

**Determining When Competition Is “Workable”:
A Handbook for State Commissions Making Assessments
Required by the Telecommunications Act of 1996**

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Executive Summary

On February 8, 1996, after twenty years of attempts, Congress passed a comprehensive revision of the Communications Act of 1934. The general thrust of the Telecommunications Act of 1996 with respect to the telephone industry, is the promotion of competition: first, by removal of legal and regulatory barriers, and second, by forcing the firms now in the industry—primarily the telephone companies—to deal directly with their emerging competitors.¹ State commissions are given substantial new responsibilities to promote competition, and to monitor and arbitrate the negotiated interconnection arrangements between the local exchange carriers and their competitors. Public-interest criteria by which the industry was formerly regulated are subordinated to the promotion of competition, but are not eliminated. In order to decide upon appropriate policies, regulators, legislators and jurists will have to consider the current effectiveness of competition—which may be different for each group of services, and which may be expected to change over time at different rates for the various service groups.

This report describes the current state of thought in the economics and legal professions on how one ascertains the markets within which competition may be occurring, and whether such competition as exists is sufficient to prevent the exercise of *market power*: the ability of the leading firm or firms to control the price of the product. There are two significant aspects of markets to be considered in determining what the markets are: their geographic scope, and those products or services which are substitutes in each geographic market. Then each market must be evaluated in terms of its structure (the number and size of the firms participating or potentially participating), the likelihood of potential participants actually entering the market and the barriers (legal, regulatory, and economic) to their doing so, and the pricing and marketing behavior and practices (including innovation and the quality of service) of the firms in the market. In particular, the concept of “workable competition” that has been applied by economists and lawyers for many years is a new addition to the thinking of regulators.

¹P.L. 104-104, 110 Stat. 56. There are also substantial revisions of the regulatory treatment of broadcast media, such as radio and television, and cable television (CATV) which was traditionally regulated under Title III of the Communications Act of 1934 as an “ancillary” broadcast service, rather than as common carriage of communications. Except for CATV, these industries have never been subject to state regulation or public-utility-style regulation. Cable television remains subject to very limited state regulation of a highly-modified public-utility form.

Having a competitive industry means far more than simply removing the barriers that impede the entrance of firms into the market. Indeed, it means far more than having a few competitors. Unless there are a substantial number of competitors with significant market shares, unless there is no single firm or group of a few firms with an overwhelming percentage of the market, the large firms in the industry will continue to exercise *market power*: the ability to raise the price. Indeed, many telecommunications markets that were opened to competition as much as two decades ago continue to show clear evidence of market power: price increases in the face of declining costs, price leadership,² and high prices and profits. Regulators must be very cautious in forbearing to regulate public-utility markets in which the forces of competition cannot be relied upon to protect consumers, although they may have to alter the form of that regulation from conventional rate-base-rate-of-return regulation or price-cap regulation.

While the Telecommunications Act of 1996 adds some authority, powers, and responsibilities to the workload of the state commissions, it also curtails their powers in some other respects. Moreover, the Act has the effect of encouraging mergers and other joint arrangements between the firms now in the industry. State commissions must approve any mergers involving regulated firms, and the grounds for approval or disapproval of these combinations must emphasize antitrust concerns: there is little scope for traditional public-interest considerations. There is reason for concern that provisions in the Act for the calculation of "wholesale rates" for all services (including those thought to be implicitly subsidized, such as residential rates) and their resale will force regulators to modify all subsidy and support mechanisms. Most likely, the result will be proliferation of explicit transfer schemes: "universal service funds" and their ilk.

For the Bell operating companies to engage in "manufacturing" and interexchange telecommunications, they must open their local exchange markets to competition by offering to provide a specified list of services and connection arrangements, the so-called "competitive checklist." State commissions must certify compliance with this checklist, and arbitrate the contractual negotiations of firms seeking to utilize the interconnections, and monitor continued compliance.

In order to perform their tasks with respect to reviewing the effectiveness of competition, state commissions will have to consider many different statistics, behaviors, and other data. Some of these are more important than others; that is, some are better or stronger indicators of effective—or ineffective—competition than others. However, it is possible to reduce the many factors to a series of checklists, which should ease the decision making

²The smaller firms change prices in lockstep with moves by the largest firm. This is sometimes called "tacit collusion."

process, and make the resulting decisions easier to support on appeal.

As examples, the methods proposed in this paper are applied to several controversial telecommunications markets: inside wiring, yellow pages, interstate domestic message telecommunications, and international message telecommunications. Interestingly, the inside wiring market is found to be composed of several seemingly independent submarkets. While most of these are competitive, the maintenance and repair of residential inside wiring (including service contracts) is apparently only *potentially competitive* at best, and there are some behavioral indicators that suggest competition in this market is not fully effective.³ Yellow pages are quite clearly a near-monopoly market, with apparently high barriers to entry, though the nature of these is obscure and was not obvious to several well-financed and experienced directory publishers that sought and failed to expand into new markets in competition with established telephone companies. The interstate and international telecommunications markets have become more competitive, yet it is obvious that the structures are not workably competitive. Behavior in the interstate market shows price leadership and other indicators of the limited effectiveness of competition. Behavior in the international market is even worse, with high prices and extremely high profits. In both markets, AT&T is losing market share rapidly, but the markets remain tight three-firm oligopolies, a circumstance that is changing much less rapidly than the market share of the dominant firm.

Finally, the introduction of competition to the regulatory process will require state commissions to obtain new information in order to perform their duties. There are suggestions for the new reports and filings that will be needed.

³The problem may be substantial information barriers for consumers. It is not certain, however, what can be done to increase consumers' awareness of their options with respect to competition. In general, it is expensive in terms of time (and sometimes money) for consumers to obtain information about rates and alternatives. Even in the long-distance markets we do not observe consumers continually changing their interexchange carriers—except, of course, those customers with large long-distance bills. This problem may manifest itself in other competitive markets as well.

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Foreword

The Telecommunications Act of 1996's complete revision and updating of the Communications Act of 1934 will usher in a new era of challenges for state regulators, as they remove entry barriers and encourage competitors. Yet only when competitors are numerous and active enough so that the industry can be termed *workably competitive* may regulators forbear from regulation with the assurance that market forces will protect consumers.

This report suggests systematic ways for regulators to apply current economic concepts as they meet their new responsibilities.

