



Report To The Congress

OF THE UNITED STATES

8980

Developing A Domestic Common Carrier Telecommunications Policy: What Are The Issues?

During the past 20 years the Federal Communications Commission has decided to allow competition in some parts of the domestic common carrier industry. Resulting from these decisions and the established carriers' reactions, the Congress has started to focus attention on domestic common carrier policy.

GAO believes there are three major issues with which the Congress, the regulator, industry, and concerned citizens must soon come to grips if the Government is to develop a cohesive domestic common carrier telecommunications policy.

- What policy goals should the United States pursue?
- What industry structure should supply common carrier services?
- Can the present regulating methods be improved?

This report discusses these issues and the critical related issues inherent in each.



003359

report

CED-79-18

JANUARY 24, 1979



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-131935

To the President of the Senate and the
Speaker of the House of Representatives

Over the past 10 years several factors have caused an increased awareness of issues surrounding the domestic common carrier industry--companies providing communications services for hire.

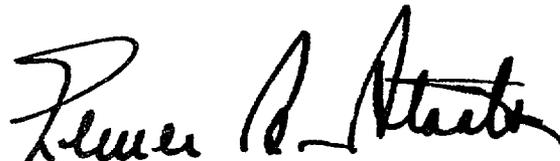
A principal factor is the advances in and the convergence of computer and communications technologies allowing the Nation to move beyond the telephone call or printed telegraph message to new services, such as electronic banking, shopping, and information gathering.

Federal Communications Commission decisions permitting competition in the previously monopolized common carrier industry have paralleled these technological changes. The Commission believed its actions would increase the availability of technological advances and encourage innovation.

Established carriers, however, reacted strongly to the Commission's actions. They asserted that allowing competition would frustrate the purposes of existing communications legislation. Carrier-sponsored legislation sought to reverse the Commission's decisions and reestablish monopoly in the common carrier industry.

In June 1978, these factors found an important focal point when the Chairman and Ranking Minority Member of the House Subcommittee on Communications, Committee on Interstate and Foreign Commerce introduced the proposed Communications Act of 1978 (H.R. 13015). This act would completely revise the Nation's communications legislation. Debate over similar provisions in the next Congress should further public awareness of domestic common carrier issues.

This report presents the principal concepts and background information needed to address domestic common carrier issues. It discusses key issues in domestic policy, industry structure, and regulation. This report will help the Congress, as well as other decisionmakers, evaluate the Nation's domestic common carrier policy.


Comptroller General
of the United States

D I G E S T

The U.S. domestic common carrier telecommunications policy is a little recognized and complex issue, but its importance and impact is growing. In economic terms, the common carrier industry's impact is substantial. In 1977, this industry, which includes the dominant telephone sector, generated \$40.8 billion in revenues, employed over 863,000 persons, and had gross investment in plant and equipment over \$115 billion. Beyond these quantitative measures, rapid technological changes are improving the services and enlarging the common carriers' role in the Nation's economy, moving the Nation into what many observers have termed an "Information Age."

In the midst of this change stands the Nation's primary telecommunications legislation--the Communications Act of 1934. The act created the Federal Communications Commission to regulate interstate and foreign common carriers and established as the Nation's policy goal:

"* * * to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges * * *."

Using this policy as a base, the Commission has issued decisions allowing increased competition in the previously monopolized domestic telephone industry. The American Telephone and Telegraph Company and the independent telephone companies, however, believe that the Commission's decisions will frustrate maintaining the policy goals of the Communications Act of 1934.

Recognizing the impact of technological change on telecommunications, the Chairman and ranking minority member of the House

Subcommittee on Communications, Committee on Interstate and Foreign Commerce introduced the proposed Communications Act of 1978 (H.R. 13015). This act would completely revise the Nation's communications legislation. Although no final action was taken on this legislation during the 95th Congress, the Chairman of the House Subcommittee on Communications said that similar legislation will be reintroduced in the next Congress.

GAO believes the Congress, the Commission, industry, and concerned citizens must face the following issues in order to develop a policy reflecting the dynamic nature of the Information Age.

- What domestic common carrier telecommunications policy goals should the United States pursue?
- What industry structure should provide common carrier services?
- Can the present methods for regulating the common carrier industry be improved?

WHAT DOMESTIC COMMON CARRIER
TELECOMMUNICATIONS POLICY GOALS
SHOULD THE UNITED STATES PURSUE?

The broad policy goals set forth in the Communications Act of 1934 have been distilled into one principal policy--making communications services available to all people of the United States. This policy is referred to as the Universal Service Mandate. The carriers have interpreted this mandate to mean that other telecommunications services should cross subsidize local telephone service. To achieve this, the American Telephone and Telegraph Company and the independent telephone companies adopted specific pricing policies and methods of distributing common costs which they assert subsidize the cost of local service and, therefore, widen its availability. (See p. 15.)

The carriers believe that the goal of universal service is in jeopardy and that competition threatens the subsidies to local service. This, in turn, threatens to raise the cost of local service, contrary to the Universal Service Mandate. However, studies conducted by the Commission, the industry, and other experts cannot provide a definitive answer on (1) exactly which subsidies exist, (2) how large the subsidies are, and (3) what competition's effect will be. (See p. 18.)

Despite this controversy, industry observers and the carriers agree that the goal of universal service has been satisfied. While only about one-third of U.S. households had telephone service when the Congress passed the Communications Act of 1934, 95 percent have it today. Consequently, in evaluating future policy goals the Congress faces the following issues:

- Should universal service remain the Nation's major common carrier policy goal or should other policy goals receive equal or greater emphasis?
- If universal service remains a major policy goal, how should it be defined in the future? One alternative would be to specify a minimum service level, based on existing technology, which all people could afford. Another alternative would be continuing a broad universal service concept where marketplace and regulatory forces would define the service level available at affordable rates to all people.
- How should universal service be financed in the future? For example, should universal service continue to be financed by cross subsidy or should different methods of insuring low-cost local service, such as an excise tax or a Government administered fund, be adopted?
- What other policy goals, such as equity or innovation, should be considered?

WHAT INDUSTRY STRUCTURE SHOULD
PROVIDE COMMON CARRIER SERVICES?

Changes in technology and market size can determine whether the Nation's telecommunications needs will best be served by a monopolistic or competitive industry structure. An inappropriate industry structure can impose significant costs on society through reduced output, slower rate of innovation, or higher prices. Because of technological changes over the last 25 years and the growing market demand for new telecommunications services substantial debate has already taken place about the appropriateness of the current domestic common carrier industry structure. (See p. 23.)

The Commission's decisions allowing competition in previously monopolized industry sectors have added to this debate. A recent ruling by the U.S. Court of Appeals for the District of Columbia Circuit in the Execunet case, opened long distance telephone service to increased competition, thus contributing further urgency to this question. (See p. 27.)

In determining the appropriate industry structure for carrying out congressional policy goals, three major approaches are available:

- The Congress mandates an explicit industry structure, such as competition or monopoly.
- The Congress mandates an explicit industry structure but allows the Commission to alter this structure in response to changes in technology or market size.
- The Congress does not address industry structure explicitly. Rather, it allows the Commission to control industry structure to best achieve congressionally set policy goals.

In evaluating and selecting an approach the Congress should recognize, among other things that (1) the proliferation of

telecommunications services has produced a highly heterogeneous industry where mixed industry structures may best achieve the congressional policy goals and (2) mandating an industry structure which might be undercut by technological change could impose significant costs on society. (See p. 30.)

CAN PRESENT METHODS FOR REGULATING THE COMMON CARRIER INDUSTRY BE IMPROVED?

The Communications Act of 1934 gave the Federal Communications Commission regulatory powers including control over (1) entry into the industry, (2) carriers' pricing practices, and (3) carrier accounting and depreciation methods. The techniques the Commission has used to carry out its authority, however, have recently come under question.

The Commission controls entry into the industry through provisions of the Communications Act of 1934 which regulate the construction and use of communications facilities. The Execunet case altered the way the Commission implements these provisions by requiring it to make a specific determination regarding restrictions on a facility's use. Consequently, the Congress faces several key issues regarding entry control:

- Should the Commission continue to control entry by regulating the construction and use of communications facilities?
- If the current method of entry control is maintained should the Congress modify the act's provisions to mitigate the Execunet decision's impact?
- Should an alternative method of controlling entry and thus industry structure be adopted? A direct control method would be to grant the Commission power to classify telecommunications services and determine which ones may be provided competitively and which may be provided as a monopoly.

To prevent the carriers from exploiting their potential monopoly position, the Communications Act of 1934 requires that rates charged be just, reasonable, and not unduly discriminatory. The Commission's methods for applying this authority have evolved over time. Initially, rates were set through informal negotiations with the carriers. With the introduction of competition, however, the potential for monopolistic cross subsidy was created. In this situation, consumers of monopoly services bear a portion of the cost of carriers' competitive offerings. To prevent this, the Commission now determines an allowable rate of return for each individual service. This transition, however, has shown that improvements are needed in the Commission's methods for accounting and determining costs. This raises the following two issues:

- How can rate of return regulation be applied more effectively? Particularly, how can the Congress make sure that the Commission uses the most appropriate and current accounting and costing methods?
- Are there alternatives to rate of return regulation of individual services which will more efficiently prevent monopolistic cross subsidy?

The Communications Act of 1934 also provides the Commission with the authority to prescribe carrier depreciation practices. These practices are important because (1) depreciation is a significant expense item when applying rate of return regulation and (2) failure of depreciation rates to keep pace with technological change can deter carriers from introducing innovations.

Given these circumstances:

- Should the Congress mandate periodic Commission review of the carrier's depreciation rates?
- Should the Commission be required to consider the impact of technological change when setting depreciation rates?

C o n t e n t s

	<u>Page</u>
DIGEST	i
CHAPTER	
1 INTRODUCTION	1
Overview	1
Scope of review	3
2 BACKGROUND AND PERSPECTIVE	4
The domestic common carrier industry	4
Natural monopoly--the economic rationale for regulation	6
Principles and methods of telecommuni- cations regulation	9
Industry rate setting practices and procedures	10
Technological change--its impact on domestic telecommunications	11
FCC policy decisions to increase compe- tition in domestic telecommunications	13
3 WHAT DOMESTIC COMMON CARRIER TELECOMMUNICA- TIONS POLICY GOALS SHOULD THE UNITED STATES PURSUE?	15
Current U.S. policy	15
Competition's "threat" to universal service	17
The future policy role of universal service	19
Other policy goals for communications	21
Related provisions of the proposed Communications Act of 1978	22
4 WHAT INDUSTRY STRUCTURE SHOULD PROVIDE COMMON CARRIER SERVICES?	23
The current structure and its ramifications	23
The carriers' response to FCC's industry structure decisions	24
Changes in industry structure create broader concerns	26
Recent court decisions focus in- creased attention on industry structure	27
Future emphasis on industry structure	30
Related provisions of the proposed Communications Act of 1978	31

CHAPTER		<u>Page</u>
5	CAN THE PRESENT METHODS FOR REGULATING THE COMMON CARRIER INDUSTRY BE IMPROVED?	33
	Control over entry--section 214 and the Execunet decisions	33
	Rate regulation	35
	Depreciation practices	37
	Related provisions of the proposed Communications Act of 1978	38
APPENDIX		
I	Major sectors and firms in the domestic common carrier telecommunications network	40
II	Key sections of the Communications Act of 1934 relating to domestic common carriers	42
III	Chronology of key FCC decisions regarding competition	44

ABBREVIATIONS

AT&T	American Telephone and Telegraph Company
FCC	Federal Communications Commission
GAO	General Accounting Office
MCI	MCI Telecommunications Corporation
MTS	Message Toll Telephone Service
WATS	Wide Area Telephone Service

GLOSSARY

Basic (local) exchange service	Telephone service for single line business and residence customers which provides the capability for originating calls to a defined local calling area, for receiving incoming calls, and for access to and from the toll network.
Common carrier	A company, organization, or individual providing wire or electronic communications services for hire.
Cross subsidy	The contribution of profits by one telecommunications service priced above its cost made to defer the cost of another telecommunications service priced below its cost.
Docket	The record of a proceeding which is assigned a docket number for administrative control purposes.
Economies of scale	The decline in a firm's unit costs as it increases its scale or plant size.
Execunet	A telecommunications service provided by MCI Telecommunications Corporation through which a customer can dial a local MCI number and be connected to a telephone in another city served by the firm.
Fully distributed cost allocation	A method of allocating total costs among various telecommunications services based on the services' historical cost responsibility.
Industry structure	The organizational aspects of firms in a particular market, including the number and size of the firms and the presence or absence of barriers to entry.

