with links carrying more traffic than before.<sup>5</sup>

Other commentators speculate that cable television and electric utility companies will one day use their local distribution networks to provide

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<sup>4</sup> See Chapter 2 above for a review of monopolistic competition.

<sup>5</sup> Peter Huber, The Geodesic Network, chapters 1 and 2.

full-network competition to the LECs.<sup>6</sup> There are few examples of full-local-network competitors so far.<sup>7</sup>

Huber acknowledges that "residential and small business users still have few practical alternatives to LEC lines for short-haul transmission; for these users, switched access remains the most economical, bundled telephone service."<sup>8</sup> There are several possible reasons why competitive entry is not more prevalent in local services. First, entry may be inhibited because the cost of local service and long distance access may exceed the charges paid by low usage customers. High volume long distance customers may continue to subsidize low volume local customers by being overcharged for local origination and especially local termination. The charges are on a usage sensitive basis, but the loop costs are considered by many to be fixed.<sup>9</sup>

Second, even if an entrant develops new features, it may not attract customers from the LEC. Some observers argue that the LECs themselves may go too far with the proposed Integrated Services Digital Network (ISDN). ISDN permits subscribers to combine voice and data services on a single local loop line, yet many subscribers only want simple voice service.<sup>10</sup>

Third, the marginal cost of maintaining the current embedded local telephone network is relatively low. A competitor would have trouble undercutting the price of the LEC and still making a profit (positive net

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<sup>6</sup> John R. Meyer, et al, The Economics of Competition in the Telecommunications Industry (Cambridge, Mass.: Oelgeschlager, Gunn and Hain, 1980), pp. 187-192. A British magazine states, "There is nothing to prevent electricity companies or cable television people from supplying telephone services (they are doing the former in Japan and the latter in Britain)." See "Telecommunications Survey," The Economist, October 17, 1987, p. 17.

<sup>7</sup> A bidder on the cable television franchise in Hong Kong promises to provide "a second telephone system, a shift from voice communications to data communications, as much as an entertainment system." See "Li Kashing: Telephone Bet," The Economist, September 19, 1987, p. 88.

<sup>8</sup> Peter Huber, The Geodesic Network, p. 2.23.

<sup>9</sup> Others contend that loop costs usage sensitive. See William Pollard, J. Stephen Henderson, Mohammad Harunuzzaman, and Ross C. Hemphill, Cost-of-Service Methods for Intrastate Jurisdictional Telephone Services (Columbus: NRRI, April 1985).

<sup>10</sup> See "Telecommunications Survey," The Economist, October 17, 1987, pp. 28-34.

present value) on its investment in a new network. Indeed, if it were profitable, interexchange carriers would create local distribution networks to avoid usage sensitive terminating access charges.

In short, deregulation of local service rates, given the paucity of current competition, would likely lead to substantial rate increases for most customers.

### IntraLATA Toll

The AT&T divestiture established the boundaries for the intraLATA toll market. That decree confined the Bell Operating Companies (BOCs) to providing services only within the newly established Local Access and Transport Areas. These LATAs are essentially large exchange areas whose boundaries represent geographic communities of interest, subject to the constraints that there could be no more than one Standard Metropolitan Statistical Area in a LATA, and that LATA boundaries could not cross the state lines.<sup>11</sup>

The decision to permit intraLATA competitive entry is in the hands of state regulators. As table 6-1 of this report indicates, less than half of the states have allowed intraLATA competition (though decisions are pending in several states) while most states have allowed interLATA competition. The presence of competitive entrants in the interstate and the intrastate interLATA markets is creating pressure to allow competitive entry within the LATA. Thus, an assessment of the competitive potential is in order.

### Market and Service Characteristics

IntraLATA toll services fall into two major categories--switched and unswitched. The services are, with a few exceptions, essentially homogeneous, but are often differentiated by various marketing strategies and alternate definitions. For example, bulk pricing and discount pricing

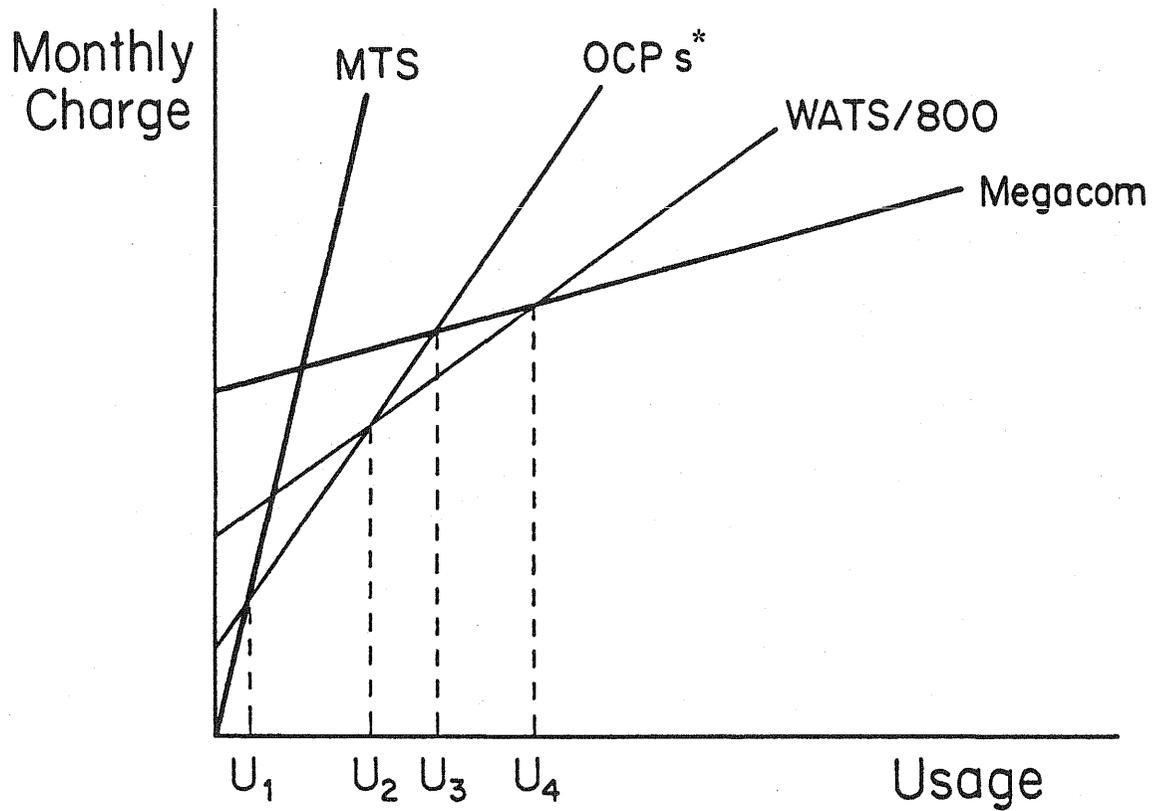
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<sup>11</sup> The court granted a limited number of exceptions to the state line constraints where the community of interest and network efficiency conditions warranted it.

packages as seen in the interstate market can require a customer to make complex calculations to determine whether one carrier's prices differ from those of another. Similarly, differences in quality can lead to product differentiation, with the most publicized example being the advertised superiority of fiber optic transmission lines.

The intraLATA toll services offered by the local exchange carrier (LEC) compete to some extent with each other, too, depending largely on call volume and relative prices. That is, customers with low call volumes will use MTS; at higher levels of volume, WATS service will be substituted; at still higher levels of use a customer will move to private line service, to achieve greatest cost efficiency. Figure 7-3 is a simple diagram depicting cross-over points, levels of usage at which the subscriber should change to a bulk service. In each case, successive bulk services require higher and higher fixed monthly charges (the vertical intercept), but offer ever lower marginal usage rates (the slope). In addition, two local services can be partial substitutes, particularly for MTS. They are extended area service and distance sensitive measured rate service that extends beyond the local exchange.

Other intraLATA toll services include 800 service, operator service and specialized private line data services. Operator services are generally provided by the local exchange company for intraLATA services and would face some competition from interexchange carriers if open entry is allowed. The WATS and 800 services are today usually provided on joint intraLATA-interLATA access lines by AT&T and the LECs. Customers may pay on the basis of their total intrastate usage, with AT&T and the LECs dividing the revenues later, or customer usage may be charged based on separate intraLATA and interLATA usage. Full participation in the 800 market by other interexchange carriers has been delayed by the need to create adequate data bases. As discussed in the previous section, LECs face competition in intraLATA specialized private line data services from bypassers and private network providers. With open entry, additional competition would come from interexchange carriers.



\* Optional Calling Plans, including PRO and Reach Out plans

Fig. 7-3. Cross-over usage points for some AT&T services

The nationwide survey by the California commission suggests that competition in intraLATA private line is likely to increase at a faster rate than intraLATA switched services, although neither of them is currently competitive (table 7-2).

TABLE 7-2

NATIONWIDE SURVEY OF EXPERT OPINION ON INTRALATA TOLL COMPETITION

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	<u>1986</u>	<u>1991</u>
Switched Services	1.2	2.6
Private Line	1.2	3.2

Ranking Code:

1 = not competitive	3 = moderately competitive
2 = weakly competitive	4 = very competitive

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Source: California Public Utilities Commission, Policy and Planning Division, Competition in Local Telecommunications: A Report to the Legislature, May 1987, p. 48 and appendix C.

As in the case of local service, it is useful to view the intraLATA toll market as a series of local markets, because it is likely that competition will develop more quickly in urban LATAs than in rural ones. It is also likely that competitive entry will focus on larger business users, rather than small business or residential users.