Douglas N. Jones
Director
July 1996

Chapter I

Competition in Economics and Utility Regulation

THE NEED FOR THE PRESENT PAPER

On February 8, 1996, after twenty years of attempts, Congress passed a comprehensive revision of the Communications Act of 1934. Even the version that finally passed as Public Law 104-104, 110 Stat. 56, had been four years in the writing. The general thrust of the Telecommunications Act of 1996 (1996 Act), with respect to the telephone industry, is the promotion of competition: first, by removal of legal and regulatory barriers, and second, by forcing the firms now in the industry—primarily the telephone companies (the *Local Exchange Carriers* or LECs)—to deal directly with their emerging competitors.¹

The 1996 Act changes regulatory relationships by forbidding (in section 253) state statutes or regulations that might “impede” the development of competition.² The Act does not affect state regulation of local exchange rates.³ State public utility commissions will have primary authority to “arbitrate” between the *Local Exchange Carriers* and the competitors that must come to them for interconnection or for the lease of facilities, and will also establish the rates to be charged for such arrangements.⁴ The FCC is to adopt general regulations to govern such negotiations and arbitrations.⁵

¹There are also substantial revisions of the regulatory treatment of broadcast media, such as radio and television, and cable television (CATV) which was traditionally regulated under Title III of the Communications Act of 1934 as an “ancillary” broadcast service, rather than as common carriage of communications. Except for CATV these industries have never been subject to state regulation or public-utility-style regulation. Cable television remains subject to very limited state regulation of a highly-modified public-utility form.

²State access regulations that are consistent with the section are explicitly permitted; see section 251(d)(3). See below for the FCC’s interpretation of this section in its Local Competition proceeding, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, (FCC mimeo 96-182, released April 19, 1996), (hereinafter Local Competition Provisions).

³In sections 251 and 252—section 2(b) of the Communications Act of 1934 has not been repealed. Section 252 requires that compensation arrangements between carriers be based on “mutual and reciprocal recovery of costs” and “a reasonable approximation of the additional costs,” but then says “[t]his paragraph shall not be construed ... to authorize the [Federal Communications] Commission or any State commission to engage in any rate regulation proceeding to establish *with particularity* the additional costs of transporting or terminating calls, or to require carriers to maintain records with respect to the additional costs of such calls.” (P.L. 104-104, 110 Stat. 56, sect. 252[d][2], emphasis supplied.)

⁴Public Law 104-104, section 252.

⁵The FCC has stated its inclination to develop a comprehensive set of regulations to be followed in all states, despite the fact that those states that have *actual* experience with establishing permitting and even promoting local competition have used a wide variety of policies to do so, with no reported differences in their success. See, for

(continued...)

While the 1996 Act seeks to establish rules that will make competition possible in telecommunications markets,⁶ competition will occur when it is technically and economically feasible, and not before. A simple review of two pro-competitive regulatory initiatives of the 1970s illustrates this: both station equipment and interexchange services were opened to competition by FCC and court decisions in the late 1960s and early 1970s. By 1982 it was clear that station equipment was becoming fully competitive, and the market share of the formerly dominant suppliers (such as Western Electric) had declined remarkably, a trend that has continued. On the other hand, interexchange services are still provided by only a few facilities-based carriers (about eighty-six per cent of the market is served by four national carriers: AT&T, MCI, Sprint, and LDDS), and the overall market appears to exhibit "price leadership," a common occurrence in industries with a "dominant firm" or "tight oligopoly" structure.⁷ Recently, the FCC chose to forbear from price regulation of AT&T, ruling that it is no longer a "dominant carrier."⁸ This decision, coming sixteen years after the FCC's decisions to order deregulation of station equipment (also called Customer Premises Equipment or CPE),⁹ and fourteen years after the CPE deregulation took effect, illustrates the differences that may occur in the rate at which competition develops in different markets.

Against this background regulatory authorities, commissions, courts, and legislatures, will have to make decisions with respect to the appropriate regulatory treatment of various telecommunications markets and services as follows:

- They will have to determine the geographic markets within which competition may be occurring.
- They will have to determine which non-identical products and services constitute a product market within which competition may be occurring.
- They will have to ascertain the extent to which competitors exist in the relevant market,

⁵(...continued)

example, Local Competition Provisions, paras. 29, 33, 36, 47, compared with paras. 52, 59, and especially 65, 69, and 81. Other examples may be found, but these should suffice to illustrate the problem.

⁶This includes competition for cable television (CATV) services as well. Impediments to intrastate interexchange competition are to be eliminated by the 1996 Act (section 257, *et passim*), including interexchange competition which is mentioned in the section on access to facilities of the Bell Companies (section 271[b]), and there is a general prohibition against statutes or regulations that "prohibit ... the ability of any entity to provide any interstate or intrastate telecommunications service," (section 253[a]).

⁷We define and discuss these terms at length below, where we discuss the empirical evidence as well. We discuss the application of these principles in chapter 3.

⁸See Motion of AT&T Corp to be Reclassified as a Non-Dominant Carrier, FCC mimeo 95-427 (released October 23, 1995) ("AT&T Reclassification Order," reconsideration pending), paras. 78-84. Note that AT&T committed to maintain price stability for residential customers (paras. 84-87) and that the FCC was unable to resolve studies purporting to show that the interexchange market is characterized by "price leadership" (a concept we discuss in detail, below). In particular, it appears that prices have increased for residential customers since 1994, and that all the price increases have occurred when AT&T raised its prices and its principal competitors (MCI and Sprint) matched the increases.

⁹Amendment of Section 64.702 of the Commission's Rules and Regulations (Computer II), 77 FCC 2nd 384 (1980) (Computer II Final Decision).

and the extent to which potential competitors may exist—and what consideration should be given to any such competitors or potential competitors.

- They will have to evaluate the alternatives available to the customers of the products or services in the geographic markets in question.
- They will have to determine whether the market conditions are such that the producers in the market are unable to exercise “market power”: they lack the ability to raise prices above costs (including a reasonable recovery of their cost of capital—their profit).
- They will have to determine an appropriate mix of regulatory policies for the market in question:
 - price regulation
 - quality regulation
 - customer protections, or
 - the abstention from any or all of the above.

The present report summarizes the relevant economic literature, to assist regulators, legislators and jurists in making the appropriate determinations with respect to the above considerations. The economic analysis contained herein is not novel: it represents the consensus (insofar as a consensus may be ascertained) of the generally accepted economic literature, with an emphasis on those theoretical constructs that have been supported by empirical study.¹⁰ The application to the Telecommunications Act is, of course, new.

COMPETITION AND COMPETITIVENESS

The model of perfect competition that is used in economics courses bears little resemblance to any industry in the real world. Pure competition assumes that there are very many buyers and sellers, each with an infinitesimal share of the market, so that no buyer or seller can influence the price “perceptibly.” Perfect competition adds the assumption that the buyers and sellers can enter and leave the market easily and instantaneously. It also assumes that all participants in the market have access to the same technology, and can acquire the necessary resources (the inputs) at the same price. It further adds the assumption that the inputs and outputs are continuously divisible (that is, there are no “lumpy” investments). And, finally, perfect competition assumes that there is perfect and complete information on present and future market conditions available to all participants.¹¹

¹⁰Some of this material has been developed from David Chessler, *The Effect of Toll Competition on Prices, Costs and Productivity of the Telephone Industry in the United States: Report to the Canadian Radio-television and Telecommunications Commission and the Joint Federal-Provincial Examination of Competition in Public Long Distance Telephone Service* (Hull, Que.: Canadian Radio-Television and Telecommunications Commission, December, 1988 [The *Sherman Commission Report*, Volume 4.], and Bethesda, Md.: David Chessler and Associates, January, 1989), chapter 3 and Appendix A. Idem, Prefiled Testimony, Developing and Preparing Criteria for Determining Whether Services are “Competitive” under the Provisions of the Code of Virginia, Virginia State Corporation Commission, Case Number PUC920029, November 4, 1993, exhibit 2, chapters 4 and 5.