Microwave relay station	A station using microwaves for radio communications between fixed points.
Message toll telephone service	A long distance communications service permitting subscribers to local exchange service in separate areas to establish two-way telecommunications on a message-by-message basis.
Natural monopoly	An industry in which economies of scale are so pronounced that competition among firms results in a monopoly by the largest firm.
Network	A system where a number of terminal points are able to access one another through a series of communications lines and switching arrangements.
Private line services	A communications link between two or more designated points set aside for a particular customer's exclusive use during stated time periods.
Public land mobile radio service	Mobile radiotelephone services provided by telephone common carriers and radio common carriers. These services include one-way paging and two-way telephone service interconnected with the public telephone network.
Rate of return regulation	A method of regulation allowing a regulated firm to earn revenues equal to its cost of service, including a fair return to stockholders and bondholders. Such regulation attempts to prevent firms from receiving monopoly profits but still allows them to attract new capital.

Jurisdictional separations procedures	The procedures for dividing the cost of common carrier facilities and services between interstate and intrastate jurisdictions.
Settlement procedures	The method for dividing revenues from a long distance call involving two or more companies.
Telegram message service	A service where a carrier accepts either written or oral messages at a public office, transmits those messages to its public office in another city, and delivers the messages in written or oral form to the designated recipient.
Terminal equipment	Any equipment capable of sending and/or receiving information over a communications channel.
Uniform system of accounts	An accounting system prescribed by the Federal Communications Commission for domestic common carriers.
Universal service mandate	The general name given to the part of section 1 of the Communications Act of 1934 which established as a policy goal making communications services available to all people in the United States.
Value-of-service pricing	A pricing method under which the highest rates are set for those services believed to possess the greatest value.
Vertical integration	Combining firms at different stages of the production process into one business unit.
Wide area telephone service	A system where a telephone user is allowed an unrestricted number of calls in specific areas for one overall rate.

CHAPTER 1

INTRODUCTION

The U.S. domestic common carrier telecommunications policy is a little recognized and complex issue, which is growing in importance. While the need for a national policy in areas such as environment or energy is readily apparent, need for a domestic common carrier policy is not as visible. With the former a policy's presence or absence may deprive U.S. citizens of benefits they have enjoyed; however, a domestic common carrier telecommunications policy's effect is on future rather than present telecommunications services.

Understanding domestic common carrier issues requires considerable knowledge in divergent, highly technical fields. Economics is the basis for the Government's regulation and involvement in common carrier telecommunications; accounting principles and methods are deeply ingrained in the regulatory process; and changes in technology, in particular computer technology, are the forces creating a greater public awareness.

OVERVIEW

In 1977, the domestic common carrier industry generated \$40.8 billion in revenues, employed over 863,000 persons, and had a gross investment in plant and equipment of over \$115 billion. In addition, rapid technological changes are leading the United States into an "Information Age"--a period in which knowledge and information are crucial elements in the U.S. economy's growth and stability. In this regard, a May 1977 Department of Commerce study estimated that total information activity accounted for 46 percent of the gross national product.

While it may be premature to predict a new economic age, a primary change is occurring. Computer and communications technologies are merging, allowing more rapid and efficient service in traditional telecommunications markets' as well as creating new services and markets. These services are becoming more pervasive and promise to replace many previous operating methods. For example, the continuing development of electronic funds transfer and digital data systems used by large businesses may provide an electronic alternative to the existing postal system. Continued technological innovation promises such new services as electronic shopping, computer-aided school instruction, and computerized libraries.

In the mid. t of this rapid technological change stands the Nation's principal telecommunications legislation--the Communications Act of 1934 (47 U.S.C. 151 et seq.). The

act created the Federal Communications Commission (FCC) to regulate, among other things, interstate and foreign common carrier communications services; however, the basic authority for regulating intrastate common carrier services was left to the States.

In the act's preamble the Congress declared as its policy:

"* * *to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges* * *."

To implement this policy, title II of the act requires every common carrier to furnish services upon reasonable request and at reasonable charges. Consequently, common carriers must file interstate tariff schedules with FCC, and the rates and requirements in those schedules are subject to FCC review and regulation. In addition, no carrier may construct or acquire additional interstate telecommunications facilities or curtail or discontinue service over these facilities without FCC approval.

Using the act's policy as a base, FCC, during the past 20 years, has decided to allow increased competition in certain sectors of the previously monopolized domestic telecommunications industry. Largely resulting from these decisions, congressional attention has started to focus on domestic common carrier policy. The American Telephone and Telegraph Company (AT&T) and the independent telephone companies (collectively known as the established carriers) have asserted that FCC's decisions will frustrate achieving and maintaining the act's policy goals.

Recognizing the impact of technological change on telecommunications, the Chairman and Ranking Minority Member of the House Subcommittee on Communications, Committee on Interstate and Foreign Commerce in June 1978 introduced the Communications Act of 1978 (H.R. 13015). The proposed act would completely revise the Nation's communications legislation. No final action was taken on this legislation during the 95th Congress; however, the Chairman of the House Subcommittee on Communications said that similar legislation will be reintroduced in the next Congress. Therefore, we have included a reference to the related provisions of the proposed act in each chapter of this report.

The following questions describe the key domestic common carrier telecommunications issues:

--What domestic common carrier telecommunications policy goals should the United States pursue?

--What industry structure should provide common carrier services?

--Can the present methods for regulating the common carrier industry be improved?

These are addressed in greater detail in the following chapters. In addition, chapter 2 presents the principal concepts and background information needed to understand these issues.

We believe everyone involved--the Congress, FCC, industry, and concerned citizens--must soon face these issues if a cohesive domestic common carrier telecommunications policy, reflecting the dynamic, changing nature of the information age, is to be developed.

SCOPE OF REVIEW

We conducted our study at FCC's Washington headquarters. We reviewed pertinent legislation, congressional testimony, agency documents and reports, and interviewed FCC officials.

CHAPTER 2

BACKGROUND AND PERSPECTIVE

The emergence of the Nation's domestic common carrier telecommunications policy as an issue has brought a need for understanding many definitions and concepts. Increasingly, terminology which is rarely seen outside technical manuals and textbooks--natural monopoly, rate of return, terminal equipment, digital transmission--has become required vocabulary for decisionmakers dealing with this issue. Therefore, the principal concepts and necessary background information are discussed below.

THE DOMESTIC COMMON CARRIER INDUSTRY

Domestic common carrier telecommunications in the United States is dominated by the telephone sector. The telephone sector, in turn, is dominated by the American Telephone and Telegraph Company or the Bell System.

The Bell System is defined as AT&T and its principal domestic telephone operating subsidiaries, the Western Electric Company (the system's manufacturing arm) and Bell Telephone Laboratories (the system's research and development arm). AT&T is both a holding and an operating company. It owns 100 percent of Western Electric's stock and 50 percent of Bell Labs' stock (Western Electric owns the other 50 percent). In addition, AT&T owns controlling interest in 23 of its 25 operating companies (including Long Lines) and minority interest in 2 others.

The Bell System is the largest nonfinancial corporation in the world. The Bell System's operating revenues in 1977 were over \$37 billion and its gross plant totaled almost \$104 billion. AT&T provides about 82 percent of the domestic telephone service in the United States, as measured by the number of telephones, and accounts for about 84 percent of domestic telephone operating revenues. It provides 85 percent of the Nation's local exchange service and 83 percent of the long distance service.

In addition, the Bell System is engaged in virtually all other aspects of the common carrier telecommunications industry. For example, it is the major private line voice and data services supplier and provides the bulk of the facilities used in transmitting radio and television programs.

The so-called independent telephone companies constitute the remainder of the telephone sector. This includes about 1,600 small telephone companies many of which are cooperative

and municipal systems. The few medium-sized systems which are the subsidiaries of five independent holding companies are exceptions. 1/

While the independent telephone companies provide about 18 percent of domestic telephone service, they serve about one-half the U.S. land area. They provide about 15 percent of local telephone service and 17 percent of the intrastate long distance service. Like the Bell System, independent telephone company revenues are mostly derived from the monopoly provision of the local exchange service, but the independent telephone companies are also involved in virtually all aspects of the common carrier telecommunications industry.

In contrast to the telephone sector's industry structure, the Western Union Telegraph Company is the monopoly provider of telegraph services (Telegram Message Service, Telegraphic Money Order Service, Mailgram, and Telex/TWX) in the United States. Western Union also provides some private line and other services which compete with similar services provided by other carriers. Western Union's operating revenues in 1977 were about \$555 million, and its gross plant totaled almost \$1.8 billion.

The most recent additions to the common carrier industry are the so-called other common carriers. These carriers have been established primarily in response to FCC's decisions regarding competition and are usually grouped into three categories:

--Specialized common carriers. The eight firms comprising this category provide point-to-point private line telephone, data, and facsimile communications. Their operating revenues for 1977 totaled about \$119 million. Part-time private line channel use and single private line use for both data and voice communications are among the services these carriers provide. These carriers provide their own intercity microwave transmission equipment; however, the connection between the user's premises and the carrier's network is usually leased from the local telephone company.

1/The five companies are Central Telephone and Utilities Corporation, Continental Telephone Corporation, General Telephone and Electronics Corporation, Mid-Continent Telephone Corporation, and United Telecommunications, Inc. They range in size from General Telephone and Electronics Corporation (1977 operating revenues, \$3.5 billion) to Mid-Continent Telephone Corporation (1977 operating revenues, \$165 million).

- Value-added carriers. Currently, there are only two value-added carriers operating. These carriers lease facilities from the established common carriers, add specialized services, and then market this package to the final user. These services might include specialized data processing capabilities which permit disparate computer terminals to communicate with each other.
- Domestic satellite carriers. The five satellite carriers offer essentially the same private line service as the specialized common carriers but because they use satellites (instead of microwave) for transmission they appeal to different market segments. A typical service offered by a satellite carrier would be transmitting newspaper pages from a composing room to a remote printing plant at a very high speed.

Two additional common carrier groups are (1) the miscellaneous common carriers which provide, through microwave facilities, television signals to cable television firms and broadcast stations and (2) firms providing public land mobile radio service. The latter sector includes both the telephone companies and firms which provide only radio common carrier service.

The terminal equipment sector is an important complement to the common carrier industry. The firms comprising this sector provide a variety of terminal equipment to the telecommunications market. These firms are not subject to economic regulation by FCC and, therefore, are not required to file reports with the Commission as are common carriers. Their equipment, however, must be registered with FCC. FCC statistics, compiled during its registration program, indicate that at least 200 firms are manufacturing a wide range of terminal equipment.