Actual and Potential Competitive Entrants

The interexchange carriers (IXCs) include the major national carriers--AT&T, MCI, Sprint--as well as any existing regional carriers. The number of IXCs varies from state to state. Table 7-3 indicates the number of IXCs which purchase interstate switched and equal access in each state. Those carriers with existing points-of-presence in the LATA will initially have a cost advantage over other IXCs. Table 7-3 shows that IXC presence, as

TABLE 7-3

INTERSTATE LONG DISTANCE CARRIERS WHICH PURCHASE  
ACCESS FROM BOCs, BY STATE, 1986 and 1987

STATE	SWITCHED ACCESS		EQUAL ACCESS	
	Dec/86	Aug/87	Dec/86	Aug/87
Alabama	53	48	13	14
Arizona	59	52	18	16
Arkansas	48	50	6	6
California	116	110	22	18
Colorado	71	81	19	17
Delaware	20	18	4	3
Dist/Columbia	54	70	13	15
Florida	103	95	20	23
Georgia	118	115	14	17
Idaho	23	21	7	7
Illinois	160	146	19	19
Indiana	39	41	15	12
Iowa	29	32	9	10
Kansas	48	45	14	14
Kentucky	52	47	11	10
Louisiana	73	67	20	17
Maine	14	15	4	4
Maryland	39	39	12	11
Massachusetts	37	43	10	8
Michigan	44	41	14	11
Minnesota	50	53	14	14
Mississippi	43	40	6	7
Missouri	92	93	20	20
Montana	17	13	6	4
Nebraska	28	25	11	10
Nevada	22	23	7	9
New Hampshire	17	18	3	3
New Jersey	61	77	20	18
New Mexico	36	31	5	5
New York	117	142	22	21
North Carolina	48	54	12	11
North Dakota	18	20	6	6
Ohio	59	54	16	15
Oklahoma	60	64	12	14
Oregon	59	46	19	19
Pennsylvania	92	101	18	20
Rhode Island	16	18	8	7
South Carolina	30	35	7	7
South Dakota	22	121	4	4
Tennessee	73	62	14	16
Texas	169	170	50	54
Utah	36	33	10	10
Vermont	14	15	3	4
Virginia	32	35	9	9
Washington	54	47	19	14
West Virginia	20	20	6	5
Wisconsin	55	56	25	25
Wyoming	20	15	6	4

Source: Federal Communications Commission, Industry Analysis Division, "Summary of Long Distance Carriers," November 5, 1987.

measured by firms buying equal access, fell in 20 states last year. In 22 states the number of IXCs purchasing switched access declined.

Nearly all states currently allow resellers in the intraLATA market, but the future of the resellers is difficult to assess. It depends largely on the results of any price realignments that occur as a result of the achievement of workably competitive markets.

The BOC is likely the dominant company overall, though a large non-Bell company may be the dominant carrier within a particular service area. Estimating the size of AT&T's operations (or other IXC's) will involve separating their intraLATA activities within a given state from their other (intrastate and interstate) services.

At least two indicators of size are important for assessing the impact of competition--traffic volume and some indication of financial strength. A company that is not initially dominant in traffic volume may exert long run competitive pressure if it is financially able to overcome short run losses.

Finally, in assessing the number and size distribution of competitors it may be most useful to describe various geographic subsites of the market. The strength of the market forces may well vary among service territories and among types of routes.

#### Barriers to Entry

Relatively little additional capital investment may be required from potential intraLATA competitors, because large IXCs already have service nodes or points-of-presence (POPs) in large LATAs to provide interstate and intrastate interLATA service. Additional investment may be undertaken to build additional POPs in order to reduce their dependence on the local exchange companies. Similarly, depending on the existing network configuration, the additional investment needed by one LEC to compete with another (when both LECs provide local service to different communities in the same LATA) may be relatively small, especially for routes contiguous to their existing service areas.

The most significant barrier to successful entry is the lack of equal access. The AT&T divestiture required the installation of equal access facilities for interstate toll access services, but no such requirement exists for intraLATA toll. The dial 1 access currently routes all intraLATA

toll calls to the relevant local exchange company. Thus all other companies receive unequal access. How severe this barrier is depends on the customers' perception of the inconvenience of the unequal access. It is likely that unequal access is a serious barrier to full competition.

A frequent barrier to entry is the presence of an existing firm with an established customer base and customer inertia (often referred to as brand name loyalty). This takes on an interesting nuance with respect to the intraLATA toll market in that the customer typically is part of the customer base of two companies--the local exchange company and an interexchange carrier. This means that the existence of an established customer base can be a barrier to AT&T in entering the LEC's intraLATA market, just as it is a barrier to other interexchange carriers (IXCs) in entering AT&T's interLATA markets.

#### Nature of the Product

As discussed earlier, the intraLATA toll services are essentially homogeneous products, i.e., a voice channel is a voice channel; a data channel is a data channel. Real or perceived differences will generally relate to quality of service differences or to marketing strategies. The major exception to this would be related to services with equal access and those with unequal access.

The major toll services--MTS, WATS and private line--are substitutes for each other, with the rate of substitution depending on call volume and the relative prices. This means there is some cross price elasticity among the services. This also means there is a market niche for resellers who offer WATS rates to small volume customers who otherwise would not have sufficient volume to utilize WATS services.

The price elasticity of market demand for intrastate MTS services is generally considered to be inelastic. Lester Taylor reports the results of several studies of elasticity in his book Telecommunications Demand: A Survey and Critique (1980). Results obtained from analysis of data for several states include: intrastate toll demand is both price inelastic and income inelastic in the short run, and is usually price inelastic in the

long run but income elastic in the long run.<sup>12</sup> Fewer estimates of WATS and private line elasticities have been computed. One strategy by Feldman indicates that WATS demand is generally price elastic and that there are high cross elasticities.<sup>13</sup> (See table 7-4.)

Two things should be noted with respect to these data. First, the studies were done before the recent growth in bypass alternatives and prior to the restructuring of the Bell System. Second, these elasticities represent the price elasticity for the market. The price elasticity of demand facing an individual firm may be quite different. For example, while intrastate MTS was generally inelastic, customers may have an elastic demand with respect to any one firm. That is, price differentials among firms can cause customers to shift among firms.

#### Competitive Nature of the Market

Two important questions merit assessment: "What is the appropriate model for describing this market structure?" and "What will be the nature of the competitive process if open entry is allowed?" Regarding market structure, if one looked only at a LATA-wide count of potential entrants, one would tend to believe the market will be quite competitive. However, LATA-wide measurements may not be most appropriate. As mentioned earlier, there are many sub-markets within the LATA, and they exhibit differing degrees of competitive potential. The larger business customer may be sought by bypass suppliers, all interchange carriers and nearby local exchange companies as well as the local exchange company currently serving that customer. By contrast, intraLATA toll routes serving small towns may have so little traffic volume that few if any competitors will be interested in providing service.

It is not at all clear that all LATAs are capable of becoming competitive. The local exchange companies have all necessary transmission facilities and switches in place. Competitors will have to pay access

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<sup>12</sup> Taylor, Lester, Telecommunications Demand: A Survey and Critique, (Cambridge, Mass.: Ballinger, 1980), pp. 124-125.

<sup>13</sup> Ibid., p. 135.

TABLE 7-4

ESTIMATES OF PRICE AND INCOME ELASTICITIES  
OF DEMAND FOR WATS (FELDMAN STUDY)

Dependent Variable	Own-Price Elasticity	Cross-Price Elasticity			Income Elasticity
		DDD	WATS Measured	WATS Full	
Inward WATS					
Total lines	-1.40	1.17	---	---	0.91
Measured lines	-2.34	1.52	---	0.64	0.75
Full lines	-2.83	0.78	1.82	---	1.01
Messages	-0.91	0.69	---	---	1.02
Hours/measured line	---	---	---	--	0.13
Outward WATS					
Total lines	-2.30	2.11	---	---	1.06
Measured lines	-3.25	2.07	---	0.88	0.78
Full lines	-3.37	1.90	1.08	---	1.09
Messages	-1.15	0.96	---	---	0.97
Hours/measured line	---	---	---	---	0.32

Source: Taylor, Lester, Telecommunications Demand: A Survey and Critique (Cambridge, Mass.: Ballinger, 1980), p. 135.

charges for the use of these facilities unless they build their own. Since the access facilities are in most cases the same facilities used by the local company to provide intraLATA toll, the cost advantage appears to be most often with the local company, assuming equal access. That is, the costs of the local company will equal the access charges. The costs of the competitor will equal the access charges plus the costs of the competitor's point-of-presence. If a competitor builds its own facilities it is not certain that these will be lower cost than the existing local company's facilities. In particular, for routes with existing excess capacity the local company's marginal cost will be quite low. Technological change is increasing route capacity further. Huber notes, for example, "Every two years or so improvements in electronics double the carrying capacity of

fiber already in the ground. By all indications, there is already and will continue to be a glut of interexchange transmission capacity."<sup>14</sup>

For intraLATA toll switched services the current and most likely future market structure is that of a dominant firm with fringe competitors. An exception to this is the market for very large business customers where there may be many competitors, particularly relative to private line services.

The competition that does occur is likely to be competition in price and in real or perceived quality differences. A competitive advantage of interexchange carriers will be their ability to offer integrated toll services--intraLATA, intrastate interLATA and interstate toll.

#### The Cross Subsidy Issue

The existing local exchange company has the ability to cross subsidize competitive intraLATA toll services with (noncompetitive) local service revenues. There is a large amount of common costs shared by these two groups of services and the precise delineation of these costs is a difficult issue. Instituting a system of access charges will reduce the potential to cross subsidize, assuming the access charges are cost-based and are charged against the existing local company as well as competitors.

Two other opportunities for cross subsidy exist that are more difficult to deal with. One is related to the interexchange carriers. These carriers are typically multi-product, multistate operations, and with deregulated intraLATA toll services could, if they choose, subsidize operations within any one LATA with revenues from other operations.