¹¹Scherer and Ross, *Industrial Market Structure*, pp. 15-18. Cf. Paul Samuelson, *Economics*, 8th edition (New York: McGraw Hill, 1970), p. 433. The requirement for knowledge of market conditions must be somewhat tempered—if knowledge really were complete, perfect, and instantaneous, a cartel might be possible.

Although the model of perfect competition describes the structure of no actual industry,¹² it is extremely robust in describing the *behavior* of actual markets. As Shepherd says:

This abstract model gave precise results, but many economists and business managers rightly pointed out that it was unnecessarily farfetched. The mainstream concept of competition is quite robust even when there are large departures from perfect conditions. Markets with relatively few rivals are often intensely competitive, in a dynamic process of struggle over time....

Competition is, as noted, a robust concept: it applies over a wide range of market conditions. For the market types listed in [table 1.1], competition is usually effective even when concentration rises to substantial levels. Only when conditions approach very high degrees of monopoly does competition lose most of its force and become *ineffective*.¹³

Indeed, modern theorists distinguish at least six market conditions or industry structures. We summarize these in table 1.1.

The key question, then, is in what market structures do the suppliers have appreciable control over price. As Shepherd and Wilcox say:

for each ten points increase in market share, the profit rate usually rises about 2.5 points. This reaches about a 20 percent rate of return for market shares of 50 percent, and at 70 percent of the market, a typical firm's profits may reach 25 percent of the firm's capital, nearly triple the competitive rate. This actual profit is lower than it could be, because X-inefficiency¹⁴ usually absorbs some profits. Concentration is related to profit rates, but more loosely. Each 10 points of concentration goes with about one extra point of profit rate. Some researchers report a stair-step rise at about 50 percent concentration.... In any case, concentration is related to higher levels of price and profit....

Market power also reduces *efficiency*. A degree of internal inefficiency usually emerges in secure firms, reaching perhaps 3 to 5 percent of costs on average when market shares reach 70

¹²Texts published 30 or even 20 years ago would point to bituminous coal production and the manufacture of cotton "grey goods" (weaving plain, unbleached, undyed, cotton cloth) as industries that approximated the conditions of pure competition. Bituminous coal has been concentrated in the hands of energy conglomerates (principally the oil companies). Cotton grey goods may still meet the definition of the model. Wheat farming was always problematic because of the role of government price supports and other market interventions in establishing the actual price and quantities produced. Since most wheat is now bought by a few large grain dealers, the structural conditions are not met on the demand side. Empirically, "perfect competition [is] simply impossible. John Johnston, in commenting on 37 ... studies, made for a wide variety of industries, concludes that ... the varied industries they attempt to describe are not purely competitive." John S. McGee, *In Defense of Industrial Concentration* (New York: Praeger Publishers, 1971), p. 17, citing Johnston, *Statistical Cost Analysis* (New York: McGraw Hill, 1960), pp. 168, 193.

¹³William G. Shepherd, *The Economics of Industrial Organization*, Third Edition (Englewood Cliffs: Prentice Hall, 1990), p. 17. Hereinafter, *Industrial Organization*. Emphasis in the original.

¹⁴[Economists usually use the term "efficiency" to refer to "allocative efficiency," that is, that the resources of society are allocated in such a manner that no person can be made better off without making some other person worse off. The term "X-efficiency" is used for the meaning of "efficiency" in common usage, that production and consumption take place without waste. The term stems from Harvey J. Leibenstein, "Allocative Efficiency vs. 'X-Efficiency,'" *American Economic Review*, Vol. 56 (June, 1966). Footnote added by present author.]

TABLE 1.1
Types of Markets, Shading from Pure Competition to Pure Monopoly

Kind of Competition	Number of Producers	Degree of Product Differentiation	Part of US Economy Where Prevalent	Degree of Control over Price	Methods of Marketing
<i>Pure Competition</i>	Over 50: None has appreciable market share	None; products are identical or nearly so	A few agricultural industries	None	Market exchange or auction; little selling expense
<i>Monopolistic Competition</i>	Many: None has over 10% of the market ^a	Some; products may be similar, or there may be real differences	Retailing; clothing; some services	None or very slight	Attempts at product differentiation; advertizing and quality rivalry
<i>Loose Oligopoly</i>	Leading 4 firms, combined, have 40% or less of the market; collusion virtually impossible	Often little difference; sometimes some differentiation	Much of manufacturing	Some little; insignificant to moderate	As above; advertizing very heavy
<i>Tight Oligopoly</i>	Leading 4 firms, combined, have 60-100% of the market; collusion ^b to fix prices relatively easy	Little to some	Steel, Aluminum, Automobiles	Significant: 5-10% or more.	Product differentiation and advertizing; administered prices (price leadership, tacit collusion, etc)
<i>Dominant Firm</i>	One firm has 50-100% of the market and no close rival	Not applicable	Often local markets; intercity telecommunications	Substantial	Price leadership; tacit collusion
<i>Pure Monopoly</i>	One firm has 100% of the market	Not applicable	Local public utilities; local telephone or CATV	Very substantial	Not applicable

Source: Adapted from Samuelson, *Economics*, table 26-1, p. 489; Shepherd, *Industrial Organization*, table 1.2, p. 14.

Notes: ^aSome authorities would emphasize that in Monopolistic Competition the competitors differentiate their products, so they can attain a minor price advantage, or reach a different market segment. Most retailing and clothing manufacture are considered to fall into this category.

^bThe collusion may be "tacit," involving the firms following "cues" of market leaders.

per cent. Allocative inefficiency also occurs ..., but it is diffuse and has proven difficult to measure....¹⁵

Thus, while a loose oligopoly may not be associated with substantial price increases, which will be reflected in high profits, the types of market structures that predominate in most communications markets do seem to be associated with elevated prices and elevated profits, or excessive costs.