The common carrier industry sectors discussed above are diagrammed in appendix I.

NATURAL MONOPOLY--THE ECONOMIC RATIONALE FOR REGULATION

The existing domestic common carrier industry structure and the rationale for FCC regulation is premised primarily on the belief that telecommunications is a "natural monopoly."

A natural monopoly exists when the production of a good or service is characterized by economies of scale; that is, per unit production costs decrease as the firm becomes larger. Consequently, an industry's largest firm has the lowest cost per unit of output and is the most efficient. This firm is

able to underprice its competitors and drive them out of business; a monopoly by the largest firm is the "natural" result. A key attribute of a natural monopoly is that a single firm can supply the entire market for a good or service more cheaply than any combination of smaller firms.

To secure the benefits from the natural monopolist's low-cost production for society, while preventing the monopolist from exploiting its monopoly position, regulation is imposed. Unregulated monopolists, for example, may produce too little, charge prices that are too high when compared to a competitive situation, engage in discriminatory pricing, and reap monopoly profits.

The particular economies of scale which determine whether one or many firms can serve the market at the lowest cost depends on the technology available at a specific time. A natural monopoly, therefore, is the best structure for an industry only as long as the technology which gave rise to the monopoly dominates.

For example, technological changes may allow lowest cost production to occur at relatively small output levels, thus changing the optimum industry structure from a natural monopoly to a competitive system. Conversely, technology may change in the other direction allowing lowest cost production to occur only in a monopoly. In either case, preserving an industry structure no longer warranted by the available technology can impose various costs on society, such as potentially higher prices.

The ability to satisfy the entire market is also not fixed over time. For example, increased demand for a good or service can enlarge the market beyond the monopolist's economies of scale. Consequently, the enlarged market can be served by more than one firm.

The debate over natural monopoly in domestic telecommunications

Both technological changes and increased demand for communications services have caused industry observers to disagree over whether a natural monopoly continues to exist in various domestic common carrier telecommunications industry sectors. This disagreement has generated discussion on whether particular industry sectors should remain monopolies or be opened to competition and how they should be regulated.

While the domestic telecommunications industry can be subdivided several ways, for the purpose of this discussion we have divided it into three sectors:

- Terminal equipment sector. Firms which produce equipment capable of sending and/or receiving information over a communications channel through which users gain access to the telecommunications network. For residential users, terminal equipment is often the basic telephone handset. For business users, it may be more sophisticated and provide more services.

- Local services sector. Primarily the telephone industry and firms which, through electrical or electromechanical switching devices, provide users with the ability to originate calls to a defined local calling area, to receive incoming calls, and for access to and from the long distance network.

- Intercity transmission sector. Firms which transmit voice and record communications intercity. This long distance transmission may use wire, microwave relay stations, or satellite ground stations.

A general consensus exists among industry observers that given present technology the local services sector continues to possess the characteristics of a natural monopoly, and as such should remain under a single firm's control. Conversely, industry observers generally agree that the terminal equipment sector is not characterized by significant economies of scale. Further, the production scale needed to realize minimum costs is only a small fraction of the total market. As a result, this sector does not seem a natural monopoly and, therefore, would be conducive to competition.

The most extensive debate among industry observers regarding natural monopoly concerns the intercity transmission sector. Because it is generally agreed that some economies of scale exist, the debate over natural monopoly centers on the relevant market or markets in which these economies of scale occur. Those parties favoring a competitive environment argue that this sector is characterized by a variety of markets in which low cost production is achieved at a small output level. On the other hand, natural monopoly proponents describe this sector as being homogeneous and very large, with minimum cost production occurring at high output levels.

Other reasons for monopoly in domestic telecommunications

Two other concepts--system integrity and excessive duplication--are offered as other rationales for monopoly in domestic common carrier telecommunications.

An industry in which the public interest calls for system integrity is telephonic communication. The system's equipment must be of sufficient quality to permit signals to be transmitted between two users without degrading or disrupting signal transmission for other users. Using the system efficiently also requires the ability to connect any two telephones and their particular local exchanges. Users, therefore, will enjoy the full service that current technology permits only if the equipment meets certain quality and compatibility standards and the total system is integrated. System integrity, however, is also achieved in less monopolized economy sectors. Reflecting this fact, FCC has determined that there is no technical reason why a single firm must operate the entire system or manufacture all equipment used by the system.

Avoiding excessive duplication is also often cited as a rationale for monopolies in domestic common carrier telecommunications. For example, two phone companies serving the same local market, with duplicate phone lines, switching centers, and phones can impose significant costs on society. This duplication concept, however, is closely related to the economies of scale concept. Our economy includes "competitive duplication" when thousands of farms all produce the same product and hundreds of doctors all practice in the same area. None of these duplications are necessarily costly to society, as long as the market needs these suppliers and they are not too small to take advantage of the economies of scale current technology provides.

When one set of facilities can satisfy the entire market at the least cost it becomes costly for society to duplicate them. This is the case in the common carrier's local services sector. Duplication in this industry, therefore, is inefficient only when the same economies of scale which provide for natural monopoly and its regulation are present.

PRINCIPLES AND METHODS OF TELECOMMUNICATIONS REGULATION

FCC is responsible for regulating interstate and foreign communications. In carrying out the regulatory responsibilities provided in title II of the Communications Act of 1934, FCC requires every telecommunications common carrier to furnish service upon reasonable request. FCC regulates entry into the telecommunications industry through section 214 which states that no carrier may construct or acquire additional interstate facilities or curtail or discontinue interstate service without FCC approval. To prevent carriers from exploiting their potential monopoly position, section 201(b) requires that all rates, practices, classifications, and

regulations in connection with interstate and foreign communications service be just and reasonable.

FCC is also empowered by section 220(a) to prescribe the form of records and accounts kept by the carriers. Under this authority, FCC prescribed an accounting system known as the Uniform System of Accounts, which has its antecedents in AT&T. American Bell Telephone Company began developing the accounting system in 1884, and the Interstate Commerce Commission--which then regulated communications--adopted a version of that system in 1913. Section 220(b) of the act authorizes FCC to prescribe depreciation rates and methods for the carriers. Key sections of the act are summarized in appendix II.

FCC's principal method for implementing its section 201 authority and preventing carriers from exploiting their monopoly position has been rate of return regulation. Under rate of return regulation, a carrier submits its direct operating costs and other expenses for a test year. FCC reviews the submission, disallowing expenses which it determines are not appropriate.

In addition to its direct costs, the carrier includes an allowance for a rate of return on the "rate base," or capital the carrier employs. Adding the direct costs and the rate of return allowance yields the carrier's total costs. The total allowed revenue, or revenue requirement, which the carrier may earn is then set equal to the total costs.

In domestic telecommunications, the carriers are permitted to choose individual rates for their specific communications service, such as long distance or telegram message services, which when combined will yield the overall revenue requirement. This ability is not totally unrestricted, however, since the FCC may disallow rates which are unjust, unreasonable, or unduly discriminatory.

INDUSTRY RATE SETTING PRACTICES AND PROCEDURES

In pricing telecommunications services carriers have traditionally used "value-of-service pricing." Under this method the highest rates are set for services believed to have the greatest value. Under value-of-service pricing business customers have been charged more than residence customers because telephone service is more valuable to businesses. To illustrate how deeply imbedded this concept is in telecommunications ratemaking, the first advertisement for the telephone in May 1877 stated: "The terms for leasing two telephones for social purposes connecting a dwellinghouse with any other building will be \$20 a year, for business purposes \$40 a year * * *."

Established carriers, particularly AT&T, have also engaged in rate averaging. For example, the charge for a long distance call (of a given distance and duration) is the same whether the call is made over a sparsely used route or a heavily trafficked route--even though the cost over the two routes does vary considerably.

Because of these two practices, the rate charged for a service and the service's cost are often not closely related. In addition, the relationship between rates and costs for services can also be affected by separations and settlements.

FCC regulates interstate telecommunications, while intrastate telecommunications are regulated by the States' public utility commissions. Since both employ the rate of return method, the joint costs between interstate and intrastate jurisdictions must be divided in order to establish the revenue requirement in each. Dividing the joint costs into interstate and intrastate rate bases is known as jurisdictional separations procedures.

In addition, making a long distance interstate call usually involves two or more telephone companies. Consequently, there is a need to agree on dividing the resulting revenues. This process is known as settlements procedures.

Section 221(c) of the Communications Act provides the statutory basis for FCC's involvement in separations and settlements procedures. For the purpose of administering the act, FCC may

"* * *classify the property of any such carrier used for * * * telephone communication, and determine what property of said carrier shall be considered as used in interstate or foreign telephone toll service."

Chapter 3 discusses how the carriers have employed the pricing practices and the separations and settlements procedures to achieve the policy goals in the Communications Act.

TECHNOLOGICAL CHANGE--ITS IMPACT ON DOMESTIC TELECOMMUNICATIONS

Until the mid-1950s two services essentially composed the telecommunications market--telephone and telegraph. Although these services have expanded and improved, they have continued to serve basically the same needs since their introduction--direct communication between subscribers on demand. However, within the last 20 years important technological developments

have occurred outside the telecommunications industry. These developments have created demands for new communications services and have offered the means for satisfying many of these demands.

While it would be difficult to enumerate all the technological developments which have affected telecommunications, the development with the greatest impact was undoubtedly the modern digital computer. The computer industry's remarkable growth and development has affected several communications industry sectors and intensified the relationship between computers and communications.

Traditionally, one product essentially constituted the telecommunications terminal equipment market--the black dial telephone. As the use of computers has increased, however, the need arose to establish communications systems which would facilitate activities between computers. Such systems require a variety of terminal equipment, much of which has been made available through advances in computer and electronics technology.

Communications' increased dependence on computers created the need to establish specialized transmissions systems over which computers could transmit data. The switched telephone network proved to be less than optimal for data transmission. As a result, digital transmission facilities were established to serve computers' specialized data transmission needs.

The computer explosion has also affected the telecommunications network. Switching systems consisting of electromechanical devices are being converted to electronic devices controlled by computer programs. The digital transmission system used by computers has also found application in voice communications. Future telephone instruments will change speech into a digital data stream which will be handled over the telephone network like ordinary data. Voice signals from many callers will be broken into pulses, interwoven, and then reassembled with a high degree of fidelity--thus offering potential economies.

Other technological developments have also led to establishing new and improved transmission systems. Developments in microwave radio, coaxial cable, and satellite communications have increased capacity, reduced transmission costs, and contributed to industry growth. New transmission systems involving technologies such as fiber optics--which use light waves transmitted over thin glass fibers for communication--promise further improvements.

Implications of this technological change

Developments in terminal equipment and communications transmission systems brought about by technological advances suggest at least three key future developments

- the growth of new information services,
- the spread of computer networks, and
- the growth of data communications.

New information services' potential appears unlimited at this time; among the anticipated services are:

- Working at home with video and facsimile services substituting for a normal day's contacts.
- Transmitting letters and notes directly to or from the house through home facsimile machines.
- Obtaining education via video and facsimile services.
- Obtaining travel information for all travel modes from a central information center.

Developing these and other information services is expected to form the basis for further growth in computer networks. Finally, the new information services coupled with the growth in computer networks are expected to increase the economy's dependence on communications links.

These trends imply substantial growth in the data communications area. For example, one estimate is that data communications revenues will grow to about \$22 billion by 1985.

FCC POLICY DECISIONS TO INCREASE COMPETITION IN DOMESTIC TELECOMMUNICATIONS

Within the past 20 years FCC has decided to allow competition in two previously, largely monopolized domestic telecommunications sectors--terminal equipment and specialized private line services (a segment of the intercity transmission sector). While the rationale behind these decisions is summarized below, a detailed discussion is presented in appendix III.