The other possible opportunity for cross subsidy lies in the mixture of services offered within the LATA. For example, MTS could be used to subsidize private line service (or vice versa) in a deregulated market. This sort of attempt to cross subsidize is likely to be short-lived, however, because of the degree of substitutability among these services and

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<sup>14</sup> Huber, The Geodesic Network, p. 3.2.

the bypass potential. As usual, it is the residential and small business users who are likely to have few, if any, viable alternatives.

### Regulatory Alternatives and Likely Results

The following paragraphs assess likely results under three alternatives: continued rate base, rate of return regulation without competitive entry; open entry with some form of relaxed or flexible regulation; and deregulation with a reliance on competition. The assessments generalize about LATA markets and it is important to note that, in reality, LATAs exhibit great variability in their characteristics. The results of a particular regulatory or deregulatory initiative will not be the same in all LATAs.

Continuing the use of rate base rate of return regulation with no open entry is a viable option for LATAs that seem unlikely to be able to develop strong broad-based competitive markets. These would seem to be LATAs that have very few high volume routes, and a significant amount of excess capacity on most routes. Some benefits of competition could still be obtained to some extent through the presence of bypass alternatives and resellers. Bypassers would stimulate the introduction of technological improvements and would act as a force to keep costs of service down and the rates charged to large business users in line with these costs. Resellers would increase options for small and medium sized users and exert pressures to keep these rates in line with costs. The regulated rates, assuming they are cost-based, would prevent small users being charged rates above costs.

The option of open entry and reduced regulation is most appropriate for LATAs that are capable of becoming competitive but in which competition is not yet well developed. An open entry policy will allow commissions to collect the data needed to determine whether the LATA can become competitive, or whether only particular submarkets will become competitive. Retaining some regulatory control will give a measure of protection to customers who do not have access to competitive alternatives. Flexibility, particularly in rate making, e.g., the use of banded rates, can enable the local exchange company to compete on prices with the competitive entrants. Once open entry is allowed, access charges will have to be instituted in order to prevent predatory pricing.

Deregulation is, of course, most appropriate for LATAs in which competition has developed. It is probable, however, that there will always be classes of customers or communities that have limited competitive alternatives. Deregulation will likely lead to price discrimination among the customer classes and some degree of rate averaging among routes. Residential users and customers on low volume routes will receive fewer, if any, benefits of competition and deregulation.

#### Intrastate, InterLATA Toll

Intrastate, interLATA traffic refers to toll calls which cross LATA boundaries but stay within state boundaries. There are many similarities between the interLATA market and the intraLATA market. The message telecommunications service (MTS), WATS, and 800 services are similar for both territories and usually are provided on the same access line. This section will focus on the differences.

First, every state has at least one LATA, so every state has the potential for intraLATA competition. IntraLATA competition is likely to be greater if population is concentrated in the LATA. By definition, for an intrastate, interLATA market to exist, there must be more than one LATA, yet twelve states have only one.<sup>15</sup> For interLATA competition to prosper there must be more than one LATA, and at least two LATAs must be fairly densely populated. In Massachusetts, for example, there are two LATAs but only the Boston LATA is densely populated, so there is little interLATA traffic. Indeed, an IXC may not choose to establish a point-of-presence even for interstate traffic originating from a sparsely populated LATA.

Second, unlike the intraLATA toll market, the interLATA one is not subject to the bottleneck problem. That is, the dominant intraLATA carrier (the BOCs) is also the monopoly provider of local distribution, so it has an incentive to discriminate against its intraLATA competitors in the pricing or provisioning of interconnection to the local network. However, the terms of the AT&T divestiture (the MFJ) prohibit the BOCs from entering the

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<sup>15</sup> Alaska, Connecticut, Delaware, Hawaii, Maine, New Hampshire, New Mexico, Rhode Island, South Dakota, Utah, Vermont, and Wyoming.

interLATA market, so the BOCs do not have an incentive in providing local interconnection to discriminate against purely interLATA toll carriers. They may have an incentive to discriminate against interLATA toll carriers which are also competitors of the BOC in the intraLATA toll market.

Third, economies of scale in telecommunications transmission may make the minimum optimal scale more easily attainable in traffic between two concentrated LATAs than within one concentrated LATA.

Fourth, as noted earlier, all multiple LATA states permit some interLATA competition but some states do not permit intraLATA competition.

In summary, interLATA competition is likely to be greater than intraLATA competition, assuming the state has two densely populated LATAs. This is also the conclusion of the panel of experts assembled by the California Public Utilities Commission (table 7-4). They feel that interLATA services are already moderately competitive. Similarly, interstate competition is likely to be greater than intrastate, interLATA competition. That is, only one concentrated LATA is needed in a state to efficiently bundle traffic for the interstate market, but two are needed for effective interLATA competition.

TABLE 7-5

NATIONWIDE SURVEY OF EXPERT OPINION  
ON INTERLATA TOLL COMPETITION

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	<u>1986</u>	<u>1991</u>
InterLATA Switched Services	2.6	3.5
InterLATA Private Line	3.1	3.3

Ranking Code:

1 = not competitive	3 = moderately competitive
2 = weakly competitive	4 = very competitive

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Source: California Public Utilities Commission, Policy and Planning Division, Competition in Local Telecommunications: A Report to the Legislature, May 1987, p. 48 and appendix C.

## Operator Services

The competition that exists in operator services is between AT&T and the Bell operating companies in states where the Bell companies have completed "operator take-back." With divestiture of AT&T the Traffic Service Position Systems (TSPS) to provide operator services went to AT&T Communications. Bell companies, however, were allowed to provide their own operator services if they wished to do so. Bell companies are offering their operator services for intraLATA calls and to interexchange carriers for interstate and intrastate interLATA calls, thereby allowing the other interexchange carriers to offer service comparable to AT&T. With only two competitors, the duopoly model of oligopoly applies. This model predicts that duopolists will ultimately settle into a pattern of maximizing the profits from a market, and they will share the market output in such a way that monopoly profits are earned. This is an anticompetitive outcome, and competition here is not considered a viable alternative to regulation at the present time.

On July 1, 1987, U.S. Sprint announced the first nationwide operator service to compete with AT&T.<sup>16</sup> This service will provide 24-hour operator services for collect calls, person-to-person calls, and station-to-station calls. In addition a caller can obtain completion assistance through this service. This Telecommunications Report announcement, however, did not indicate an in-service date. Commissions can monitor the market for operator services for entry of new providers and market shares. It is unlikely that three or four providers would make the market behave in a competitive manner. However, the presence of regulation may discourage entry if it has the effect of holding down profits. This dilemma of regulating profits and discouraging entry to markets for such services is difficult to resolve.

One potential bottleneck exists in this market due to the Bell operating companies' participation in the market for operator services. Local exchange companies must provide access to a competitor's operator services.

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<sup>16</sup> Telecommunications Reports, July 6, 1987, Vol. 53, No. 27, pp. 14-15.

Nondiscriminatory access for operator services must be provided for entrants and incumbent firms if competition is to be fair in this market. If at any time in the future it is decided that the market for operator services is sufficiently competitive, the deregulatory statute or decision must ensure that access is provided on a nondiscriminatory basis. Otherwise, the local exchange companies could extend their monopoly over the local exchange to operator services. This issue is much the same issue that resulted in the breakup of AT&T.

#### Concluding Remarks

This report indicated several aspects of competition which are important to commissions considering telecommunications deregulation. It is not possible to enumerate specific market concentration and other criteria which are applicable for deregulation in all states. Each state shapes its regulatory and deregulatory policies based on its goals and circumstances. Nor is it desirable to promote one set of standards. There is much that is still unknown about the amount of competition extant and the effects of deregulation. Diversity in approaches to deregulation permits tests of the evidence.

Although studies of competition so far are helpful, additional LATA and service specific studies are needed. The actions of market participants suggest that competition is not strong in local or long distance service. Judge Greene noted, for example, that business and residential user groups almost unanimously oppose relaxation of the MFJ restrictions on Regional Bell Holding Companies. If local markets were competitive, user groups would not be concerned about the RBHC entry into interLATA toll markets. Similarly, it is counter-intuitive that MCI and Sprint support deregulation of AT&T by the FCC. If long distance markets were competitive, deregulation would presumably make AT&T a better competitor to them. Some observers argue that a deregulated AT&T will serve as a price leader, setting an umbrella price at which it and other firms will make profits. The International Communications Association, a business user group, opposes deregulation of AT&T, stating that "users want...cost-based prices, and that is what we've been seeing lately. Users are pleased with the recent decline

in long-distance rates and see no reason to alter this trend."<sup>17</sup> Perhaps the most clear conclusion is that regulators should proceed with caution in telephone deregulation.

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<sup>17</sup> Karyl Scott, "MCI Urges Free Rein for AT&T," Network World, March 9, 1987, p. 44.



APPENDIX A

HISTORICAL PERSPECTIVE ON PUBLIC POLICY ACTIONS  
RE COMPETITION/MONOPOLY IN THE TELEPHONE  
UTILITY FIELD

[Prior to divestiture] "the Bell System routinely petitioned for reconsideration or rehearing, sought regulatory or judicial stays, played federal law and regulation against state law and regulation and vice versa, and in other ways delayed action until the regulators, more often than not, lost interest or gave up in frustration."

Judge Harold H. Greene, in  
the Triennial Review of the  
Modified Final Judgment,  
September 10, 1987

This appendix is intended to provide a brief historical perspective on major public policy actions regarding the treatment of monopoly and its opposite--competition--in the telecommunications industry. As such it considers the three main arenas where public policy is formulated/decided. These are in legislatures (national and state); before independent regulatory commissions charged with the task of telephone regulation (federal and state); and in federal court through U.S. Department of Justice, Antitrust Division actions. (We do not include, in this review, therefore, the many private law suits that have arisen over the decades between and among the various private parties in the telecommunications field.) The appendix is organized, as implied, into three parts in the order mentioned. Given the limited purpose of the appendix, it draws heavily on the work of others in summarizing this important history.