In most instances the relevant market is a distinct service offered in a geographical area

¹⁵William G. Shepherd and Clair Wilcox, *Public Policies Toward Business*, Sixth Edition (Homewood, Ill.: Richard D. Irwin, Inc., 1979), pp. 50-52 (emphasis in the original), citing Robert D. Buzzell, Bradley T. Gale, and Ralph G.M. Sultan, "Market Share—a Key to Profitability," *Harvard Business Review*, Vol. 53 (January-February, 1975). Footnote added.

which can be clearly defined. However, in some instances competition occurs from firms that are not considered to be in the telecommunications industry. Electronic mail is one of the extreme examples of a communications service where much of the competition comes from firms not normally classified as in the communications industry (because firms are classified according to the industry in which they receive most of their revenues). Other examples may exist, and these will be found when closely competing services and their suppliers are listed.¹⁶ These services that cross industry frontiers present a few difficulties for analysis, the most important of which is that the market shares of the firms providing the service may be hard to ascertain and compare. A commission's inability to compel non-utility firms to provide information may impede analysis in some instances, although alternative sources of information may sometimes be found.

THE CONCEPT OF "WORKABLE COMPETITION"

The Telecommunications Act of 1996 speaks, in a few instances, of "competition."¹⁷ Competition appears to be defined as a lack of market power—a lack of the power to influence price.

The Commission shall forbear from applying any regulation or any provision of this Act ... if the Commission determines that—

"(1) enforcement of such regulation or provision is not needed to ensure that the charges, practices, classifications or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory.

"(2) enforcement of such regulation or provision is not necessary for the protection of consumers;... (New sections 10(a)(1) and 10(a)(2), of the Communications Act, added by section 401 of the 1996 Act).

The Federal Communications Commission uses the term "non-dominant" to describe carriers that "[lack] market power in the [specified] market," in which the specified market was "the overall market for interstate, domestic, interexchange telecommunications services."¹⁸

The Commission has never definitively concluded, either in its rules or in the Competitive Carrier orders, that a carrier must demonstrate that it lacks the ability to control the price of

¹⁶See the discussions of the Yellow Pages and Inside Wiring services in chapter V.

¹⁷See new section 10, "Competition in Provision of Telecommunications Service," added by section 401, "Regulatory Forbearance," in the Telecommunications Act of 1996. The term "competitive effect" is used in 10(b), and section 271(b)(2)(B) is a "competitive checklist."

¹⁸See, for example, Motion of AT&T to be Reclassified as a Non-Dominant Carrier, FCC Mimeo 95-427 (released October 23, 1995), paras. 1, 19 (http://www.fcc.gov/Bureaus/Common_Carrier/Orders/fcc95427.wp, accessed April 20, 1996). (Hereinafter, AT&T Reclassification Order.) The FCC incorporated this definition into its rules, 47 C.F.R. 61.3(o), 61.3(t).

every service that it provides in the relevant market before the Commission can classify that carrier as non-dominant. Indeed, Section 61.3(o) of our regulations states only that a dominant carrier is defined as "a carrier found by the Commission to have market power (i.e., the power to control prices)." We believe, in light of the evidence in this case and the state of competition in today's interstate, domestic, interexchange telecommunications market, we should assess whether AT&T has market power by considering whether AT&T has the ability to control price with respect to the overall relevant market.

... AT&T does not have the ability to control prices in the overall interstate, domestic, interexchange market. The record indicates that, to the extent AT&T has the ability to control prices at all, it is only with respect to specific service segments that are either *de minimis* to the overall interstate, domestic interexchange market, or are exposed to increased competition so as not to materially affect the overall market...¹⁹

The Congress and the FCC are attempting to apply something similar to the economists' definition of "workable competition."

We cannot expect competition to become everywhere "perfectly perfect," in the strict sense of the economist. But what we must strive for is what the late J. M. Clark of Columbia University years ago called "workable competition." By public and private policies we can hope to improve the efficiency with which market prices reflect underlying individual needs, desires, and wants against the background of the true costs of goods—marginal costs in terms of alternative goods that could be produced and in terms of used-up scarce productive factors which involve sweat and disutility. Just as concentration in control of share of market was made to decrease from 1900 to mid-century, so by the century's end can monopoly imperfections be weakened further. But *laissez fair* cannot be counted on to do this. Public vigilance and support for antitrust will be required.²⁰

Thus, the concept of "workable competition" has two aspects: the first, which is reflected fairly explicitly in the 1996 Act and in the FCC regulations and orders, is that (1) the behavioral and structural characteristics of pure competition (as defined by economists) might not be met, but that the deviations may still be of little economic consequence. The second is that, (2) even where the deviations from competitive behavior and market structure do have significant economic consequences, there may be other economic benefits derived from the behaviors or structures that are of such benefit to society that they outweigh the losses stemming from the anticompetitive behavior and structures. This second aspect of workable competition is not discussed by the FCC or the drafters of the statute, because these would appear to be situations in which some form of regulatory activity might be able to mitigate the losses while permitting the gains: in short, in a public utility industry, if deviations from pure competition are to be permitted because of economies of scale, destructive or unstable competition, or any other consideration, some form of economic regulation would appear to be required. It is for this reason that the statute requires that the

¹⁹AT&T Reclassification Order, paras. 25, 26 (footnote omitted).

²⁰Samuelson, *Economics*, p. 507.

FCC find that no consumer protections are needed before it can “forbear” from regulation—and the FCC made its specific finding that, although there were deviations from perfect competition, they were in its opinion “*de minimis*.”

Workable competition may be defined as follows:

[T]he antitrust laws are not ... unwise in promoting competition.... Rivalry can tend toward the same results as the competitive model.... Rivalry tends to keep costs and prices lower and quality higher than monopoly would....

It is said that an imperfect market whose results are “reasonably compatible” with “general economic welfare” is “workably competitive.” Workable competition is not a precise concept,²¹ but directs our attention to firm behavior, economic performance, and market structure.

... [T]he general behavioral outlines are much clearer than those for structure or performance. For example, each firm should make its production and marketing decisions—especially on price and output—independently and without collusion with its competitors. Firms should not attempt to exclude or eliminate rivals ... except through competition on the merits, nor, in general, should a seller attempt to link the purchase or sale of any product ... any other....

The most persuasive criterion for judging whether a market is workably competitive is its actual performance. The following appear to be general signs of non-workable competition:²²

1. profits persistently above usual investment returns,
2. “scale of many firms seriously outside the optimal range,”
3. “considerable excess capacity not justified by secular change or reasonable stand-by provision,”
4. “excessive” selling costs,
5. “persistent lag in adoption of cost-reducing technical changes or persistent suppression of product changes which would advantage buyers.”

“A market could be considered a case of unworkable competition if it had an extremely bad rating in any direction or moderately bad or suspicious ratings in several.... For criteria of tolerable deviations, we have little more than the ad hoc judgements of the observer.... [A]ny economist’s assessment of the workability of competition is likely to have a highly provisional and even personal character and is likely to rest heavily on the ad hoc assessment of obvious alternatives in given situations.”

In addition, the evidence itself will often be ambiguous....