The primary rationale FCC offered in its decisions to allow competition in the terminal equipment sector was the consumer's right to interconnect with the telecommunications system equipment of his own choosing, which increases the

system's utility to him without harming the system's integrity. Natural monopoly issues in the terminal equipment sector were not raised since it has been generally recognized that this sector's economies of scale are not significant. The established carriers argued, however, that the system's integrity could be harmed.

Responding to this argument, FCC felt that an equipment registration program, which would provide uniform standards for terminal equipment, would sufficiently insure that interconnecting customer-provided devices would not harm the system. In October 1977, this registration program became effective.

FCC offered several rationales for introducing competition in the private line services sector. First, it reasoned that the public would benefit from the dynamic nature of increased competition. These benefits would include increased technical innovation, the introduction of new techniques and services, potentially lower costs, and increased responsiveness on the part of the existing carriers.

In addition, the Commission reasoned that the specialized common carriers who were providing private line services, were not entering a fixed homogeneous market. As a result, these carriers could be expected to satisfy demands which were not being met by existing carriers and, therefore, expand the size of the aggregate market.

Responding to FCC's decisions, AT&T argued that a natural monopoly in intercity transmission existed. FCC responded by noting that economies of scale largely occur where the technology is stable and the market is homogeneous; however the market for specialized communications is characterized by rapidly changing technology and diverse consumer demands.

As a result of allowing private line sector competition, FCC found it necessary to define the various market segments in which competition would be allowed. Decisions on using domestic satellites, establishing "value-added" carriers, and reselling and sharing telecommunication services were reached subsequent to the initial decisions on private line services. These decisions are also discussed in appendix III.

CHAPTER 3

WHAT DOMESTIC COMMON CARRIER TELECOMMUNICATIONS

POLICY GOALS SHOULD THE UNITED STATES PURSUE?

A fundamental issue facing the Congress is what policy goals the United States should pursue in domestic common carrier telecommunications. Currently, the broad goals set forth in the Communications Act of 1934 have been distilled into one principal policy--to make communications services available to all people of the United States. This policy is referred to as the Universal Service Mandate.

This policy has caused considerable controversy. The established carriers assert that FCC's decisions allowing competition threaten the policy goal's continued satisfaction. Substantial information gaps exist, however, which make it difficult to verify this assertion.

Other industry observers argue that this policy goal has been satisfied, and that the Universal Service Mandate should no longer be the Nation's primary telecommunications policy goal. They feel new policy goals, in line with technological and economic change, should be established.

CURRENT U.S. POLICY

The Communications Act of 1934 established as a national policy goal:

"* * * to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges * * *."

While general in nature, this policy statement encompasses several goals--rapidity, efficiency, universality of service, adequate facilities, and reasonable charges. In addition, it appears to reflect an awareness by the Congress that achieving these goals may involve certain tradeoffs.

One policy goal has received overwhelming attention and has become ingrained in the telephone common carriers' method of conducting business. That goal is the Universal Service Mandate.

Achieving the Universal Service Mandate

Although available telephone service varies throughout the country, most observers would agree that the Universal

Service Mandate has been largely satisfied. While only about one-third of U.S. households had telephone service when the Congress passed the Communications Act in 1934; 95 percent have it today.

Several factors are believed to have contributed to the Nation's ability to provide 95 percent of its households with telephones. Real incomes (adjusted for inflation) have risen substantially during the last 44 years. Interdependence has increased throughout society, reinforcing the notion that the telephone is a necessary instrument in daily life. A key factor contributing to universal service, however, has been the decline in real local telephone rates.

Low-cost capital provided by the Rural Electrification Administration and Rural Telephone Bank has contributed to the decline in local rates, as has the rapid technological progress which the industry has witnessed. A final contributing factor, and one which has caused substantial controversy, is a cross subsidy in the carriers' rate structure.

Specifically, the established carriers have interpreted the Universal Service Mandate to mean that basic (local) exchange service should be cross subsidized by contributions from other telecommunications services. This cross subsidy has two potential sources (1) separations procedures which consciously allocate joint costs among different services in a manner which does not accurately reflect the true cost relationships or (2) net contributions where the price for the services or equipment significantly exceeds associated cost.

An example of the first cross subsidy source would be shifting the carrier's common cost burden to interstate Message Toll Telephone Service (MTS), with a corresponding reduction in the cost burden borne by intrastate (local) services. As a result, the revenue requirement for interstate services is higher than it should be, while the revenue requirement for local services is less than its true amount. This disparity is subsequently reflected in rates for interstate and local services, with lower local rates and higher interstate rates than the correct cost relationship would dictate.

An example of the second cross subsidy source would be the net contribution to total revenues derived from selling certain types of terminal equipment at prices above their cost.

Complimenting these cross subsidies has been the established carriers use of rate averaging. Under this scheme, a long distance service user in a remote area pays no more for a call of the same distance and duration than does a user on a

heavily used route even though the carrier's costs are less over the heavily used route. Similarly, within a given local exchange, a subscriber several miles from the carrier's office pays the same for basic exchange service as a subscriber living next door to the carrier's office.

This pricing philosophy's dominance among the carriers is illustrated in the following statement made by the Chairman, AT&T in September 1976:

"* * * to encourage the widest availability of service, the telephone companies have historically sought to keep the rates for local service within the reach of all. To fulfill this aim, long distance service and certain specialized services have been traditionally priced sufficiently above their direct costs to produce a higher contribution to the common costs of the business than does basic exchange service.

"Also, we have traditionally averaged costs in setting rates. We charge different customers within an exchange the same rate even though one might be out on the edge of town and one right next door to our switching center when obviously the cost is different.

* * * * *

"We think this pricing philosophy makes good business sense and it makes good social sense, too. Without it, the percentage of U.S. households with telephone service wouldn't begin to approach the 95 percent that it is today. Without it, the remoter and harder-to-serve communities and customers in this country would never experience the degree of communications development that they have today. Without it, we would be a less unified nation, a poorer nation."

COMPETITION'S "THREAT" TO UNIVERSAL SERVICE

The established carriers have stated that competition in the terminal equipment and private line services sectors threatens the cross subsidy to basic exchange service, and, therefore, threatens to raise the cost of basic exchange service, contrary to the Universal Service Mandate.

The established carriers argue that if users purchase terminal equipment from firms other than the established carriers it will deprive those carriers of the net contribution

provided by terminal equipment as well as certain revenues associated with terminal equipment separations procedures. As a result, local rates which had been the beneficiary of these net contributions and separations procedure revenues, would have to be raised.

The established carriers also argue that private line services and interstate MTS and Wide-Area Telephone Service (WATS) are readily substitutable. Consequently, the other common carriers who do not engage in rate averaging and, therefore, may have lower rates on certain routes, allegedly either siphon away business which would have gone to MTS and WATS, or force the carriers to lower MTS and WATS rates to meet the competition. The carriers argue that the subsequent revenue loss means that the cost responsibility previously borne by interstate MTS or WATS services must be borne by local services, with an increase in local rates.

Is this threat real?

Considerable disagreement exists among industry observers over competition's effect in terminal equipment and private line services. Some industry observers believe that the cross subsidies described by the carriers may not be as large as the carriers say, and that competition may not be as significant as the carriers assert. This disagreement is compounded by the fact that studies conducted by FCC, the industry, and other experts can not provide a definitive answer on (1) exactly which cross subsidies exist, (2) how large the cross subsidies are, and (3) what competition's effect will be.

For example, several State public utility commissions, particularly New York's, have published special studies which indicate that terminal equipment revenues are not covering their full costs and thus are not making a net contribution.

FCC attributed considerable merit to these studies in its September 1976 study of the economic effect of competition in the terminal equipment and private line sectors (Docket 20003). Conversely, the carriers submitted studies which indicated that terminal equipment was making a net contribution. FCC, however, felt the carriers' studies contained flaws in data, assumptions, and methodology which invalidated their conclusions.

FCC and the carriers agree that some losses in revenues flowing from terminal equipment separations procedures could result from competition. The magnitude of this loss is unclear. In any event FCC and the carriers agree that changes in terminal equipment separations procedures could compensate for the potential loss in revenues.

Using its authority under section 410(a) of the Communications Act, FCC, in November 1976, convened a Federal-State Joint Board to investigate the effects of customer-provided terminal equipment. The Board was directed (1) to determine what effect customer-provided equipment has on the local telephone companies and (2) to make recommendations to FCC about what modifications, if any, should be made in existing separations procedures to avoid adverse revenue consequences from customer-provided terminal equipment. An FCC official told us that the Joint Board's recommendations should be completed in early 1979.

Disagreement also exists over competition's effect in private line services. While the carriers assert that private line competition will divert revenues from MTS and WATS and thus raise the cost of local service, FCC in Docket 20003 concluded that there will be little, if any, diversion or repricing of MTS or WATS due to competition.

It is generally conceded that separations procedures provide a cross subsidy for local services; however, due to weaknesses in the Uniform System of Accounts the magnitude of this cross subsidy is not clear. During April 1978 budget hearings before the Senate Committee on Appropriations, the Chairman, FCC was asked when the Commission would have sufficient information to determine what cross subsidies exist in the rates charged by common carriers--especially what cross subsidies exist between local and interstate telephone rates.

The Chairman stated that FCC was still revising the Uniform System of Accounts and that answers to the cross subsidy question would probably not be available until 1980. He stated that until the Uniform System of Accounts is changed and the carriers revise their records according to the new system, available data would be insufficient to resolve the cross subsidy issue.

Without this information the issue of cross subsidy cannot be definitively resolved, and the task of the Congress becomes more complicated.

THE FUTURE POLICY ROLE OF UNIVERSAL SERVICE

Determining universal service's role in the Nation's future telecommunications policy requires an awareness of two other factors. First, in addition to its universality, the Nation's telecommunications system is among the world's finest. Consequently, the Nation has a strong incentive to maintain the existing system and not permit its deterioration. Second, the notion of universal service is losing its precision. When the Communications Act was passed in 1934, technology was such

that the concept of universal service was relatively easy to grasp and define--it meant voice grade communications over a simple telephone handset. Given the anticipated array of communications services promised by technological change, defining universal service has become a more complex task.

With these factors in mind, the issues facing the Congress are broad but straightforward:

- Should universal service remain the Nation's major telecommunications policy goal or should other policy goals receive equal or greater emphasis?
- If universal service remains a major policy goal, how should it be defined in the future? One avenue for defining universal service would be to specify a minimum service level based on existing technology which would be available to all people. Under this approach, future communications advances would be available at the consumer's option. An alternative would be continuing a broad universal service concept, where marketplace and regulatory forces would define the service level provided by future technologies which would be available to all people.
- Regardless of the emphasis placed on universal service, how should it be financed in the future? Several options exist. The current method of cross subsidy by the carriers could be maintained. In this case, adjustments to current separations procedures may be necessary to mitigate any harmful impact of competition. A second option would be to replace the current system with excise taxes on interstate telecommunications services. The revenues from this tax on interstate carriers that use local facilities would be redistributed to local telephone companies and used to subsidize basic exchange service. A third alternative would be to set up a Government-administered fund. All interstate carriers which use local facilities to provide their service, would be required to contribute to the fund. Similar to the excise tax, the revenues would be redistributed to local telephone companies to hold down the cost of local service.

OTHER POLICY GOALS FOR COMMUNICATIONS

The policy goals of the Communications Act of 1934 involved more than universal service. The act also called for communications services which were rapid, efficient, and provided by adequate facilities. While each of these characteristics remains important for the future, two additional goals--equity and innovation--could also be considered.