A concluding commentary is offered as to any recurring themes, general positions of the parties, and what needs to be known as public policy changes in this important field are considered.

#### Before Legislatures - Congress and State

Regulatory commissions are the creations of legislatures - the Federal Communications Commission (FCC) by the Congress and the public utility commissions (PUCs) by the various state legislatures. As such, the basic statutory underpinnings on which regulatory commissions operate are crucially determinative of authorities and latitudes as well as constraints and prescribed policies. They often go decades without serious change, but in times of great public attention to a utility field or intense private efforts to accomplish a particular outcome, the legislative forum can become one of the most important arenas for action.

Not until the 94th Congress in the mid-1970's did revision of the 1934 Communications Act become a matter of serious legislative concern at the national level. For their part, state legislatures turned new attention to telecommunications regulation mainly in the last 4 or 5 years, having been preoccupied in the 1970's and early 1980's with energy issues. This section sketches the relevant content of the major congressional bills since 1976 and the recent state legislative initiatives.

## Congressional Activity

The Bell System and its subsequent elements, like all other parties of interest, have access to the Congress as a place to pursue what they see as their best fortunes. Sometimes this has meant the introduction and support of legislation that would have preserved their monopoly status and other times (like recently) an advocacy that would allow them to compete "fairly and fully" - to "untie the one hand tied behind their back." A tracing of the legislative actions of the 94th to the 98th Congress provides examples of both.

### Actions in 94th and 95th Congresses<sup>1</sup>

H.R. 12323 and S. 3192 both known as the "Consumer Communications Reform Act of 1976" were introduced in a variety of forms and reintroduced in the 95th Congress (H.R. 8, S. 530). This legislation presumed in favor of a monopoly communications network, declaring that an integrated interstate common carrier service results in reasonable charges that are "lower than otherwise would be required" and results in an efficient, high quality, universal service. Further it saw a single integrated system free from marketplace competition, finding that such competition resulted in inefficiencies and was "contrary to the public interest."

Provisions of the bill were so blatantly anticompetitive that further detail is instructive. As discussed in a Congressional Research Service report, the bill would

place the burden on potential competitors to prove that their service offerings would not duplicate the existing or potential services of established carriers. It would set incremental cost as the floor for competitive rate responses by the established carriers, would give AT&T and the other telephone companies an antitrust exemption enabling them to acquire the facilities of

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<sup>1</sup> Gilroy, Angele A., "Restructuring the U.S. Domestic Telephone Industry: Federal Activity," Issue Brief No. IB 81150, Economics Division, Congressional Research Service, Library of Congress, June 1, 1983. These sections on Congressional activity draw liberally from CRS documents as excellent and objective summaries on the subject.

existing specialized carriers in the event such competitors fail, and would grant exclusive jurisdiction over terminal equipment to the State public utility commissions, rather than the FCC. As of August 25, 1976, the legislation, in the form of 125 House bills and 2 Senate bills, had been sponsored or co-sponsored by 15 Senators and 167 Members of the House.

The proposed legislation could have an extremely adverse effect on future competition and on the limited competition which presently exists in telephone markets according to a recent report by the White House Office of Telecommunications Policy (OTP). The report states that the burden of proof requirement on potential entrants "would most likely be a complete deterrent to any would-be competitors," explaining that since the technology is generally available, established carriers need only maintain the capability to provide a broad spectrum of services and be prepared to move quickly to stop competitive entry by arguing that they themselves have the potential to provide similar services.<sup>2</sup>

The arguments used by the proponents of the restrictive legislation can be summarized in the following way:

that increased competition will result in economic harm to existing companies, thus necessitating higher charges to the average consumer. The telephone industry contends that competitors have focused on the private line and terminal equipment markets because such markets historically have been very lucrative. AT&T and the Independents claim that the excess revenues which they collect in those markets are rightfully used to subsidize local service rates, thus fulfilling the traditional goal of the industry to make telephone service widely available to all through low-cost basic service. To accomplish this, the telephone industry claims that they have pursued pricing policies that place a higher share of joint costs on long distance and business services than on local exchange service. Competition in such markets, it is argued, will force a reallocation of those costs, resulting in higher charges for residential users.<sup>3</sup>

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<sup>2</sup> Ibid., pp. 14-15.

<sup>3</sup> Hines, Sara, "Federal Communications Commission Actions Leading to Limited Competition in the Telephone Industry and 'The Consumer Communications Reform Act,'" Economics Division, Congressional Research Service, Library of Congress, September 2, 1976, p. 16.

#### Actions in the 96th Congress<sup>4</sup>

In the 96th Congress the Senate Communications Subcommittee introduced major legislative initiatives (S. 611; S. 622). Both legislative measures contained extensive proposals dealing with the deregulation of the common carrier industries.

In the House, H.R. 6121, addressing common carrier issues, was introduced in December 1979. The major concept promoted by the House legislation was the reliance on market forces and competition when possible as a substitute for present regulation. However this deregulation would not remove the obligation of the industry to provide basic telephone service at "reasonable and affordable" rates. The major highlights of the House legislation as approved by the Commerce Committee included (among other features) the following provisions bearing directly on competition;

- Deregulation of intercity markets and services while retaining regulation over basic telephone service and services provided by "dominant carriers" (i.e., AT&T).
- Modification of a 1956 consent decree permitting AT&T to provide services in various competitive markets. AT&T would be prohibited, however, from offering mass media service (e.g., the type of information offered by newspapers, periodicals, radio or television). AT&T was also required to create a separate subsidiary with separate accounting procedures for offering any unregulated telecommunications services so that no cross-subsidization could occur between monopoly and competitive services.
- Deregulation of the manufacture and sale of terminal equipment (e.g., telephone receivers and switchboards) including a provision permitting customers to connect their own terminals.

After lengthy discussion the House Commerce Committee approved H.R. 6121 in July 1980 and hoped to move the proposal to the House floor. However, the bill was referred to the House Judiciary Committee for examination of its effects on the structure of AT&T and the Justice Department's pending antitrust suit against the firm. After the House Judiciary Subcommittee on Monopolies and Commercial Law held hearings and

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<sup>4</sup> Gilroy, op.cit., pp. 15-16.

reviewed the antitrust aspects of the legislation, the full Judiciary Committee reported H.R. 6121 "adversely without prejudice." The Judiciary Committee's "recommendation" had the effect of killing the bill.

After months of discussion over unresolved differences between the two Senate initiatives, the Senate communications Subcommittee introduced a compromise in June 1980 in S. 2827. The major thrust of the common carrier provisions was similar to the House proposal, but significant differences existed. One concerned the issue of Federal Communications Commission authority. The Senate version retained the FCC's power over the structure of AT&T while H.R. 6121 barred the FCC from making any further structural changes in AT&T. S.2827 also expanded the list of "dominant" carriers to include the six largest common carriers and required the formation of separate subsidiaries for the provision of unregulated services.

No further action was taken on S. 2827. The lateness of the session, the House Judiciary Committee's adverse report and the differences between House and Senate proposals all combined again to block the passage of any significant legislation to amend the Communications Act of 1934.

#### Actions in the 97th Congress<sup>5</sup>

The Members of the 97th Congress took a different approach to communications reform by introducing a series of separate measures dealing with specific aspects of communications reform. The most far reaching telecommunications measures to be introduced in the 97th Congress were S. 898, the "Telecommunications Competition and Deregulation Act of 1981," and H.R. 5158, the "Telecommunications Act of 1982." Both initiatives sought to restructure major segments of the telecommunications industry including AT&T. It was recognized that vast changes in communications technology and subsequent changes in industry structure called for major amendment of the 1934 Communications Act. Withdrawal of H.R. 5158 from full committee consideration ended any further legislative attempts to formulate a new national telecommunications policy in the 97th Congress. Factors arresting

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<sup>5</sup> Ibid., pp. 8-9.

a new formulation were AT&T's \$2 million lobbying campaign against H.R. 5158, opposition to specific provisions expressed by other groups, inability to gain a consensus among communications specialists regarding the best legislative approach, the strong opposition to H.R. 5158 expressed by Senate Communications Subcommittee Chairman Goldwater, and Administration opposition to any legislation that would at that time attempt to modify the structural provisions contained in the proposed antitrust settlement.

#### S. 898 as Passed by the Senate<sup>6</sup>

S. 898 states that because of technological and structural changes, extensive regulation of the telephone industry and its emerging technologies and services results in delay in the introduction of new services, wastes taxpayers' dollars, and hinders the development of competitive alternatives. S. 898, while continuing the regulation of basic telephone service, would promote marketplace competition, deregulation, and reliance on the private sector to provide telecommunications services.

After hearings and gaining input from the Senate Judiciary Committee the legislation was brought to a full floor vote and an amended version of S. 898 passed the Senate by a vote of 90 to 4 on October 7, 1981. Although this initiative was passed prior to the proposed Justice Department/AT&T settlement, the Senate had examined the concerns raised by the settlement during a series of hearings and had planned to make any modifications to their measure during conference. The major provisions of S.898 as passed by the full Senate would:

- Establish as national policy the promotion of competition in the telecommunications industry.
- Continue regulation of ordinary telephone service and basic telecommunications services. Federal regulation would pre-empt State regulation of long-distance telephone service within the State.
- Direct the FCC to reduce or eliminate regulation of telecommunications services as competition develops, unless the change would hurt national security.

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<sup>6</sup> Ibid., pp. 10-13.