The key structural variables are

1. the number and size distribution of sellers and
2. the conditions of entry by other firms into the market....

Some have suggested that a market would ordinarily be workably competitive when there are five to ten “effective” rivals, where the largest firm does not exceed twenty to thirty-three per

²¹Varying notions of workability are reviewed in S. Sosnick, “A critique of Concepts of Workable Competition,” *Quarterly Journal of Economics*, Vol. 72, p. 380 (1958); R. Knox, “Workable Competition and Public Policy,” *Antitrust Law and Economics Review*, Vol. 1, p. 41 (Spring 1968).

²²The ... list and quotations are from J. Bain, “Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence,” *American Economic Review*, Vol. 40, p. 35, 37–38 (1950)....

cent of the market.²³ Others²⁴ suggest that ... when there are as few as eight firms with two-thirds or more of a market [it is not].²⁵

Clearly, by these criteria, few economists would term an industry "workably competitive" unless it were a *loose oligopoly* as that term is used in table 1.1. In a later section of this paper we discuss criteria whereby regulators, courts, or legislators can judge whether an industry is becoming more competitive, even if it does not meet the economists' and lawyers' definition as developed by Areeda, Bain, Caves, Kaysen and Turner in the passage quoted above.

COMPETITION AND QUALITY

Areeda mentions that one of the criticisms levied against monopolies is that there is a deterioration in quality. This seems to be at variance with experience in telecommunications in the United States, where service quality in the Bell System before the advent of significant competition, was extremely high. Service quality among the independent telephone companies was also high by international standards. Some authorities have attributed the high quality to a "culture of service,"²⁶ while others have pointed out that rate-base-rate-of-return regulation, by providing an incentive to "pad the rate base" caused the firm to acquire excessive amounts of capital.²⁷ In general, this capital will not be completely idle, and so will lead to excessive production;²⁸ this can cause the firm to have service quality in excess of that provided by an unregulated firm. As Kahn says:

[P]ublic utility companies [tend] to adhere to excessively high (because excessively costly) standards of reliability and uninterruptibility of service, with correspondingly high and costly specifications for the equipment they employ. The alleged tendency [to maintain a large

²³"Report of the Task Force on Productivity and Competition" (1969), reprinted in *Journal of Reprints in Antitrust Law and Economics*, Vol. 1, p. 829 (1969). [This is known as the "Neal Commission." Identification added by present author.]

²⁴R. Caves, *American Industry: Structure, Conduct, Performance*, 2nd Ed. (1967), p. 107, n. 3.

²⁵Phillip Areeda, *Antitrust Analysis: Problems, text, cases*, 3rd Edition (Boston: Little, Brown and Company, 1981), pp. 40–42. Some footnotes omitted. There have been a number of proposals for antitrust legislation with similar peril points. Areeda cites C. Kaysen and D. Turner, *Antitrust Policy* (1959), pp. 266–272, at n. 8, who proposed legislation that would intervene "where, for five years or more, one company has accounted for 50 per cent or more of the sales in the market, or four or fewer companies have 80 per cent or more of sales." Areeda also notes two proposals calling for intervention where four-firm concentration ratios exceed 70 per cent, one of which was the Neal Commission of 1969, cited above. McGee points out that the Neal Commission's proposed legislation defined an "oligopoly firm" as any firm with a market share over 15% in 2 of the 3 most recent years. *In Defence of Industrial Concentration*, p. 5.

²⁶See Alvin von Auw, *Heritage and Destiny: Reflections on the Bell System in Transition* (New York: Praeger, 1983), e.g., pp. 40–42, 45.

²⁷Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review*, Vol. 52, no. 5 (December 1962), pp. 1052–69. Fred M. Westfield, "Regulation and Conspiracy," *American Economic Review*, Vol. 55, no. 3 (June, 1965), pp. 424–43. Stanislaus H. Wellisz, "Regulation of Natural Gas Pipeline Companies: an Economic Analysis," *Journal of Political Economy*, Vol. 71, no. 1 (February 1963), pp. 30–43.

²⁸Exceptions can be deduced on grounds of economic theory. See Charles W. Needy, *Regulation Induced Distortions* (Lexington, Mass.: Lexington Books, 1975), pp. 13–35.

amount of standby capacity, in excess of peak requirements] is clearly a special case of this one. It is, of course, extraordinarily difficult to demonstrate. Conceivably, ... telephone subscribers are so annoyed by any delay whatever in completing their calls or by wrong numbers or misconnections that they ... would pay whatever is necessary to obtain the very maximum of service that it is physically possible to produce. But the need for an economic calculus in matters such as these is inescapable: ... telephone companies do not place all calls instantaneously and correctly, nor do they devote unlimited resources into methods of improving their performance in these respects. It is entirely conceivable, therefore, that the economic calculations they do make are, consciously or unconsciously, influenced by the [Averch-Johnson] consideration, particularly since it would have a tendency to reinforce their other motivation to do the best possible job—pride, an instinct of workmanship, a desire to minimize public complaint, and so on.²⁹

This incentive is not among the incentives facing the unregulated monopoly, which has the normal incentives to minimize costs for its planned output and thereby maximize profits. The unregulated monopoly need not fear loss of sales to competitors, but an adjust both its price and the quality of its product to attain the desired level of sales; it is merely an additional dimension to the problem of maximizing profit by minimizing cost and maximizing price, subject to the constraints of customer demand and the firm's production function. Thus, even when rate-base-rate-of-return regulation is not practiced (for example, in trucking prior to its deregulation, or stock brokerage), "[t]he consequence is an inherent tendency to what might be termed service inflation, in which an equilibrium of cost and price is achieved not by reducing price to marginal cost but by raising marginal cost to price."³⁰

To the extent that competition is effective in causing the formerly regulated firm to cease employing excessive capital in order to reduce its costs, quality of service may suffer. If other, non-capital, costs have also been increased due to a general slackness,³¹ these will also be reduced. Indeed, as Baumol and Blinder observe, "[d]eregulation has badly hurt unions such as the Teamsters ... and the Airline Pilots Association. In the new competitive climate, firms have been forced to make sharp cuts in their work forces and to resist wage increases.... Indeed, there has been strong pressure for retrenchment...."³² Any reduction

²⁹ Alfred E. Kahn. *The Economics of Regulation: Principles and Institutions*, 2 vols. (New York: John Wiley and Sons, 1971), Volume 2: Institutional Issues, p. 53. Footnotes omitted. Hereinafter, *The Economics of Regulation*.

³⁰ Kahn, *The Economics of Regulation*. Vol. II, p. 207. See also his discussion of trucking, p. 189, and of air transportation, pp. 209–212.

³¹ A lack of what economists, following Leibenstein, call "X-efficiency."