Equity

The rate structure which the established carriers assert they use to achieve universal service can have an effect on the equity of the distribution of income. If the system operates as the established carriers say it does, the impact of current separations procedures is that long distance users are penalized by paying rates above true costs, while users of local services benefit by paying rates below true costs. A similar situation occurs where rate averaging is employed. Since subscriber density is a major determinant of cost, averaging favors low density users in rural areas while penalizing high density users in urban areas.

Subsidizing and penalizing users in this way has brought the equity issue to the Congress attention. In addressing this issue, and considering greater equity as a policy goal, the Congress faces two related issues:

- Should all local services users continue to be fully subsidized or should only those unable to subscribe to telephone service without the full subsidy receive it?
- How should the burden for these subsidies be distributed among the various users? Particularly, what policy guidance can the Congress give FCC and the industry?

Innovation

The technological developments of the last 20 years have created demand for new communications services and have offered the means to satisfy these demands. However, communication's future horizons, both in the aggregate volume of business opportunities, and in the service's variety and versatility, appear almost unlimited. For example, advances in telecommunications promise

- a checkless society in which monetary transactions and settlements are effected through large scale computers communicating between banks and credit institutions,

- vastly increased access to stored research libraries, music libraries, and computing services,
- remote access reading of electric and gas meters or activating energy storage systems at residences to save energy, and
- more widespread use of the picturephone to reduce the amount of physical travel.

Recognizing this promise, an issue facing the Congress is whether an additional policy goal should be to vigorously develop and exploit the entire potential of modern communications technology, with a view to offering the people of the United States the widest possible opportunities for communication.

- - - -

RELATED PROVISIONS OF THE PROPOSED
COMMUNICATIONS ACT OF 1978

Section 101 of the proposed Communications Act of 1978 contains a congressional finding that regulating interstate telecommunications is necessary to the extent marketplace forces are deficient in order to

"* * * make available to the people of the United States nationwide and worldwide telecommunications services which are diverse, reliable, and efficient, and which are available at afforded rates."

In addition, section 331 directs the Communications Regulatory Commission (FCC's replacement) to promote the maintenance of nationwide basic voice telephone service at affordable rates through regulation, which provides equitable treatment to all common carriers, and direct assistance where appropriate.

A "Universal Service Compensation Fund" is intended to provide the direct assistance. Section 334 directs the Communications Regulatory Commission to establish and administer the fund and requires intercity carriers using local exchange facilities to pay an access charge. The Commission is required to distribute the revenues received to "maintain toll telephone service and local exchange telephone service rates at affordable levels and to ensure the nationwide availability of basic voice telephone service."

CHAPTER 4

WHAT INDUSTRY STRUCTURE SHOULD PROVIDE

COMMON CARRIER SERVICES?

An important corollary to the issue of policy goals that the United States should pursue in domestic telecommunications is what industry structure should provide common carrier services. Substantial debate has already taken place about the current industry structure's continued appropriateness in light of technological changes which have occurred in the last 25 years and the growing demand for new services.

FCC's decisions allowing competition provided the basis for much of this debate, with the established carriers arguing that competition threatens the purposes of the Communications Act of 1934 and in turn offering proposals to alter the industry structure. Recent court decisions also have affected FCC's ability to regulate the carriers and have revitalized this issue's importance.

THE CURRENT STRUCTURE AND ITS RAMIFICATIONS

In 1934, when the Communications Act was passed the domestic common carrier industry's structure was well established. In the voice sector AT&T held a virtual monopoly in long distance service while Bell System operating companies and numerous independent telephone companies held monopolies on local service. In the nonvoice sector, Western Union was the sole supplier. Except for the declining number of independent telephone companies and the competition in terminal equipment and private line services allowed by FCC's recent decisions, this structure has remained largely the same over the last 44 years.

The principal rationale for a sole supplier in domestic telecommunications is the belief that this industry was a natural monopoly. A natural monopoly's appropriateness is predicated on the existence and extent of the relevant economies of scale. While the terminal equipment sector is not characterized by significant economies of scale, industry observers generally agree that the local services sector possesses the characteristics of a natural monopoly. However, considerable disagreement remains over the intercity transmission sector's natural monopoly characteristics.

Resolving the debate over the appropriate industry structure in domestic telecommunications has important implications for the whole economy. An inappropriate industry structure can impose various costs on society.

For example, if a competitive structure is mandated when the existing technology prescribes a natural monopoly, low-cost production benefits may be lost. The established carriers, particularly AT&T, have contended that this is the case and that economies of scale exist in the intercity transmission sector to the extent that losing any appreciable interstate traffic to competition could raise the unit cost of service and ultimately telecommunications services' rates. FCC, on the other hand, contends that it can find no documented evidence which supports AT&T's assertions.

Conversely, if a monopoly is mandated, when the prevalent economies of scale indicate that lowest cost production can be achieved by multiple firms, the benefits of competition--lower costs, increased quantity and variety of output, and potentially lower rates--may be lost to society.

Industry structure can also influence the rate and quality of innovation in domestic telecommunications. A rapid innovation pace can result in substantial reductions in telecommunications costs over time. Neither economic theory nor available empirical evidence, however, definitively support a specific industry structure as the one which will provide the most rapid pace or innovation. Rather, a general consensus appears to exist in economic literature that a blend of competition and monopoly--with more emphasis on competition--is needed for rapid innovation. In this regard, FCC has stated:

"An increased rate of innovation due to competition is possible and probable based on theory and empirical evidence, including our experience to date, but no clear answer exists as to its effect in the future on innovation in telecommunications."

Consequently, the issue of appropriate industry structure will not be easy to resolve. Inadequate data on economies of scale, the absence of definitive theoretical guideposts on innovation, and rapidly changing technology complicate the decisionmaking process. Further, domestic common carrier telecommunications is a highly heterogeneous industry; an industry structure appropriate for one sector may not be appropriate for another. Therefore, the approach adopted should be flexible enough to accommodate this environment.

THE CARRIERS' RESPONSE TO FCC'S INDUSTRY STRUCTURE DECISIONS

Within the past 20 years FCC has decided to allow competition in two previously largely monopolized domestic

telecommunications sectors--terminal equipment and specialized private line services. These decisions have prompted varied responses from the established carriers.

In response to FCC's decisions allowing terminal equipment competition and establishing a registration program for terminal equipment, the established telephone carriers proposed a modification to FCC's registration program known as the "primary instrument concept." This proposal's apparent effect would have been to prohibit subscribers to single-line telephone service from providing their own terminal equipment under any circumstances, disregarding the absence of harm to the telephone network. The proposal was a significant modification of the principles developed in the Carterfone 1/ decision--that the consumer has a basic right to connect any and all types of terminal equipment to the telephone network unless there is a sufficient public detriment. On this basis, FCC rejected the primary instrument concept.

In response to FCC's decisions regarding private line services, the established carriers proposed revisions to the industry structure for the intercity transmission sector. Their proposal sought to resolve what they viewed as a conflict between the universal service goal and the desire to widen communications services' availability by partitioning intercity services into monopoly and competitive sectors. Only specialized intercity services which either do not connect with the established carriers' network or connect only at the customer's terminal equipment would be permitted. All other services would be provided as a monopoly by AT&T and the independent telephone companies.

This proposal's net effect would be to eliminate many of the specialized services which have developed as a result of FCC's decisions. In support of this proposal, the established carriers offered the argument that intercity services which connect with their network are direct substitutes for their long distance (MTS/WATS) services and thus jeopardize the existing rate structure and universal service policy goal.

The specialized carriers were opposed to this proposal. They felt the proposal would unduly partition the telecommunications market, oust them from services they were authorized to provide, and restrict them to a market segment which is not large enough to support viable competition.

1/13 FCC 2d 420 (1968).

A more broad-based response to FCC's decisions has been the established carrier-supported Consumer Communications Reform Act (H.R. 8). Introduced in both the 94th and 95th Congresses, this proposed legislation would reaffirm a regulated monopoly in all markets in which the established carriers operate.

Supporting this legislation, AT&T argued that in enacting the Communications Act of 1934 the Congress felt that a regulated monopoly was the best industry structure for providing telecommunications services. An analysis by the Department of Justice's Antitrust Division, however, indicated that the legislative history of the Communications Act does not support the view that FCC's decisions allowing competition conflict with congressional intent. In addition, the Department of Justice indicated that the legislative history of a broad, general statute enacted over 40 years ago is not likely to be useful in evaluating current issues.

CHANGES IN INDUSTRY STRUCTURE CREATE BROADER CONCERNS

Developing an industry structure containing both competitive and monopoly sectors has generated several areas of concern. The most obvious is the threat of competition which was discussed in chapter 3.

An additional concern is how to ensure fair competition between carriers offering monopoly and competitive services and carriers offering only competitive services. A monopolist, even a regulated one, will have a strong incentive to practice "monopolistic cross subsidy" whereby its protected monopoly services are charged rates much higher than costs, yielding high rates of return, while existing or potentially competitive services are charged rates much lower than costs, yielding low or negative rates of return. The monopoly services, therefore, cross subsidize the competitive offerings, and monopoly services consumers bear a portion of the cost of the competitive offerings.

Alternately, maintaining fair competition also requires ensuring that competitors in the specialized common carrier sector do not have an advantage over the established carriers and bear their proportionate share of the interconnected facilities costs that make their services attractive.

Changes in industry structure and the growth of communications technology also cause concern about the extent to which common carriers should be involved in related telecommunications industries, particularly, computers and data processing. Currently, AT&T's services are restricted by the

1956 Consent Decree which ended the Government's antitrust action. 1/ By the decree's terms, AT&T may not offer any interstate service or facility unless it is a regulated common carrier offering or, in the case of a facility, is offered by Western Electric (or its subsidiaries) and is similar to equipment provided to the regulated carrier.

RECENT COURT DECISIONS FOCUS INCREASED
ATTENTION ON INDUSTRY STRUCTURE

While the debate over FCC's pro-competition decisions has been taking place over the last several years, and the various modifications discussed above have been proposed, recent court decisions have focused increased attention on the industry structure issue.

In September 1974, the MCI Telecommunications Corporation (MCI), a specialized common carrier, filed a tariff application with FCC to provide a service known as "Execunet." With Execunet, a customer can dial a local MCI number and be connected through a microwave system to another telephone in another city served by the firm.

After several procedural disputes and an informal letter to MCI in July 1975 rejecting its tariff, FCC in July 1976 issued an extensive final opinion finding that MCI was not authorized to offer Execunet. In that opinion, the Commission relied on its Specialized Common Carrier Decision, 2/ pursuant to which most specialized carrier facilities authorizations have been issued. FCC felt that the Specialized Common Carrier Decision dealt with only private line services, which specialized carriers like MCI had applied to provide, and did not open other areas such as MTS/WATS to competition.

FCC found that Execunet was not a private line service, but rather had the essential characteristics of the MTS/WATS service offered as a monopoly by AT&T. Therefore, FCC

1/The Justice Department suit against AT&T began in 1949 and culminated in the Consent Decree Judgement in 1956. In this suit the Justice Department sought (1) divestiture of Western Electric from AT&T, (2) competitive bidding by AT&T and its operating companies in the purchase of telecommunications equipment, and (3) patent licensing on a nondiscriminatory basis with reasonable royalties. Only the patent licensing provisions were included in the final Consent Decree.

2/29 FCC 2d 870 (1971).

rejected MCI's Execunet tariff as unlawful because it violated FCC's Specialized Common Carrier Decision.