- Classify AT&T as a dominant-regulated carrier and allow the FCC under certain conditions to reclassify any regulated carrier as a dominant-regulated carrier.
- Prohibit regulation of the production, marketing or other provision of customer premises equipment, such as telephone receivers or data processing services.
- Require a regulated carrier to provide service existing at the time of enactment under tariff for at least two years, by which time the FCC would have to determine which services should be deregulated, based on whether there is effective competition. A service which the FCC deregulated would continue under regulation for 6 months.
- Bar the FCC from regulating the resale of services and bar any carrier that sells regulated services to a second company from prohibiting that company from reselling that service to other customers.
- Modify the 1956 consent decree to allow AT&T to enter new and unregulated markets, such as data processing, through a separated subsidiary.
- Set requirements for AT&T's establishment of a fully separated subsidiary. No more than one member of the subsidiary's governing board may be a member of the AT&T governing board or an officer or employee of AT&T or its affiliates.
- Require that at least 50% of the board of directors of the fully separated affiliate be composed of outside directors (i.e., not affiliated with the fully separated affiliate or AT&T).
- Clarify that patents developed by AT&T before the fully separated affiliate is established cannot be transferred to the affiliate to avoid making them available to competitors on a cross-licensing or payment basis.
- Require a complete separation between the fully separated affiliate and Western Electric in the production of components and subassemblies.
- Clarify that all information regarding AT&T's telephone network given to the fully separated affiliate be disclosed in the same manner and basis to all non-affiliated entities.
- Prohibit AT&T from supplying its affiliate with research and development, administrative services, management or marketing information except on a "fully auditable and compensatory basis." Any information paid for by regulated rate-payers supplied by AT&T to its fully separated affiliate must also be disclosed free of charge to competing companies.

- Require AT&T and its affiliates to purchase equipment from outside competitors at 20% per year for a period of 5 years with a gradual phaseout over the succeeding 5 years.
- Clarify the FCC's authority to prohibit cross-subsidization and other anticompetitive practices and authorize the FCC to request the fully separated affiliate to produce books and records for oversight purposes.
- Require AT&T and other local exchange carriers to give equal access to their network at the same charges to all interexchange carriers in a non-discriminatory manner so that competitors may provide a service "that is equal in type and quality."
- Bar the FCC or any state commission from considering revenues derived from unregulated services when deriving rates for regulated services. States are permitted to continue including revenues derived from the printed yellow pages when calculating AT&T's rate of return for up to 4 years following the bill's enactment.

H.R. 5158 as passed by the Subcommittee<sup>7</sup>

On March 25, 1982 the House Subcommittee on Telecommunications, Consumer Protection and Finance, unanimously passed a substitute version of H.R. 5158 that revised the common carrier provisions of the Communications Act of 1934.

The Subcommittee approved version of H.R. 5158, titled the "Telecommunications Act of 1982," not only addressed the many issues necessary for the formulation of a comprehensive national telecommunications policy but was also modified to reflect the terms and issues raised by the then recently proposed AT&T/Justice Department antitrust settlement. The legislation incorporated five major themes: (1) consumer protection; (2) viability of the divested local operating companies; (3) competition; (4) information flow; and (5) regulatory reform and employee protection.

Although much of the controversy surrounding H.R. 5158 resulted from the provisions that modified terms of the AT&T-Justice Department settlement, there were many provisions that not only incorporated most of the settlement's terms but went beyond its scope. The overall objective of the legislation was to modify communications law and develop a framework for

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<sup>7</sup> Ibid., pp. 9-10.

a new, national telecommunications policy. The major guideline for this policy was to rely "to the maximum extent possible" on the forces of competition rather than regulation to provide reliable, efficient, and diverse telecommunications services and facilities at an affordable price. The legislation directed the FCC not only to deregulate markets where they are competitive, but also to take actions to promote competition where it is not present. The major framework of the legislation, according to the subcommittee, addressed the needs of users and ratepayers as the telecommunications industry evolves from a monopoly to a competitive structure.

Although H.R. 5158 incorporated many of the changes provided for in the proposed antitrust settlement, reflecting the reality of a restructured Bell System, the legislation also sought to modify selected settlement terms in an attempt to alleviate concerns over its potential negative effects on both the industry's suppliers and users.

Some of the deficiencies that the subcommittee members felt were contained in the settlement and which their legislation addressed included: the prevention of AT&T's potential ability to use its dominant position in the long lines transmission market to cross-subsidize products and services and inhibit competitive access and information flow; the protection of the financial health and viability of the local exchange network; and the minimization of possible high increases in local telephone rates, particularly in rural and small exchange areas.

H. R. 5158 proposed to address the above issues by, among other provisions, imposing further structural and behavioral requirements on AT&T, assuring equitable asset valuation and debt allocation, expanding the range of activities of the divested local operating companies, and providing for additional transitional and subsidy mechanisms to help ease the possible negative impact of the divestiture on local telephone rates.

#### Since 1983

With the divestiture plan approved and in place, interest in broad scale legislative initiatives in the Congress waned. Congressional actions

since that time in telecommunications have been characterized by specific concerns like rural telephone service, access charge matters, and the level of local rates.

#### State Legislative Activity

State legislative activity, for purposes of this summary of actions relating to competition in the telecommunications industry, takes the form of either providing state public utility commissions with deregulatory authority they arguably do not now have or "preempting" PUC decision making on the matter by directing PUCs to behave in particular ways. Also, some of the legislative initiatives are toward (and perhaps from) AT&T, and others focus on the local exchange company, often by their instigation.

#### AT&T

It is an announced goal of AT&T to secure reduced regulation nationwide and state-by-state. In a recent memorandum (summer 1987) on the subject of "Regulatory Flexibility in the States" AT&T tallies 31 PSCs that have now adopted (or now have authority to adopt) reduced detailed regulation. Of these, 16 have come through the legislative route since 1983. More specifically, intra-LATA service competition has been authorized AT&T in some 15 states.

#### BOCs

While the Nebraska and Vermont legislative deregulatory statutes are perhaps the best known (followed closely by Iowa's and Virginia's), as of September 1987 at least a dozen states have passed or have pending legislation.<sup>8</sup> In 2 states deregulatory legislation failed in 1987, and in

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<sup>8</sup> Stoffregen, Philip E., "Overview of State Telecommunications Deregulation Laws," presentation at Second Annual Conference on Deregulation and Competition, September 21, 1987, Washington, D.C.

one other a gubernatorial veto killed the legislation.<sup>9</sup>

In all cases proponents of the measures argued that competition in various telecommunications markets had advanced to the point where continued traditional regulation was unnecessary and/or less effective in providing a public interest outcome than some form of deregulation.

#### Before Regulatory Commissions - FCC and State PUCs

Primary responsibility for national regulatory policy decisions was intended to reside mainly in the FCC since 1934, not with either the Congress or with the courts in a detailed way. And of course the counterpart to FCC administrative regulation of AT&T nationally was the state PUCs in the case of the Bell operating companies (and others) in the states. This section traces the periods and main actions of the FCC and the PUCs with respect to the theme of competition (and its opposite, monopoly).

#### FCC

In 1934 the Federal Communications Commission was created to take over telephone and telegraph regulation from the interstate Commerce Commission, which had acquired such authority in 1910. The method adopted by the FCC for the enormous task of regulating AT&T's interstate services was one of "continuing surveillance." It was informal, subjective, consisted of essentially private negotiations between AT&T and the FCC (and was probably "too cozy" for this reason), but coincided with a quarter century of industry growth with improved services and lower prices.<sup>10</sup> The focus was on aggregates - revenue requirements, earnings, and levels of rates. Market structure issues, to the extent they arose at all, were seen mainly in terms of the need for preserving the monopoly.

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<sup>9</sup> Ibid.

<sup>10</sup> Bolter, Walter G., Editor, Telecommunications Policy for the 1980's: The Transition to Competition, Annenberg Schools of Communication, Prentice Hall, Inc., pp. 27-28.

Probably the first major break in this presumption came with the FCCs "Above 890 Decision" in 1959 which ushered in what one author has called the period of "incipient competition" in the industry.<sup>11</sup> It may well be that since the early 1980's we are in a period of "burgeoning competition," but of course whether or not that is true and if so, in which markets, are the key policy matters to which this report is addressed.

In "Above 890" suppliers of microwave equipment and prospective private users asked the FCC for access to radio frequencies above 890 megacycles to develop non-common carrier service. As summarized by Phillips,

The potential entrants contended that there were sufficient frequencies available for both private and common carriers, and that private entry would enhance consumer choice and promote competition in the communications equipment market. The common carriers questioned the adequacy of the frequency spectrum to support both private and common carriers and suggested that private entry might result in interference. They argued also that private entrants would engage in "cream skimming," by entering only on a selective basis. As a result, not only would they lose significant revenues, but smaller users would be burdened with higher rates since the overhead of the common carriers would be distributed over a smaller number of customers. They maintained that a closely controlled system of communications is necessary in time of emergency and for national defense, and suggested that they could provide and plan a more efficient national microwave system. . . . On July 30, 1959, the FCC removed all significant barriers to the installation and operation of private microwave systems.<sup>12</sup>

#### MCI and Specialized Common Carriers Decisions

In 1963 the FCC received applications from Microwave Communications, Inc. for construction permits providing service from St. Louis and Chicago and various intermediate points. Again Phillips writes,

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<sup>11</sup> Meyer, John R., et al., The Economics of Competition in the Telecommunications Industry, Charles River Associates, Oelgeschlager, Gunn & Hain, Publishers, Inc., 1980, p. 28.

<sup>12</sup> Phillips, Charles F., Jr., The Regulation of Public Utilities, Public Utilities Reports, Inc., Arlington, Va., 1984, p. 645.

The common carriers (e.g., the Bell System, General Telephone, Western Union) objected to the applications on four basic grounds: that MCI was not financially or technically qualified to construct and operate the proposed facilities; that such services could be provided more economically by the existing common carriers; that the proposal, requiring additional microwave systems, would be duplicative and would represent an inefficient utilization of the frequency spectrum; and that MCI's entry would result in "cream skimming," since the company would have no general service responsibilities and would provide service only over the most profitable routes....But in 1969, on a 4 to 3 vote, the commission granted MCI's applications . . .<sup>13</sup>

This decision was rather promptly followed by some 37 additional applications by companies (including more by MCI) seeking to become specialized common carriers. In 1971 the FCC announced a policy of virtually free entry.