³² William J. Baumol and Alan S. Blinder, *Economics: Principles and Policy*, 6th edition (Ft. Worth: The Dryden Press, 1994), p. 468. Some authorities believe that labor, both unionized and management, is a the major beneficiary of any monopoly power the firm may have, appropriating in the form of wages, salaries and benefits funds that might otherwise have been reported as profits and gone to the shareholders. This is a possible interpretation of Paul Samuelson's statement that "[if] the targets for union organizers are profitable, expanding, high-productivity, concentrated industries; then the union may be riding aboard a moving demand curve and be given credit for wage increases that would have occurred even in its absence." *Economics*, p. 566. See the formal analysis in Baumol and Blinder, pp. 410, 417–421. Dennis W. Carlton and Jeffrey M. Perloff point out that the vast majority of unions in the transportation industries had guarantees of both wages and employment, suggesting that the union was capturing

(continued...)

that does occur is particularly likely for those aspects of service quality that are readily controlled, such as response times to customer service requests or trouble reports. Aspects of service quality that are largely mechanical, such as bit error rates, may not experience as much deterioration.

As the environment in the utility industries becomes more competitive, but remains less than fully competitive, the regulators have to direct their attention to quality issues to a greater extent than previously. No longer can they assume that rate-base padding in a cost-plus environment will ensure that the quality of service stays high. Moreover, until competition becomes effective, they cannot assume that management pressures on costs will not cause service quality to deteriorate. Early in the deregulatory era an experienced regulatory economist noted that:

Consistent, well-defined standards of weights, measures and quality are essential if markets are to function efficiently. In the absence of such standards, valid price comparisons cannot be made between competing goods or services. In the telephone industry, quality of service has many dimensions and varies over time and place. Delays in initial service hook-ups, long waits for dial tone, noise and cross-talk on the line, frequent "no circuit available" conditions and inadequate amplifications are examples of quality defects. Statistics are collected by carriers and commissions on these and other quality factors and subjected to analysis to discover persistent weaknesses in the system.³³ Carriers not subject to traditional rate base regulation, sometimes referred to as "other common carriers" (OCCs), are not subject to the quality surveillance programs of regulatory commissions. Even for the traditionally regulated carriers, such programs are in a period of decline at the present....

In general, as the technical complexity of a product increases, or extreme simplicity is camouflaged by claims of complexity, accurate quality information seems more and more to be displaced by PAP (Puffery, Advertizing, Propaganda).³⁴ This tendency renders inefficient the functioning of the market and contributes to needless waste. In Veblenian terms, the behavioral basis of this phenomenon might be characterized as the swamping of the instinct of workmanship by the pecuniary instinct.

In the absence of reliable quality standards, two important negative characteristics of "free" markets arise, (1) valid price comparisons, as noted above, cannot be made, and (2) corrections (if they are possible) take place only after damage is [d]one.... [I]f a telephone customer is plagued by frequent busy signals, inordinately long waits for the dial tone and poor audio quality, he cannot change to another local service company. And ... when buying telephone equipment the

³²(...continued)

some or all the "consumer surplus" that would otherwise contributed to the firm's profits; such contracts were rare in the economy as a whole. *Modern Industrial Organization*, 2nd edition (New York: Harper Collins, 1994), pp. 444-445.

³³The FCC began a computerized quality surveillance system in the Common Carrier Bureau in 1969. In recent years it has virtually disappeared.

³⁴This is no trivial concern, in view of the fact that entire industries, e.g., radio broadcasting, television and newspapers are almost totally dependent upon PAP.

customer takes the risk of poor quality. It is clear, then, that in all market situations, effective and well-understood rules as to product and service quality are essential.³⁵

Regulators and the Quality of Service

Regulators recognize this potential problem. All or nearly all rate cap orders, federal or state, have some explicit commitments by the dominant carrier to maintain high service quality. There is evidence that some aspects of service quality in the telephone industry have deteriorated recently. This appears at variance with the statements above, that quality is one aspect of competition in workably competitive industries, those characterized by monopolistic competition or loose oligopoly. Quality has to be broadly defined, with multiple measures. As Bruce Hill, a vice-president of Olin Corporation said, "[q]uality is everything that goes with having a satisfied and, hopefully, a continuing customer; it's the quality of service, of responsiveness, and of error-free delivery."³⁶

There has always been company-to-company variability in service quality. Even among the Bell Companies, some appear to have maintained higher standards than others. Many of the smaller independents have admirable reputations for good service. The service problems of the late 1960s that caused the FCC to develop a system of quality of service reports abated in the 1970s, so that in the early 1980s Dr. Nelson could report that the service quality report program was "in a period of decline." Even so, when the Automated Reporting Management Information System (ARMIS) program was developed in 1987, the FCC included quarterly and semi-annual service quality reports.³⁷

On February 25, 1996, Whitey Thayer of the FCC staff made a presentation before the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Communications, in which he presented an analysis of the service quality reports submitted by the Bell Regional Holding Companies (RHCs) for the years 1991 through 1995.³⁸ To summarize, he found that, although there are substantial differences and quarter-to-quarter fluctuations, the general trend has been that quality of local service has deteriorated. Moreover, the report of customer satisfaction that was abandoned in 1993 had been showing

³⁵Boyd L. Nelson, "Regulation and Effective Rivalry in Telecommunications Markets and Submarkets," in Jane L. Racster, ed., *Issues in Regulating Imperfectly Competitive Telecommunications Markets* (Columbus, Ohio: The National Regulatory Research Institute, 1986), pp. 102-104, footnotes in the original. Thus, von Auw recalls an "unsubtle young manager who asserted that 'we're in business to make money'" and describes him as, "not so much wrong as ... premature." *Heritage & Destiny*, p. 43.

³⁶Quoted in L. William Seidman and Steven L. Skancke, *Productivity: the American Advantage; how 50 U.S. Companies are Regaining the Competitive Edge*, (New York: Simon and Schuster, 1990), p. 37.

³⁷In the Matter of Reporting Requirements for Certain Class A and Tier 1 Telephone Companies (Parts 31, 43, 67 and 69 of the FCC's Rules), Report and Order, CC Docket No. 86-182, 2 FCC Rcd 5770 (1987), (ARMIS Order), modified on reconsideration, 3 FCC Rcd 6375 (1988).