MCI subsequently appealed FCC's decision to the U.S. Court of Appeals for the District of Columbia. In its July 1977 decision ^{1/} the court said that while FCC had the statutory authority to authorize competition in limited areas with restrictions, section 214 (c) of the Communications Act required FCC to make an affirmative determination that the public interest requires such restrictions. Regarding FCC's Specialized Common Carrier Decision, the court said FCC had not properly made such a determination. Instead, the court said:

"* * * it appears that the Commission saw benefits accruing to the public from the services which were before it. In granting the facilities authorizations on the basis of that public interest finding, the Commission did not perhaps intend to open the field of common carrier communications generally, but its constant stress on the fact that specialized carriers would provide new, innovative, and hitherto unheard-of communications services clearly indicates that it had no very clear idea of precisely how far or to what services the field should be opened.* * * There being no affirmative determination of public interest need for restrictions, MCI's facility authorizations are not restricted and therefore its tariff applications could not properly be rejected."

In reaching its decision the court did not determine whether the competition in monopolized long distance service like that posed by Execunet was in the public interest. That determination was left to the Commission. In addition, it did not disturb FCC's finding that Execunet was not a private line service. In January 1978, the Supreme Court denied FCC's petitions for review.

Following the Supreme Court's action, AT&T applied to FCC for a declaratory ruling to clarify and define precisely what obligations AT&T had regarding interconnection with MCI for Execunet. In its ruling FCC said that AT&T's interconnection obligations were only for private line services and that the Commission had not made the affirmative public interest finding required by section 201(a) regarding the interconnection of Execunet.

^{1/}MCI Telecommunications Corp. v. FCC 561 F. 2d 365 (1977), cert. denied 434 U.S. 1040 (1978). Hereinafter referred to as the Execunet Decision.

MCI subsequently appealed this ruling and filed a motion to require compliance with the court's first Execunet mandate. FCC opposed MCI stating that the first mandate was not related to interconnection. Rather, the court had found only an error in FCC's decisions regarding section 214.

On appeal, however, the court said that FCC read its original decision too narrowly and that its decision carried a broad interconnection mandate. 1/ In August 1978, FCC filed for review of this most recent decision with the Supreme Court. In December 1978, the Supreme Court denied FCC's petitions for review of the second Execunet decision.

Execunet decisions may have
substantial impact

The Execunet decisions' impact on the domestic common carrier industry structure are only beginning to be felt, and all ramifications are still not clear.

The most immediate impact is that they have opened the previously monopolized long distance market to competition. To restrict competition in this market, FCC must make the affirmative determination required by the court that any restrictions are in the public interest.

To accomplish this FCC recently initiated an inquiry into the MTS/WATS industry structure. According to FCC this inquiry will address not only what industry structure--competition or monopoly--should provide interstate long distance service but also several related areas including

- the impact of competition in long distance services on local rates,
- the appropriate amount of revenue which should flow from interstate to local services through settlements and separations procedures, and
- the public interest basis for nationwide rate averaging.

1/MCI Telecommunications Corp. v. FCC, 580 F 2d 590 (1978), cert. denied, ___ U.S. ___ (1978), also referred to as the Execunet II decision.

FCC officials, however, could not provide us a timeframe for completing this proceeding. 1/

The court's action has also added new impetus to the established carriers' arguments regarding the threat of competition. Before the court's action the debate centered on private line services' and the monopolized MTS/WATS services' substitutability. The established carriers have argued that these services were readily substitutable. Consequently, the other common carriers can allegedly either siphon away business which would have gone to MTS and WATS, or force the established carriers to lower MTS or WATS rates to meet the competition. The established carriers argue that the subsequent loss of revenues means that the cost responsibility previously borne by interstate MTS or WATS services must be borne by local services, with an increase in local rates. FCC, in its study on the economic effects of competition in private line services (Docket 20003), however, concluded that there would be little, if any, diversion or repricing of MTS or WATS due to competition from private line services.

Resulting from the court's July 1977 decision, the specialized carriers can now provide services which are virtually the same as MTS or WATS services. According to an FCC official, the public is presently vulnerable in two areas--the potential termination of nationwide rate averaging and the potential loss of MTS/WATS revenues to competition. These revenues now partly defray the cost of local exchange facilities.

Finally, the Execunet decisions have affected FCC's use of section 214 as a regulatory tool to control industry structure. This will be discussed in chapter 5.

FUTURE EMPHASIS ON INDUSTRY STRUCTURE

In addressing the industry structure issue three major approaches are available:

- The Congress mandates an explicit industry structure, for example, competition or monopoly.
- The Congress mandates an explicit industry structure but allows the Commission to alter this structure in response to changes in technology or market size.

1/While not a direct outgrowth of the Execunet decision, FCC in March 1978 did begin an inquiry into whether Western Union should continue to provide message telegram service as a monopoly or whether competition in this service should also be allowed.

--The Congress does not address industry structure explicitly. Rather, it allows the Commission to control industry structure to best achieve congressionally set policy goals.

In evaluating and selecting an approach, however, the Congress should recognize that (1) information on economies of scale and the effect of industry structure on innovation are incomplete, (2) the proliferation of telecommunications services has produced a highly heterogeneous industry, where a mix of industry structures may best achieve the goals of the Congress, and (3) the appropriate industry structure depends on the level of technology available; therefore, in an era of rapidly evolving communications technology the risks of imposing significant costs on society by mandating an industry structure which could be undercut by technological change are high.

Other related issues include:

--What can be done to ensure fair competition between different carriers?

--If terminal equipment production is not a natural monopoly, should the vertical integration of AT&T and Western Electric be reevaluated?

--In considering the convergence of communications with computer and other technologies, should the 1956 Consent Decree's restriction remain in effect? Or should AT&T, as well as other common carriers, be permitted to enter other telecommunications markets? If the carriers are permitted to enter other markets under what conditions should this be allowed?

- - - -

RELATED PROVISIONS OF THE PROPOSED
COMMUNICATIONS ACT OF 1978

The proposed Communications Act of 1978 favors competition in domestic common carrier telecommunications. The general findings in section 101 state that regulating interstate telecommunications is necessary to the extent marketplace forces are deficient. Specifically, section 331 directs the Communications Regulatory Commission to:

--Place maximum feasible reliance on marketplace forces to achieve the domestic common carrier provisions' purpose.

--Rely on competition to provide efficiency, innovation, and low rates, and to determine the variety, quality, and cost of telecommunications services.

--Establish full and fair competitive conditions.

--Prevent practices which would allow any carrier to limit or exclude competition in providing telecommunications services.

The proposed act also contains two sections directed specifically at the current industry structure. Section 332 allows any common carrier to hold or acquire shares of any separate company providing any service or offering any product which the Communications Regulatory Commission has determined to be telecommunications. Section 333 provides that, after 3 years from the proposed act's enactment, no carrier shall provide a noncompetitive service and also be engaged in manufacturing equipment used in furnishing any common carrier service.

CHAPTER 5

CAN THE PRESENT METHODS FOR REGULATING THE COMMON CARRIER INDUSTRY BE IMPROVED?

FCC's major regulatory powers include control over (1) entry into the industry, (2) the rates carriers charge for their services, and (3) the carriers' accounting and depreciation methods. FCC's techniques for implementing these powers have recently come under question as the result of several developments, including:

- FCC's policies introducing competition,
- the proliferation of communications services which technological advancement has generated, and
- the recent Execunet decisions.

There are few alternatives to the current regulation methods and all are largely untried. This chapter describes the existing regulatory techniques and possible alternatives. An understanding of these techniques can serve as a benchmark for evaluating how future decisions on domestic common carrier policy goals and the related industry structure can best be implemented.

CONTROL OVER ENTRY--SECTION 214 AND THE EXECUNET DECISIONS

The Communications Act of 1934 provides FCC with control over entry into the domestic common carrier industry through provisions relating to the construction and use of communications facilities. Specifically, section 214(a) provides that:

"No carrier shall undertake the construction of a new line or of an extension of any line, or shall acquire or operate any line, or extension thereof, or shall engage in transmission over or by means of such additional or extended line, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require the construction, or operation, or construction and operation, of such additional or extended line * * *."

In addition, section 214(c) grants FCC the power to issue the certificate:

"* * * as applied for, or to refuse to issue it, or to issue it for a portion or portions of a line,

* * * described in the application, or for the partial exercise only of such right or privilege, and may attach to the issuance of the certificate such terms and conditions as in its judgement the public convenience and necessity may require."

The July 1977 United States Court of Appeals for the District of Columbia Circuit decision in the Execunet case 1/ has altered the way FCC uses section 214 to control entry and, subsequently, the industry structure in domestic common carrier telecommunications. The court found that the primary purpose of section 214(a) is preventing unnecessary duplication of facilities, not regulating services provided over these facilities. The court found, however, that section 214(c) did authorize the Commission to restrict services (and, therefore, entry into a particular market segment) that may be offered over a communication line once it is built, acquired, or extended. The court stressed that FCC must

"* * * strictly follow the terms of section 214(c) and it cannot impose any such restriction unless it has affirmatively determined that 'the public convenience and necessity [so] require.'"

An FCC official stated that in granting section 214 applications FCC had traditionally focused on its ability under section 214(c) to grant the application "as applied for." FCC assumed that by granting the application as applied for, it had implicitly restricted the facility's use to the services listed in the application. The court did not share this view.

According to FCC officials, the court, by requiring FCC to make an affirmative public interest determination regarding service restrictions and by ruling that without restrictions a carrier may use the facility to provide any service, may have hampered FCC's ability to control industry structure. In exploring the possibility of competition in other market segments FCC must now consider all possible alternative uses for a proposed facility and develop a basis for restricting the services to be provided by the facilities.

Finally, FCC officials felt the Execunet decisions have, to some extent, reversed the evidentiary burden regarding entry into the common carrier industry. Previously, an applicant had to demonstrate that it should be permitted to enter the industry and provide service. Now FCC must show that

1/MCI Telecommunications Corp. v. FCC 561 F. 2d 365 (1977),
cert. denied 434 U.S. 1040 (1978).

the public interest requires not allowing entry or restricting it in some way.

The following issues represent the most immediate concerns regarding entry control for the domestic common carrier industry.

- Should FCC continue to control entry by regulating the construction and use of facilities?
- If this entry control method is maintained, should the Congress modify section 214 to mitigate the impact of the Execunet decisions? FCC officials have stated that if the Congress were to affirm the importance of the phrase "as applied for" in section 214(c), the Commission would not be burdened with determining all possible uses for a particular facility before granting an application.
- Should an alternative method of controlling entry and, thus, industry structure be adopted? A direct method would be to grant FCC explicit power to classify telecommunications services and determine which services may be provided competitively and which may only be provided as a monopoly. Because technological change can significantly influence the appropriate industry structure, FCC may have to periodically reevaluate the industry structure it develops.

RATE REGULATION

To prevent the carriers from exploiting their potential monopoly position, section 201(b) and 202(a) of the Communications Act require that rates carriers charge be just, reasonable, and not unduly discriminatory. The Commission's methods for implementing these provisions have evolved over time. Before 1965, rate setting resulted from informal negotiations between the carriers and FCC; however, in 1965 FCC began its first investigation into AT&T's overall rate of return. Because of (1) evidence that some AT&T services might be unduly cross subsidizing others, and (2) the advent of FCC's policies allowing competition, FCC, to prevent monopolistic cross subsidy extended rate of return regulation to the carriers' individual services. 1/

1/A monopolist, even a regulated one, will have a strong incentive to practice monopolistic cross subsidy whereby its protected monopoly services are charged rates significantly higher than costs, yielding high rates of return, while existing or potentially competitive services are charged rates lower than costs yielding low or negative rates of return.