#### Carterfone Decision

On the presumed grounds of protecting the technical integrity of the network, the attachment of "foreign devices" to the telephone system had historically been prohibited by Bell System tariffs. This, of course, had the more than incidental effect of prohibiting competition in telephone customer premises equipment. In the Carterfone case,<sup>14</sup> the FCC opened the market for non-Bell customer premises equipment vendors. The Carterfone was a cradle connecting a regular telephone to a mobile radio transmitter. In 1968 the FCC held against AT&T, saying its restrictions were discriminatory, unreasonable, and unnecessary. After years of what some considered "rear guard delaying action" by AT&T, implementation of Carterfone was accomplished in 1975.

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<sup>13</sup> Ibid., p. 646.

<sup>14</sup> Carterfone, 13 FCC 2d 420 (1968). Because a Carterfone is an electronic device, potential degradation of the network was an issue. In an earlier case, Hush-A-Phone v. U.S., 238 F.2d 266 (1956), the courts struck down a Bell System prohibition of a plastic (non-electronic) cup attaching to the telephone instrument into which one speaks for increased privacy.

### Computer Inquiry I, II, and III

In the mid-1960s the FCC sought to inquire into the interdependence of computers and communications services. Computers can provide data storage, processing, and retrieval functions as well as be used as a message switching device. Hence the emerging interest in 1966 of computer manufacturers to become "telephone companies" and telephone companies to provide specialized information service and data processing activities.

In 1971 the FCC adopted rules designed to provide "maximum separation" between these activities. In a split decision the FCC said in part:

The specialized and variant nature of the data processing services, particularly with reference to costs and charges thereof, is conducive to improprieties which are difficult to detect. Such improprieties could translate into inflated charges to customers of a carrier's regulated services which, in turn, could lead to lengthy administrative proceedings and other litigation.

At the same time, such improprieties could cause irreparable harm to a carrier affiliate's data processing competitors and thus, to the essentially competitive market within which data processing service offerings currently exist. In other words, excessive payments by carriers to data processing affiliates would enable the affiliates to unfairly underprice their own competitors in the data processing market.

Since the basic objective of our policy herein is the deterrence of foreseeable abuse from indirect carrier entry into data processing, we shall amend our rules to include a provision prohibiting a common carrier from obtaining any data processing service from its data affiliate.<sup>15</sup>

In the issuance of its Computer II decision the FCC plan for restructuring the domestic telecommunications industry by type of service took new form. Under the FCC's Computer II plan (adopted in December 1980) AT&T is permitted to provide "enhanced" unregulated services, such as data processing, and customer premises equipment through one or more separated subsidiaries. Additional accounting and behavioral provisions were required

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<sup>15</sup> Ibid., p. 652.

to ensure that cross subsidization does not occur between AT&T's regulated operations and the unregulated services offered by these subsidiaries.

In compliance with the order, AT&T received FCC approval in June 1982 to formulate a new subsidiary to begin its first venture into unregulated communications services. The subsidiary -- then American Bell Inc. -- became operational in July 1982 and as of January 1, 1983 was responsible for the provision of all of the Bell Systems unregulated ventures. Included in these unregulated functions is the provision of new customer premises equipment. Since January 1, 1983, the local Bell operating companies only have control over the equipment presently in use by its customers and items in outstanding inventory. The U.S. Court of Appeals upheld the Computer II ruling in November 1982, and the May 16, 1983 Supreme Court refusal to hear appeals to that ruling placed the FCC's restructuring of the telecommunications industry, beyond legal challenge.<sup>16</sup>

In 1986 in the Third Computer Inquiry, the FCC reversed itself, deciding that telephone companies need not maintain fully separate regulated and unregulated subsidiaries. Cross subsidies from the regulated to the unregulated branches would be prevented by accounting restrictions. Predatory provisioning of the regulated service would be eliminated by as yet undefined technical interconnect standards - "Open Network Architecture (ONA)" and "Comparably Efficient Interface (CEI)."

#### State PUCs

With respect to AT&T some 26 state PUCs have lessened detailed regulation of the carrier, principally by removing rate-of-return constraints, allowing pricing flexibility for services, and eliminating cost support data.

In the case of Bell Operating Companies (and other intrastate operators) the picture is less clear. For example, a recent survey<sup>17</sup> indicated there had been relatively little change in the past 12 months in

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<sup>16</sup> Gilroy, op.cit., pp. 5-6.

<sup>17</sup> State Telephone Regulation Report, Vol. 5, No. 8, September 24, 1987, pp. 1-2.

intrastate intraLATA long distance competition moving from 16 to 19 states. Reportedly five additional states permit limited competition (entry), and 11 others are considering whether to allow full or partial competition for toll traffic within LATAS.<sup>18</sup> Despite the urging of the FCC Chairman in January 1986 for the state PSCs to at least experiment with the deregulation of the local exchanges, relatively little has happened here through PSC actions. Thus, the theme of "freeing the BOCs" has not widely caught on at the PSC level.

#### In Federal Court - Antitrust Activities

Antitrust activities in the U.S. can be viewed as another form of social control for the treatment of market power. How far it is truly an alternative form of control to traditional public utility regulation is open to real question. The answer is of particular importance now because many proponents of telecommunications deregulation claim that antitrust can be counted on to handle any anti-competitive problems that might arise. Such a view implies a substitutability of one public policy for another with respect to control of monopoly power.

Most appraisals of antitrust theory and practice point out the downside limitations as the following.<sup>19</sup>

...the vigor of enforcement varies greatly from Administration to Administration, depending importantly on the White House and Department of Justice view of appropriate business behavior.

...agency resources and powers may be too small to do the job, even when the will is there.

...an uncommonly high degree of skill and expertise in economics, finance, accounting, and engineering - not just in law - are required for real effectiveness in antitrust actions.

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<sup>18</sup> Ibid.

<sup>19</sup> See, for example, William G. Shepherd's, Public Policies Toward Business, Richard D. Irwin, Inc., 7th Edition, Chapter 11.

...the laws themselves are broad and often vague and sometimes too comprehensive (e.g., "every monopoly") for straightforward application.

...case decisions are necessarily particularized and don't lend themselves to broad policy generalization.

...cases often take so long (years and occasionally a decade) to resolve that the original issue or practice are long since "overcome by events" - as may be the parties!

...state antitrust statutes tend to be markedly weaker than federal ones.

Such deficiencies do not leave one sanguine about full dependence on antitrust approaches if, when, and where administrative commission regulation "pulls back" from the telecommunications sector as the primary form of social control in the public utility field.

However all this may be, antitrust action has in fact played an important role in the evolution and present structure of the telecommunications industry in the U.S.<sup>20</sup> The most dramatic was the antitrust case which resulted in the 1984 divestiture action under the Modified Final Judgement (MFJ), but there were prior ones dealing with alleged anticompetitive behavior.

The earliest antitrust suit in telecommunications resulted in the so-called Kingsbury Commitment in 1913 under which AT&T agreed (1) to sell its Western Union stock, (2) to interconnect with independent telephone companies which met its equipment standards, and (3) to refrain from acquiring control of competing telephone companies.<sup>21</sup> On this last count it should be noted that other telephone companies have been involved in antitrust actions concerning acquisition activities, namely GTE in 1964 and 1969.<sup>22</sup>

In 1949 a civil antitrust suit was filed by the government against AT&T and Western Electric which resulted in a consent decree 7 years later.<sup>23</sup>

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<sup>20</sup> In addition to antitrust litigation there have of course been a number of private law suits by and against the Bell System over the decades, as well as between other telephone companies.

<sup>21</sup> Phillips, *op.cit.*, p. 629.

<sup>22</sup> *Ibid.*, p. 630.

<sup>23</sup> *Ibid.*, p. 634.

The companies were charged with engaging in "a continuing conspiracy to monopolize the manufacture, distribution, and sale of telephones, telephone apparatus, and equipment." The federal government sought that (a) Western Electric be separated from AT&T and dissolved into three competing manufacturing companies; (b) Western Electric be required to sell its 50 percent stock interest in Bell Labs; (c) AT&T, Western Electric, and Bell Labs license their patents to all applicants on a nondiscriminatory and reasonable royalty basis; and (d) the Bell operating companies be required to buy all equipment and supplies under competitive bidding.<sup>24</sup> The then Attorney General said of the case, "the chief purpose of this action is to restore competition in the manufacture and sale of telephone equipment now produced and sold almost exclusively by Western Electric at noncompetitive prices."<sup>25</sup> AT&T and Western Electric denied the charges, arguing that existing regulatory processes adequately protected the public. Also, they claimed vertical integration - the unification of research and development, manufacturing, and operation in the Bell System - was a leading factor in "promoting the efficiency, economy, and dependability of the telephone service."<sup>26</sup>

When the suit was settled AT&T and Western Electric were made to grant licenses to anyone under all existing and future patents, sometimes royalty-free and other times at reasonable royalties; restrictions were placed on Western Electric's manufacturing and selling of telephone equipment and the company was required to maintain and disclose its manufacturing costs; and AT&T and the operating companies were precluded from any business other than common carrier communications services and attendant operations like (interestingly) directory advertising.<sup>27</sup> In light of subsequent events it is notable that at the time of settlement (1956) the federal government was criticized in some quarters for not pressing ahead with the case for divestiture.<sup>28</sup>

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<sup>24</sup> Ibid., p. 633.

<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

<sup>27</sup> Ibid., p. 634.

<sup>28</sup> Ibid.