³⁸Whitey Thayer, "ARMIS Database: Converting Data to Information," Presentation before the NARUC Staff Subcommittee on Communications, February 25, 1995 (unpaginated mimeo).

steady and severe declines for the Bell Regional Holding Companies. Overall, he reports that while there are substantial differences among the Regional Holding Companies, there is a generally increasing trend in the trouble rate.³⁹

One of the most interesting trends is in the statistic "No Trouble Found," reported when the carrier is unable to find and clear the trouble reported by the customer. It is not known why the trend should be increasing, although Thayer believes that there is a "Significant difference [in No Trouble Found] between business [and] residence and among RBOCs."⁴⁰ There seems to be no evidence as to whether the increasing trend reflects increased complexity of customer problems requiring more advanced testing procedures to diagnose, customers demanding higher quality service than the carrier believes it is obligated to provide, or the carriers are forcing their craftspeople to "clear" cases as quickly as possible, even if the customer's complaint has not been addressed—or at least Thayer does not report on any evidence.⁴¹

Thayer also reports that out-of-service repair intervals are increasing, and that residence repair intervals are forty-four per cent more than business repair intervals (averaging twenty-six hours for residences and only eighteen hours for businesses). Moreover, when the repair has to be repeated, the interval for the repeated service is greater than the interval for the initial repair.⁴²

Thayer reports that, for the seven Bell Regional Holding Companies, employment declined between 1992 and 1994.⁴³ The overall decline in employment was about twelve per cent, while average compensation increased by almost eleven per cent.⁴⁴ This suggests that, despite the well-publicized layoffs of middle managers, the bulk of the reductions have been among lower-paid workers, presumably including many of the craftspeople, operators, and clerical personnel who are involved in the actual provision of service.

³⁹"ARMIS Database," viewgraph "Local Service: Troubles and Trouble Rate" and supporting viewgraph charts.

⁴⁰"ARMIS Database," viewgraph "Local Service: No Trouble Found." Thayer does not report any calculations to show that the difference is "significant" in the statistical sense of the term. [The term RBOC (Regional Bell Operating Company) is used by some to refer to the Regional Holding Companies, even though they are not "operating companies": they do not, themselves operate telephone networks or provide telephone services. but holding companies: companies that own the companies that actually provide the utility services.]

⁴¹For some years there have been stories about carriers ignoring reports of noise on the lines if the complainant admitted using the line for data transmission. Thus, one may speculate that the increased use of local telephone service for data and telefacsimile transmissions are a partial cause of the increased incidence of "no trouble found," and the somewhat higher incidence among business customers.

⁴²"ARMIS Database," viewgraph "Local Service: Out-of-Service Repair Intervals" and viewgraph chart "Local Service: Out-of-Service Repair Interval."

⁴³"ARMIS Database," viewgraph chart "RBOC Employment." The employment declines occurred for all companies in all years, and were generally large in percentage terms. The exception is Bell Atlantic which reported a small increase in employment in 1993 (followed by an approximately ten per cent decrease in 1994).

⁴⁴"ARMIS Database," viewgraph chart "Employment: 7 RBOCs + GTE." [GTE Corporation is the largest holding company system among the "independent" telephone companies.]

Quality and the Degree of Competition

There have been no systematic studies of the relationship between the level of quality and the degree of competition. Anecdotal evidence from a few industries, notably automobiles⁴⁵ and electronics, suggests that quality may improve when significant new competition enters an industry. The automobile industry is particularly suggestive, since the market structure, including the market shares of the American firms, is somewhat comparable to that of the telecommunications industry.⁴⁶

Thus, in addition to being a consumer-protective issue, changes in service quality may serve as an indicator of the degree of competition in a market. The end of regulation, the end of controlled prices and essentially guaranteed profits,⁴⁷ has been associated with declines in quality. The change to price-cap regulation may have exacerbated the tendency for quality to decline in the telecommunications industry, but the example of airline deregulation, with its declines in service to some smaller communities (especially by the major airlines), reductions in customer amenities, and continued concerns about safety issues (though nothing has been *proven*)⁴⁸ suggests that price caps are not the sole culprit.

In the early stages of deregulation, when there is no effective competition, there may be few incentives for the maintenance of service quality (which might, in any case, have been artificially raised by the effects of rate-of-return regulation). Eventually, though, effective competition (even *workable* competition) may develop in the industry. Table 1.1 suggests that at this point "quality" will be one element of industry competition, while Areeda reminds us that workable competition will keep quality higher than [an unregulated] monopoly would.

It is reported that, in many instances, improvements in quality have been associated with decreases in costs.⁴⁹ However, most of the examples are from manufacturing industries

⁴⁵Japanese manufacturers sold under 10 per cent of the cars in the United States in 1975. By 1980, they sold over 20 per cent of the cars, whereupon quotas were imposed. Carlton and Perloff, *Modern Industrial Organization*, p. 774, citing Robert W. Crandall, "The effects of US Trade Protection for Autos and Steel," *Brookings Paper in Economic Activity* (1987), pp.271-88. [By the late 1980s quality of American cars had begun to improve (reportedly at different rates among the three major American manufacturers, and when quotas were withdrawn market shares remained steady. Updating for the late 1980s and the 1990s added by present author.]

⁴⁶The percentage of value added in manufacture accounted for by the first 4 companies (essentially, the first 3, General Motors, Ford and Chrysler) was 56% in 1947, 75% in 1954 and was still 75% in 1958. There were 779 firms in the industry in 1947, 991 in 1954 and 989 in 1958. *An Anthology of Studies in Industrial Concentration by the Conference Board: 1958-72*, (New York: The Conference Board, 1973), Section III, Table 11, p. 28. It is commonly thought that imports of European imports became a significant factor in the market in the late 1950s. Japanese imports became significant in the middle to late 1960s.

⁴⁷The guarantee is of an *opportunity* to earn profits of a satisfactory level, and not of the profits themselves. If market conditions do not permit profitability, the firm will not earn them. (For examples, consider the declines of Western Union and the railroads while still under regulation.) However, for monopoly firms in a growing industry, there is a practical guarantee of any permitted level of profits, even though there is no legal guarantee, per se, of profits.

⁴⁸Baumol and Blinder, *Economics*, pp. 468-470.

⁴⁹For example, see Seidman and Skancke, *Productivity*, pp. 74-75, 91-96, 162-164, 202-203 *et passim*.

(though a few are from services, transportation, and even government). We have found no reported studies of quality improvement in telecommunications leading to cost reductions. Moreover, the experience of the airline industry, as reported by Baumol and Blinder, was that some aspects of quality improved while related aspects declined.⁵⁰ As Viscusi, Vernon and Harrington point out, the hub-and-spoke system (which was unanticipated before deregulation) “trades off longer travel time ... for a wider array of departure times.”⁵¹ Many attributes of service quality, including travel time, on-time performance, and safety have an effect on the prices that customers will pay for the service, rather than the service of a competitor.⁵² It should be pointed out that, after deregulation there were many mergers, and the number of “effective competitors,” which rose for a few years, then declined and has remained lower than at the time of deregulation.⁵³

There do not appear to be any studies to identify the point at which competition in a formerly monopolized or regulated industry becomes sufficiently “workable” so that quality of service will rise. We cannot say whether some minimum number of competitors will be sufficient, or whether the competitors must be above—or under—a certain size. Neither can we necessarily be sure what attributes of service quality will improve: we may predict that they will be attributes that can be charged for, or that will be particularly effective in attracting customers, and perhaps that they will be inexpensive to provide, or will lower costs. However, the producers may seek some elements of quality to enhance their reputation, or for marketing purposes, without their being clearly related to a salable attribute. Presumably, some other attributes of service that might have been promoted when the industry was a regulated monopoly will decline until they stabilize at a much lower level than under regulation.