In determining the relationship of the carriers' rates to costs, and therefore determining the rates' reasonableness, FCC found that its accounting and costing methods needed improvement.

The Uniform System of Accounts grouped all costs together to determine the overall revenue required to support a particular carrier. This produced a significant problem when applied to current multiple-service carriers: it classified data so that it was impossible to relate costs to any specific services. FCC is revising the Uniform System of Accounts and expects that the changes will not be fully implemented until 1980.

Developing individual rates of return has also revealed the need for a specific cost allocation method to divide common costs among the carriers' various services. FCC has adopted a method of fully distributed cost allocation. Under this method all costs are distributed among the services provided based on the costs attributable to these services in past years. According to an FCC official changes being made in the Uniform System of Accounts will provide the data to support this costing methodology.

Because communications services are likely to continue becoming more heterogeneous, requiring the regulation of additional rates of return, three important rate of return regulation issues are:

- How can current rate of return regulation be more effectively applied? Particularly, how can the Congress ensure that FCC uses the most appropriate and current accounting and costing methodologies for effective regulation?
- Should the Congress mandate a particular accounting or costing methodology, or should it require FCC to periodically review these methodologies?
- Are there alternatives to rate of return regulation of individual services which will prevent monopolistic cross subsidy? One alternative which has attracted considerable attention is to require the established carriers, particularly AT&T, to set up separate subsidiaries when operating in competitive markets. Under this alternative any monopolistic cross subsidies which might flow from the regulated monopoly services to the competitive services should be detectable, as they would necessarily show up in the separate business entity's accounts. A potential stumbling block is that

such actions could require modification of the 1956 AT&T Consent Decree. 1/

DEPRECIATION PRACTICES

Section 220(b) of the Communications Act authorizes FCC to prescribe the depreciation practices employed by the carriers. While not as widely discussed as other regulatory practices, the carriers' depreciation practices are significant in several respects.

Depreciation is important simply because it is included as an expense item when determining the carriers' revenue requirement. In quantitative terms, this figure is significant. For example, depreciation expenses for domestic telephone carriers totaled about \$5.6 billion in 1977. Since this expense can influence rates, there is an incentive for the regulator to keep the depreciation rate as low as possible in order to keep rates as low as possible.

Depreciation rates take on a greater significance, however, considering the rapid changes in technology which characterize the domestic telecommunications industry. In such an environment there can be a key difference between a piece of capital equipment's physical and economic lives. For example, an electronic calculator purchased several years ago may be only one-third worn out, but its economic life may be reduced by much more than one-third due to the current availability of cheaper and better calculators.

There is currently concern that depreciation rates in common carrier communications may have not kept pace with technological change and, as a result, a significant portion of the carriers' communications equipment is being carried on their books at a level far higher than its economic value. For example, electronic switching equipment is currently depreciated by the carriers over 30 to 40 years while similar equipment, such as computer mainframes, is usually fully depreciated by unregulated companies in less than 10 years.

If technological progress outruns the depreciation rates and reduces the equipment's economic value to zero before it is fully written off, the carriers may be deterred from replacing this equipment with economically more efficient alternatives unless they can continue to depreciate the outmoded equipment. Continued depreciation of useless equipment, with its subsequent impact on rates, would likely meet considerable resistance. Consequently, using existing depreciation methods

1/See chapter 4, p. 27.

society may not gain the benefits of newer technology as it becomes available.

Given these circumstances two key issues are:

--Should the Congress mandate a particular interval for FCC to review the carriers' depreciation rates?

--Should FCC be required to explicitly consider changes in the economic value of the carriers' assets (due to technological change) when setting depreciation rates?

- - - -

RELATED PROVISIONS OF THE PROPOSED
COMMUNICATIONS ACT OF 1978

The proposed Communications Act of 1978 does not continue regulating entry through control over the construction and use of telecommunications facilities. Section 335 of the proposed act only requires a carrier to notify the Communications Regulatory Commission if it intends to construct, acquire, or operate any facility. Section 311 gives the Commission control over entry through the authority to (1) classify common carriers and (2) classify telecommunications services into competitive and noncompetitive sectors. The Commission, however, under section 336 may require carriers providing noncompetitive services to extend these services to a particular community and may prevent such a carrier from discontinuing or reducing a noncompetitive service.

Section 312 of the proposed act requires that carriers provide service upon reasonable request, and that the rates charged for these services be equitable. This section presumes that a rate is equitable unless the service being provided is noncompetitive. Under section 314 the Communications Regulatory Commission may hold hearings to determine whether a rate for a noncompetitive service is equitable; however, the Commission must complete this action within 9 months or the rate will be presumed equitable. Where the Commission has determined a rate is inequitable it must require a refund and see that an equitable rate is set.

Under the proposed act the Communications Regulatory Commission retains authority over the carriers' accounting and depreciation practices. The Commission is required to review its determination of depreciation every 5 years and consider changes in the economic value of the carriers' assets.

KEY SECTIONS OF THE COMMUNICATIONS ACT OF 1934RELATING TO DOMESTIC COMMON CARRIERS

<u>Section</u>	<u>Subject</u>	<u>Key provisions</u>
Section 1	Purpose of act	Created FCC for regulating interstate and foreign commerce by wire and radio. Set policy goals for regulation.
Section 201(a) & (b)	Common carrier service & charges	Under section 201(a) carriers must furnish service upon reasonable request, and must establish physical connections and through routes with other carriers if FCC determines this is in the public interest. Under section 201(b) all charges, practices, classifications, and regulations must be just and reasonable.
Section 202(a)	Discrimination	Section 202(a) bans unjust or unreasonable discrimination by carriers in charges, practices, classifications, regulations, and facilities.
Section 203(a) & (b)	Schedules of charges	Section 203(a) requires every carrier to file with FCC public tariffs. Under section 203(b) no changes may be made to these tariffs without 30 days notice.
Section 204	Hearings on lawfulness of new charges	FCC may conduct a hearing on the lawfulness of a tariff filed with it. Pending a hearing, FCC may also suspend the tariff for 3 months; however, after 3 months the tariff will go into effect. In the case of an increased charge, FCC may order a refund after the hearing.

<u>Section</u>	<u>Subject</u>	<u>Key provisions</u>
Section 205(a)	FCC authority to prescribe rates	After a hearing at which FCC determines a charge violates the act, it may prescribe a just and reasonable charge.
Section 214 (a), (c), & (d)	Facilities authorizations	Under section 214(a) the construction or extension of facilities may not take place until the carrier receives from FCC a certificate that the public convenience and necessity require the carrier's action. Section 214(c) gives FCC the power to issue the certificate as applied for, to refuse to grant it, or to attach conditions which FCC feels the public convenience and necessity require. Under section 214(d), FCC may also require carriers to provide facilities which are reasonably required by the public convenience and necessity.
Section 220(a) & (b)	Accounting practices	Under section 220(a), FCC may prescribe all accounts and records kept by carriers. FCC may also prescribe the depreciation practices used by the carriers under section 220(b).
Section 221(c)	Special provisions for telephone companies	After proper hearing and notice FCC may classify the property of telephone carriers and determine what property is used in interstate telephone service.

CHRONOLOGY OF KEY FCC DECISIONSREGARDING COMPETITIONTERMINAL EQUIPMENT DECISIONS

Traditionally, telephone company tariffs prohibited customers from using any device not supplied by the company in connection with the services it provided. In the 1956 Hush-A-Phone (Hush-A-Phone v. United States, 238 F. 2d 266 (D.C. Cir. 1956)), case this prohibition was first challenged.

The Hush-A-Phone was a plastic cup-like device placed over the handset to facilitate private conversations. In reaching its decision that AT&T acted unlawfully by disallowing the Hush-A-Phone's use, the U.S. Court of Appeals established the principle that telephone subscribers have a right to use the telecommunications system in ways which are privately beneficial but which do not harm the system's integrity, and that tariffs which interfere with this right are unreasonable.

After the Hush-A-Phone decision, the industry made some changes in its tariffs, but the general prohibition against connective customer-provided terminal devices continued. In its 1968 Carterfone (13 FCC 2d 420 (1968)) decision, FCC ruled that the existing tariff provisions were unlawful because they violated the consumer's right to interconnect the Carterfone device. FCC found that this device which would couple a mobile telephone to the telephone system improved the system's utility and did not harm the system's integrity. FCC also made it clear that its decision was not limited to the Carterfone device per se, but rather constituted a general policy.

After the Carterfone decision, the carriers filed tariffs allowing interconnection if a connecting arrangement provided by the telephone company was used to protect the telephone system from harm. In 1972, these tariffs came under additional scrutiny, with FCC recognizing that the carrier-supplied connecting arrangement could impose a substantial and possibly discriminatory burden on consumers installing their own terminal equipment. This potential for discrimination became very clear when consumers purchased their equipment from the same firms which supplied the carriers, with the consumer-supplied equipment requiring a connecting device while the identical carrier-supplied equipment did not.

As a result, FCC in 1972 initiated Docket 19528 to investigate alternative interconnection methods. A

Federal-State Joint Board was instituted to make recommendations to the Commission. Based on the Joint Board's recommendations, the Commission in November 1975 established a registration program for ancillary and data terminal equipment. The registration program provided certain technical requirements to insure that the equipment would not harm the system. Terminal equipment which met these requirements were registered and allowed to be used.

In March 1976, FCC extended the registration program to main station telephones, key telephone systems, and private branch exchanges. The carriers subsequently appealed this action. The Fourth Circuit Court of Appeals affirmed all FCC's decisions in this area, and in October 1977 FCC's registration program became effective. ^{1/} Accordingly, telephone subscribers who have the right under Carterfone to provide and interconnect their own terminal equipment may now do so without a carrier-supplied connecting arrangement, provided such equipment is registered pursuant to the Commission's rules and the telephone company has been properly notified.

The primary rationale behind these decisions was the consumer's right to interconnect with the system devices of his own choosing which increased the system's utility to him without harming the system's integrity. Issues of natural monopoly in the terminal equipment sector were not raised because it is generally recognized that economies of scale are not prevalent in this sector.

With regard to system integrity, FCC felt that the registration program was sufficient to insure that the system would not be harmed and that consumer's rights would not be violated by the interconnection of customer-provided devices.

SPECIALIZED PRIVATE LINE SERVICES DECISIONS

Before the 1960s, only the established carriers and Western Union offered private line services, with those services generally being either telegraph or voice grade circuits. The advent of computers and the electronics revolution, in conjunction with changing social and economic developments and needs, created new demands for specialized intercity communication services. In addition, the introduction of microwave technology promised to lower the costs of intercity

^{1/}Continental Telephone Corp. v. FCC, 537 F. 2d 787 (1976),
cert. denied 429 U.S. 1027 (1976).

transmission and to make it economically feasible for firms other than the established carriers to construct microwave transmission networks to serve the growing demand.

The first FCC decision to respond to these demands was the 1959 Above 890 Decision (27 FCC 359 (1959)), which allocated part of the microwave spectrum to private business users. In issuing this order FCC reasoned that an adequate number of frequencies existed in the microwave spectrum to satisfy both the common carriers' and private systems' future needs. In addition, the Commission determined that there was not much likelihood that the common carriers would suffer any adverse economic effects from the entry of private communications systems.

Despite this decision, a growing demand for specialized intercity communications systems continued, as a result of the growth of computer technology. To evaluate this demand the Commission initiated a rulemaking procedure which culminated in the Specialized Common Carrier Decision (29 FCC 2d 870 (1971)). This decision established a Commission policy favoring new entry in the specialized communications field.