In fact divestiture was to come as a federal district court ruling in 1982 which ended the civil antitrust suit entered by the government in 1974 against AT&T, Western Electric, the Bell Labs, and the operating companies. Under the Modified Final Judgement (MFJ) as initially written, the 22 wholly owned Bell operating companies (BOCs) were to be divested from AT&T so that the company would not have "the ability to disadvantage competitors in the interexchange and equipment markets."<sup>29</sup> Bell Labs and Western Electric were left with the company, and line of business restrictions and patent licensing requirements contained in the 1956 consent decree were eliminated. As for the Bell operating companies after divestiture, they were limited to

the business of supplying local telephone service. They are prohibited from providing "any product or service that is not a natural monopoly service actually regulated by tariff" and may not engage in three specific activities: the provision of interexchange services, the provision of information services (including electronic publishing), and the manufacture of telecommunications products and customer premises equipment. They may engage in the marketing of new customer premises equipment and they retain control over the "Yellow pages" directories. They are prohibited from discriminating in the "establishment and dissemination of technical information and procurement and interconnection standards" and, by September 1, 1986, must provide access services to interexchange carriers and information service providers which are "equal in type, quality, and price" to the access services provided AT&T and its affiliates.<sup>30</sup>

As to implementation, the MFJ carried many specific provisions directed toward a fair and reasonably even start for the divested companies. These include features that

AT&T must provide to the divested operating companies "sufficient facilities, personnel, systems, and rights to technical information" to permit them to perform their exchange telecommunications and exchange access functions. Assets must be divided between AT&T and the divested operating companies on the basis of net book value; at the time of transfer of ownership, the separated operating companies "shall have debt ratios of approximately 45 percent (except for Pacific Telephone and

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<sup>29</sup> Ibid., p. 662.

<sup>30</sup> Ibid., p. 663.

Telegraph Company which shall have a debt ratio of approximately 50 percent), and the quality of the debts shall be representative of the average terms and conditions of the consolidated debt" at the time of divestiture.<sup>31</sup>

Importantly, the Court kept for itself continuing enforcement authority and implementation oversight. Probably the most widely anticipated Court action from that oversight came with the August 1987 findings of Judge Greene that modify in important ways the MFJ, now three years into its implementation.

Over the summer of 1987 a triennial review of the MFJ restrictions was conducted by Judge Harold Greene. In January 1987 an outside consultant submitted a report (The Huber Report) on competition in the telephone industry for the Antitrust Division of the Department of Justice. On September 10, 1987 Judge Greene issued his findings in a brief order supported by a lengthy opinion.

As reported in the trade press, he found no reason to lessen in any substantial way current restrictions on the dominant carriers. Bottlenecks at the local exchange remain, and prohibitions on manufacturing and lines of business need to be continued. He wrote that if the laws on interexchange services and equipment manufacturing were removed, the telephone industry "would be back where it was when these struggles began, the Regional Holding Companies would have the same incentives as well as the same means for discrimination, manipulation, and cross-subsidization that the Bell System possessed before the break-up.<sup>32</sup> Making reference to the earlier antitrust action noted above Judge Greene commented,

Once before, in 1956, an antitrust suit against the Bell System was aborted precipitously by a Department of Justice decision, and that step laid the groundwork for many years of turmoil and travail in the industry, the courts, the regulatory commissions, and the Congress. That history must not be repeated. ....It is therefore denying all requests for the removal of the core restrictions of the decree.<sup>33</sup>

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<sup>31</sup> Ibid., p. 664.

<sup>32</sup> Telecommunications Reports, Vol. 53, No. 37, September 14, 1987, p. 1.

<sup>33</sup> Ibid., p. 4.

And referring to the current consent decree at another point, he noted that "The Bell System did not concede, and the court was not called upon to find, that violations of the antitrust laws had occurred. However the (consent) decree proceeds on the basis of an implicit assumption to that effect."<sup>34</sup> He recalled the occasion for the drastic action of divestiture in the first place with regard to the "insuperable disadvantage" at which competitors in telephone markets were placed:

It followed that these competitors were at the mercy of the Bell Systems' managers, who could with ease discriminate against them by such practices as delaying interconnections, providing inferior connections, charging exorbitant prices, or refusing to attach competitors' products altogether. The Bell System was also able to subsidize its competitive products with funds siphoned off from the monies paid in by the ratepayers, thus to undercut the prices charged by independent firms and drive them out of business. The quite predictable result was that no independent long distance, manufacturing, or information company ever really got off the ground: for practical purposes, the Bell monopoly remained just that.<sup>35</sup>

On the current state of competition in various parts of the industry Judge Greene found:

...RHCs have no basis to claim that competition has reduced their market power and there has been little "bypass" of the local exchange.

...for restrictions to be removed it will not be enough for RHCs to demonstrate that there is "no certainty of anticompetitive conduct," no "substantial possibility" that it would behave anticompetitively, and that it will not act to "entirely eliminate competition in markets it seeks to enter."

...much footdragging toward the equal access objective continues to go on on the part of the RHCs against competitors.

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<sup>33</sup> Ibid., p. 1.

<sup>35</sup> Ibid., p. 3.

...to remove the restriction on manufacturing equipment could mean that "a flourishing, broad-based, innovative industry would be cut back to become one dominated by a small number of muscle-bound giants, possibly dominated by foreign conglomerates."<sup>36</sup>

Concluding his opinion, Judge Greene saw it as advancing the original objectives of the 1982 decree (and subsequent rulings), that is

(1) the establishment in the telecommunications industry of conditions of fair competition, freed from the heavy hand of monopoly; (2) the protection of the goals of universal service and of reasonable rates for those who could not otherwise afford telephone service; and (3) the encouragement of innovation, to the end that the full benefits of a sophisticated telecommunications industry be made available to all segments of the American public in this Information Age.

His belief in the workability of a court-imposed solution to the telecommunications monopoly problem as against trust in state and federal regulatory commission solutions was reaffirmed in various parts of his writing.<sup>37</sup> He often relied on information from the Huber Report but reached different conclusions. Judge Greene viewed most of the intense public relations efforts claiming structural changes in certain telephone markets as "exaggerated" and "having little relationship to the realities;"<sup>38</sup> and he labeled as an "erroneous assumption" the idea that repeal of local regulation would promptly result in competition to local exchange carriers.<sup>39</sup>

#### Concluding Commentary

The three arenas treated in this historical perspective can, for the near future, be fairly characterized in the following fashion with regard to regulatory changes in the telecommunications field. The Congress will likely play merely an oversight role in whatever "transition to competition" comes about, except perhaps for occasional legislation on rural/urban

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<sup>36</sup> Ibid., pp. 5-6.

<sup>37</sup> Ibid., p. 16.

<sup>38</sup> Ibid., p. 4.

<sup>39</sup> Ibid., p. 6.

matters and residential telephone charges. State legislatures, at the urging of the telephone industry and some academics, will continue to be a main forum for telephone deregulation efforts. Antitrust actions are not likely to be at center stage, but U.S. District Judge Harold Greene will continue to be the main architect of cautious implementation of reduced regulation within the framework of the Modified Final Judgement.

The FCC in its current posture can be expected to remain at the vanguard of deregulation federally, finding possible competitive markets at any opportunity and encouraging competitive forces wherever it believes them to be lurking. How the state PUCs will ultimately handle the pulling and hauling of the several parties seeking "relaxed regulation" or protection of various kinds is very much in doubt. Pressure on the PUCs for regulatory relief, however, can be expected to continue unabated over the next few years.

The content of the debate in all three arenas over the myth or reality of workably competitive markets in telecommunications has familiarity and similarity to it. Not surprisingly when industrial market structure is the issue, concepts and practices like "cream-skimming," cross-subsidies, dominant carriers and market shares, optimal rates of innovation, predatory pricing, undue discrimination, monopoly profits, anticompetitive mergers and acquisitions, and barriers to entry and exit are usually the elements of discussion. The positions of the parties adopting one or another stance with respect to these elements have now changed from previous decades - because their perceived self-interest has changed with alterations in the technology, finances, and public policy of the telecommunications industry.

By way of summary it seems fair to say:

(1) At an earlier time AT&T's interest was to preserve the monopoly almost at all costs, while potential or real competitors sought to break down the door; courts, FCC, and national legislation have now sided with the latter and against AT&T and its successor organizations.

(2) In the post-divestiture environment it is in AT&T's interest to argue that regulation is no longer necessary to restrain prices. Potential or real competitors must decide whether to seek continued restraints on AT&T or hope that a deregulated AT&T will maintain a price umbrella for them to climb under. The FCC and the PUCs are generally relaxing regulation of AT&T

through price caps and other means, as equal access and competition begin to take effect.

(3) The new BOCs (and RBOCs) argue for deregulation of some services while preserving the local exchange for themselves as a monopoly, and the other carriers seek protection from the dominant firm in those same services while pursuing access to the local exchange market: the court is generally siding with the non-dominant carriers, the legislature with the BOCs, and the state PUCs are seeking more information and analysis on which to base decisions. It is to the first of these - information - that this appendix is intended to contribute.



## APPENDIX B

### POSITIONS OF SOME PARTIES AND EXPERTS

In hearings on telecommunications deregulation state commissions and legislatures often hear from interested parties or expert witnesses for the dominant carriers (interLATA - AT&T, intraLATA - BOC). This appendix provides a brief summary of the positions of some of these parties regarding the Modified Final Judgment (MFJ) restrictions on the BOCs, deregulation of AT&T, and deregulation of the BOC's. It does not include all such parties, nor does it contain all publications of the parties included. Rather, by annotating specific books or articles, this appendix attempts to convey briefly some positions regulators are likely to encounter.

#### Users' Groups

[The Barlas article below cites some groups specifically: Ad Hoc Telecommunications Users Committee, the Committee of Corporate Telecommunications Users (CCTU), the Consumer Federation of America, and the International Communications Association (ICA)]

#### MFJ Restrictions

Want to go slowly on allowing RBHCs to enter lines of business prohibited by the MFJ. (Karyl Scott, "Greene Ruling Wins Approval of Users," Network World, Sept. 21, 1987, p. 1)

Question whether there are adequate safeguards to ensure true competition if the RHBCs can enter prohibited lines of business. (Stephen Barlas, "User, Vendor Interests Collide in Washington," Network World, Sept. 28, 1987, p. 35)

Approve prohibiting RBHCs from data base services. Suggest they also be prohibited from forming subsidiaries to market data base services. (Scott, op. cit., p. 4)

#### AT&T Deregulation

Social contract regulation is of doubtful legality, produces little benefit to ratepayers and disregards its own economic implications. (Jack L. Landau, "Social Contract Regulation is a Bad Bargain for Ratepayers," Public Utilities Fortnightly, July 9, 1987, p. 25)

Gerald R. Faulhaber  
(University of Pennsylvania)

#### AT&T Deregulation

Supports social contract transition period rather than service-by-service deregulation. Suggests adopting any of several social contract methods. During a fixed transition period the dominant carrier would not be allowed to raise rates for core services by more than a specified percentage. (Gerald R. Faulhaber, "The FCC's Path to Deregulation: Turnpike or Quagmire," Public Utilities Fortnightly, Sept. 3, 1987, p. 26)

Considers regulatory cost-based pricing "a source of trouble," with new services by AT&T the likely victims. (Gerald R. Faulhaber, Telecommunications in Turmoil: Technology and Public Policy, Cambridge, Mass.: Ballinger Publishing Co., 1987, p. 153)

"Regulation is the problem, not the solution." (Ibid., p. 159)

Recommends deregulation. (Ibid., p. 164)

Lee L. Selwyn  
(Economics and Technology)

AT&T and/or BOC Deregulation

Calls for constraints on dominant carriers' market power through economic regulation. (Testimony before House telecommunications subcommittee July 15, 1987, as reported in Telecommunications Reports, July 20, 1987, p. 30)

Says effective competition is a factual predicate to removing constraints on dominant carriers and permitting BOCs to enter adjacent lines of business, but finds that competition is lacking now. (Ibid.)

BOC Deregulation

Advocates confining BOCs to provision of networks and resources for others' enhanced and information services. (Ibid., p. 31)

Alfred E. Kahn  
(Cornell University)

AT&T Deregulation

Condemns cost-plus regulation. Supports pragmatic devices such as rate freezes or indexed rates of putatively monopoly services. (Testimony before House telecommunications subcommittee, July 15, 1987, as reported in Telecommunications Reports, July 20, 1987, p. 31)

In general, supports deregulation, saying opening an industry to free entry demands it. (Ibid.)

Haven't had a fair test yet of whether deregulated telecommunications industry will work. (Alfred E. Kahn and William B. Shew, "Current Issues in Telecommunications Regulation: Pricing," Yale Journal on Regulation, Vol. 4: 191, 1987, p. 198)

Recommends "as long as regulation of POTS for households and small businesses continues to be necessary, the only logical solution, ultimately, is total deregulation of the other services and total separation of their revenues and the costs assigned to them from the rates that continue to require regulatory attention." (Ibid., p. 199)

Agrees with former FCC chairman that objective in transition period is encourage the efficiency that would be obtained under full competition. (Ibid., p. 256)

Experience with airline deregulation convinced him there is no halfway house. Better to let go all at once rather than deregulate gradually. Halfway house may be pragmatically necessary in the complicated case of communications, but there will be distortions in asymmetrical regulation of one company and not of others. (Alfred E. Kahn, "The Next Steps in Telecommunications Regulation and Research," Public Utilities Fortnightly, July 19, 1984, p. 17)

#### AT&T and BOCs

Regulation is imposing handicaps on AT&T and BOCs through: (1) the requirement to have proposed services and prices approved in advance by regulators, (2) the obligation on them to offer services only under openly published tariffs, (3) the requirement that their prices be based on fully distributed costs, (4) the obligation to engage in rate deaveraging and cross-subsidization, and (5) the obligation to serve as carriers of last resort. (Ibid., p. 18)

Should find ways other than rate base/rate of return regulation to protect captive customers. (Ibid.)

Not attempting to form a balanced judgment on continued need for regulation in some portions of the operations of the Bell successor companies, nor on the nature of that regulation. But does suggest, "urgently," that government should get "out of the business of handicapping competitors." (Ibid.)

## BOCs

BOC responsibility for imposing charges covering the NTS costs of access as well as TS costs that interexchange services causes them to incur makes sense, because BOCs provide the facilities and incur those costs. (Alfred E. Kahn, "The Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, Vol. 1: 139, 1984, p. 149)

## AT&T

Should have gradual but not too gradual transition to efficient pricing (cost-based and unbundled). (Ibid., pp. 151, 157)

Almarin Phillips  
(University of Pennsylvania)

## MFJ Restrictions

Critical of MFJ for preventing BOCs from engaging in businesses that might use their facilities economically. Permitting the BOCs to put more intelligence into their switches and provide intraLATA ISDN services would be an improvement. Would be inadequate simply to permit the BOCs themselves to engage in facilities-based interLATA services. Need arrangement in which each BOC and other LXC effectively offers access to its ISDN facilities to the subscribers of all other BOCs and domestic and international LXCs. (Almarin Phillips, "Humpty Dumpty Had a Great Fall," Public Utilities Fortnightly, Oct. 2, 1986, p. 24)

Need active intervention of a dominant regulatory agency, the FCC, to encourage development of new regime. (Ibid.)

John T. Wenders  
(University of Idaho)

BOCs

Recommends leaving pricing of local service to the marketplace. Conditions are that the local company serve all who demand service and that the reselling of local service not be prohibited. Actions and temporary rules as steps to this deregulation: (1) no telecommunications carrier should have any exclusive franchise, (2) the BOCs should lose their intraLATA one-plus monopoly and all toll carriers should be allowed into intraLATA markets on an equal basis; (3) the BOCs and all other LECs should be allowed to provide interLATA service; (4) no local company should be allowed to construct facilities to bypass itself; (5) inter- and intraLATA toll operations of local companies should pay the same carriers access charges as other toll carriers; (6) local companies should be prohibited from deaveraging local prices for any reason other than differential economic costs of service. (John T. Wenders, The Economics of Telecommunications: Theory and Practice, Cambridge, Mass., Ballinger Publishing Co., 1987, p. 253.)

AT&T

Better off in a competitive toll market, even if it is artificial, because the competition will put pressure on the "regulatory cartel that will continue to try to subsidize local service from toll." (Ibid., p. 165)

Gerald W. Brock  
(Common Carrier Bureau, FCC)

AT&T

Telecommunications industry is unlikely to become perfectly competitive regardless of government policy. Economies of scale and systems effects don't lend themselves to large numbers of companies. But this doesn't mean

the industry is a natural monopoly. Even a dominant firm industry can achieve performance quite close to that of competition if there are many small firms able to compete within small segments of the industry. Must be relatively free entry into all segments of the industry and no segment can be totally blocked. (Gerald W. Brock, The Telecommunications Industry: The Dynamics of Market Structure, Cambridge, Mass.: Harvard University Press, 1981, p. 303)

No part of the telecommunications network can be predicted to be a natural monopoly 10 years from now. (Ibid.)

Says two questions should be asked in evaluating the wisdom of deregulation. First is social desirability of discriminatory pricing and subsidies. Concludes that costs of subsidies outweigh benefits. Second is whether consumers would be exposed to exercise of monopoly power. Notes availability of antitrust restrictions. Suggests that raising prices would bring in competitors. (Ibid., p. 306)

Recommends that long-distance services and terminal equipment be completely deregulated. Would retain regulation for local service, but limit it to setting maximum prices. Says there should be no attempt to retain existing entry restrictions or non-cost-based price structures. (Ibid., pp. 306-307)

Says dissolution of AT&T "would largely eliminate the extension of monopoly power from local service to other segments and would be desirably if it could be accomplished without cost." But suggests that the actual costs from dissolution are potentially great enough to make this step unwise. (Ibid., p. 307)

David S. Evans and James J. Heckman

(CERA Economic Consultants and University of Chicago, respectively)

Re AT&T

Existing econometric studies do not provide credible evidence as to whether a single firm can provide telecommunications services more efficiently than several firms (David S. Evans and James J. Heckman, "Natural Monopoly," in Breaking Up Bell: Essays on Industrial Organization

and Regulation, David S. Evans, editor, New Ycrk: North Holland, 1983, p. 147.) These studies do suggest that provision by one firm may not be the most efficient possible arrangement. (Ibid., p. 148)

There is weak evidence that the industry is not a natural monopoly. (Ibid., p. 149)

William F. Baumol and Robert D. Willig  
(Princeton University)

#### AT&T Deregulation

"As a result of the arbitrariness of full cost allocation, only increased problems for rational regulation, for the regulated firm, and for the public can follow from any attempt at partial or sequential deregulation while continuing to control what purports to be the rate of return of the portion of the company that remains under regulation." (William F. Baumol, Michael F. Koehn, and Robert D. Willig, "'How Arbitrary is Arbitrary'? -- or, Toward the Deserved Demise of Full Cost Allocation," Public Utilities Fortnightly, Sept. 3, 1987, p. 17)

The authors "show that different and equally plausible allocation criteria yield shockingly different numerical results, so that by judicious choice of allocation criterion, the partisan calculator can make the process yield virtually any numbers he chooses (in advance) to obtain." (Ibid., p. 16)

Michael E. Porter  
(Harvard University)

#### AT&T Deregulation

Concludes that the interLATA exchange market is competitive and likely to remain so. Factors making the market competitive include: (1) presence of firms that have networks with the products and geographic scope to match AT&T, (2) narrowing price differentials between carriers, (3) a "high and

increasing level of marketing activities," and (4) a market structure that calls for continued competition. (Michael E. Porter, Competition in the Long Distance Telecommunications Market: An Industry Structure Analysis, as reported in Telecommunications Reports, Aug. 3, 1987, p. 6)



APPENDIX C  
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