As a rationale for this decision, the Commission argued that the specialized common carriers were not entering a fixed homogeneous market with the same services but rather were seeking to develop new, more heterogeneous markets. As a result, they could be expected to satisfy demands which were not being met by existing carriers and expand the size of the aggregate telecommunications market.

In response to these decisions, the argument of a natural monopoly in intercity transmission was raised. The Commission noted that economies of scale largely occur in markets where the technology is stable and the market is homogeneous. In contrast, FCC argued that the market for specialized communications is characterized by rapidly changing technology and diverse consumer demands.

OTHER DECISIONS ON COMPETITION

In its 1972 DOMSAT Decision (35 FCC 2d 844 (1972)), FCC extended its multiple entry policy for licensing specialized common carriers using microwave systems to licensing specialized common carriers seeking to use domestic satellite systems. As a rationale for this policy the Commission concluded that a competitive supply market would be more dynamic and would encourage service and technical innovation as well

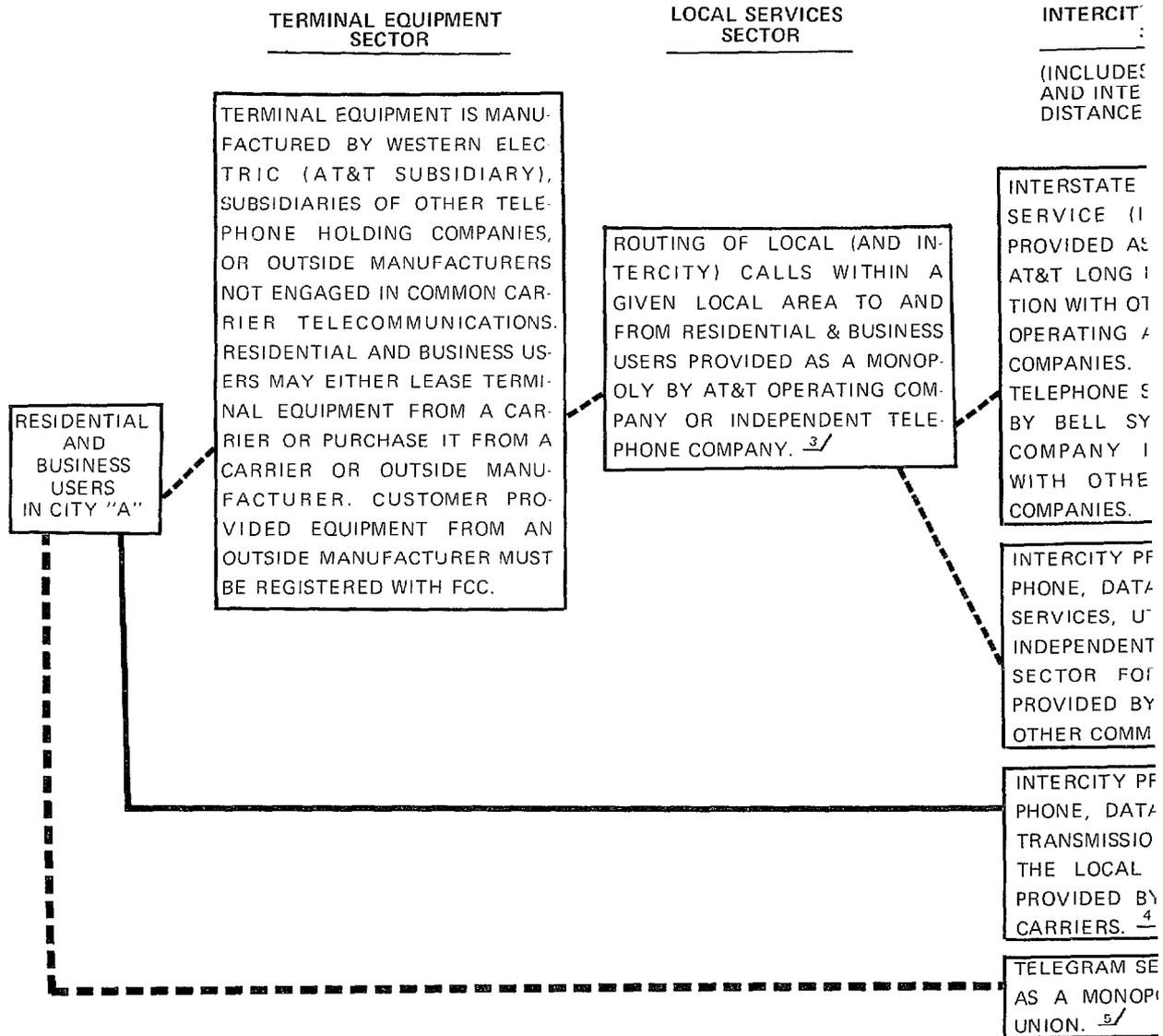
as provide an impetus to minimize costs and prices to the consumer.

In addition, FCC permitted the establishment of "value-added" carriers in 1973 and authorized the unrestricted resale and sharing of domestic telecommunications services in 1976.

Value-added carriers lease channels from other carriers and then add extra services or "value" before reselling them to the final consumer. Resale is the subscription to communication services and facilities by one entity with the subsequent resale to the public for profit. Sharing is a nonprofit arrangement in which several users collectively use and pay for communications services and facilities provided by existing carriers.

(06207)

MAJOR SECTORS AND FIRMS IN THE DOMESTIC C



^{1/} NOT SHOWN IN THIS DIAGRAM ARE MISCELLANEOUS COMMON CARRIERS WHICH PROVIDE TELEVISION AND MOBILE RADIO SERVICES.

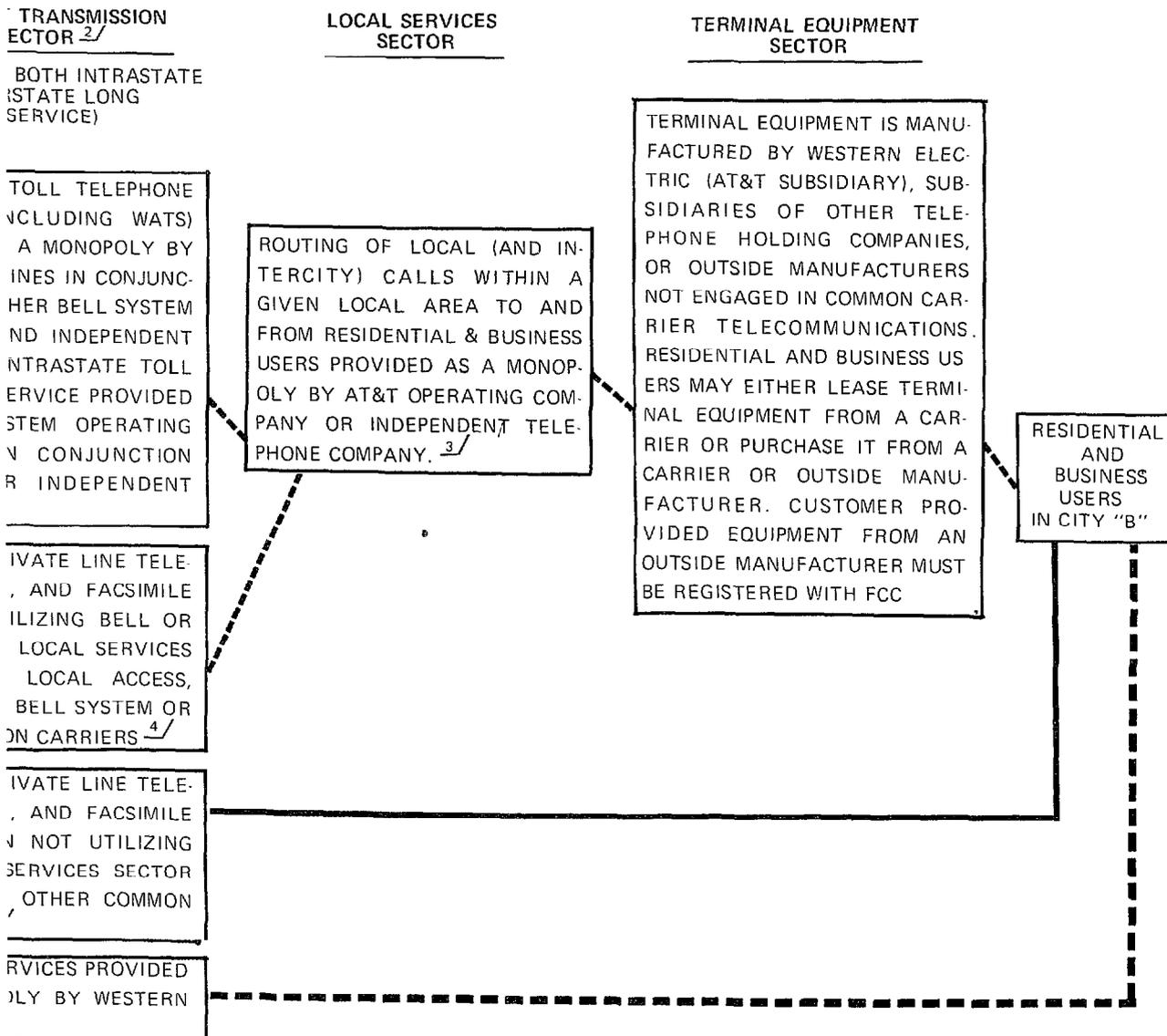
^{2/} THE DIVISIONS SHOWN FOR THIS SECTOR HAVE BEEN IMPACTED BY THE EXECUNET DECISIONS.

^{3/} LOCAL SERVICES SECTOR ALSO APPLICABLE TO SERVICES PROVIDED BY WESTERN UNION AS PART OF LOCAL SERVICES.

^{4/} OTHER COMMON CARRIERS INCLUDE SPECIALIZED COMMON CARRIERS, VALUE-ADDED CARRIER SERVICES, AND OTHER SERVICES.

^{5/} USERS MAY EMPLOY THE LOCAL SERVICES SECTOR TO CONTACT WESTERN UNION FOR TELEGRAM SERVICES.

COMMON CARRIER TELECOMMUNICATIONS NETWORK ^{1/}



...ION SIGNALS TO CABLE TELEVISION FIRMS AND BROADCAST STATIONS AND CARRIERS PROVIDING PUBLIC LAND

SEE p.37.

...IT OF ITS TELETYPEWRITER EXCHANGE SERVICES (TELEX AND TWX).

...DOMESTIC SATELLITE CARRIERS, AND IN CERTAIN CIRCUMSTANCES WESTERN UNION. SEE p.7.

...SERVICES. WESTERN UNION MAY EMPLOY THE LOCAL SERVICES SECTOR TO DELIVER THE TELEGRAM MESSAGE ORALLY.

Single copies of GAO reports are available free of charge. Requests (except by Members of Congress) for additional quantities should be accompanied by payment of \$1.00 per copy.

Requests for single copies (without charge) should be sent to:

U.S. General Accounting Office
Distribution Section, Room 1518
441 G Street, NW.
Washington, DC 20548

Requests for multiple copies should be sent with checks or money orders to:

U.S. General Accounting Office
Distribution Section
P.O. Box 1020
Washington, DC 20013

Checks or money orders should be made payable to the U.S. General Accounting Office. NOTE: Stamps or Superintendent of Documents coupons will not be accepted.

PLEASE DO NOT SEND CASH

To expedite filling your order, use the report number and date in the lower right corner of the front cover.

GAO reports are now available on microfiche. If such copies will meet your needs, be sure to specify that you want microfiche copies.

AN EQUAL OPPORTUNITY EMPLOYER

**UNITED STATES
GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300**

**POSTAGE AND FEES PAID
U. S. GENERAL ACCOUNTING OFFICE**



THIRD CLASS