To the extent that other industries will follow the pattern we think we have observed—far too few industries have been deregulated for us to be sure that other industries will

⁵⁰*Economics*, pp. 468–469, pointing out that hub-and-spoke patterns give customers more options as to the number of flights between origins and destinations, but are not as convenient for customers as direct flights. The larger airlines have left the smaller communities, but in most instances they have been replaced by commuter airlines that, on average, offer more frequent flights. “A few communities have been left without service or with service of poorer quality, but other locations have benefited considerably.”

⁵¹*Economics of Regulation and Antitrust*, p. 582.

⁵²*Ibid.*, pp. 481–582. For example, customers will pay \$77.80 more for an otherwise equivalent flight on an airline that has not had a fatal accident in the past 6 months. A 10 minute reduction in travel time is worth \$5.67 to customers; a 10 minute reduction in transfer time is worth \$6.67, and a 10 percentage point increase in flights on time is worth \$12.13.

⁵³Viscusi, Vernon and Harrington, *The Economics of Regulation and Antitrust*, pp. 591–593, citing Steven A. Morrison and Clifford Winston, “The Evolution of the Airline Industry,” Northeastern University, manuscript, August 1994. Morrison and Winston calculate an index of “effective competitors,” weighting the number of competitors by their market shares. During this period “the Department of Transportation (DOT) (which had handled airline mergers since 1984) has approved every airline merger, some against the recommendation of the Department of Justice.... [T]wenty airlines merged in 1985–1987.” Of the airlines that entered the market at the time of deregulation, none had more than one per cent of industry revenue by 1987, and all had disappeared by 1995 when Viscusi, et al, wrote.

follow the pattern we observe in the airlines and other transportation industries—we may then consider quality of service a measure of the degree of competitiveness:

1. In the initial stage of deregulation quality will decrease, and regulatory intervention may be required for consumer protection: to maintain quality at acceptable levels.
2. As the industry starts to develop some elements of rivalry, with some new firms, the change in quality will be disputed, with some aspects improving and others declining.
3. Eventually, if the industry becomes workably competitive, service quality is expected to improve, overall. It is not clear that it will be better than it was under monopoly, though it may be in some respects, while remaining worse in other respects. The evidence for this is weak: we lack experience with this stage.

Thus, it appears that trends in the overall quality of service, and the actual level of quality may serve as auxiliary indicators of the state of competition in an industry after it has been deregulated, with rising levels of service quality being associated with increasing effectiveness of competition, after the initial decline when during the period in which rivalry is ineffective.

WHAT IS A MARKET?

A “market” exists when buyers and sellers exchange commodities⁵⁴ that are close substitutes.⁵⁵ Thus, markets are defined by (1) the product type, and (2) the geographic area, and substitutability is the key condition for defining markets.

The question of how a market is defined is critically important when one is assessing whether a company has “market power.” Thus, in its AT&T Reclassification Order, quoted above, the FCC was at pains to define the market—the geographic area (domestic) and the services (all interstate interexchange telecommunications services)—for which it was making a determination. Indeed, the FCC was careful to state that it was not considering at this time

⁵⁴If these are tangible, we call them “goods” or “products”; if intangible, “services”; the generic term is “commodities.”

⁵⁵That is, in the perception of the consumer, they can serve the same function. Technically, substitutability is defined in terms of the “cross-elasticity of demand,” but operationally “cross elasticities have not been of much practical use in defining markets because they are virtually impossible to measure accurately.” Shepherd, *Industrial Organization*, p. 55. The formula for the coefficient of cross-elasticity of demand is:

$$\text{Cross-Elasticity of Demand between goods 1 and 2} = \frac{\% \text{ change in quantity of good 2}}{\% \text{ change in price of good 1}}$$

As James V. Koch says, “if [the coefficient] < 0 the goods are complements, whereas if [the coefficient] > 0 the goods have some substitutability. Unfortunately, although one can say that the larger the positive value of [the coefficient], the more substitutable are the goods in question, one cannot say that any particular positive value of [the coefficient] is necessary in order to state that the two goods are sufficiently substitutable to be classified as being in the same market.” *Industrial Organization and Prices*, (Englewood Cliffs, N.J.: Prentice-Hall, 1974), p. 14 (footnote omitted). Complements are goods that are used together, like shoes and shoe laces or automobiles and gasoline.

whether AT&T might be non-dominant in the international market as well.⁵⁶ There are two forms of market power. Traditional texts identify market power with the ability to control the price of a commodity by changing its output.⁵⁷ More recently, the literature identifies a second form of market power: the ability to exclude rivals or raise the costs of the firm's competitors.⁵⁸ There are many methods of measuring market power. Some are structural, looking at the number and size of the firms in the market. Others are behavioral, looking at the actions of the firms, fluctuations in prices, relationships between prices and costs, and other discernable market phenomena. Interestingly, and perhaps paradoxically, market structures get greater attention, although market behavior is more important. It is market behavior that determines what goods and services are available, at what prices, and at what cost to society. Market behavior determines the quality of the commodities in the market, and the rate of introduction of new commodities: the innovation of new products. The explanation for the paradox is simple: market structure, particularly the size and market shares of the largest firms, is the principal determinant of the behavior of those firms.⁵⁹

The Importance of Market Structure

Market structure is important only because it can be shown, both on theoretical and empirical grounds, that it exerts a strong influence upon the behavior of firms, the buyers and sellers, participating in a market. It is relatively easy to count the number of firms in a market (once the market is defined geographically and in terms of products), and even ascertain their approximate sales as a percentage of total sales in the market. It is much more difficult to ascertain the prices at which the myriad transactions take place, their relationship to the costs of the firms producing the commodities, the rate of innovation, and other aspects of the behavior of the firms.

⁵⁶AT&T Reclassification Order, para. 2. "We defer consideration of AT&T's request to be reclassified as non-dominant in its provision of all international services because that category of services requires a different market analysis." The FCC later found AT&T to be non-dominant in the international market in Motion of AT&T to be Declared Non-Dominant for International Service, Order, FCC Mimeo 96-209 (May 14, 1996) (ORDER59.5 in <http://www.fcc.gov/Bureaus/International/Orders/fcc96209.zip>, accessed May 25, 1996).

⁵⁷That is, if the firm increases its output it will lower the price received by itself and its competitors; if it decreases its output, the price the firm and its competitors receive will increase.

⁵⁸Steven C. Salop reviews the literature and "current acceptance of post-Chicago theories of exclusionary market power such as 'raising rivals' costs.'" "Exclusionary Vertical Restraints Law: Has Economics Mattered?" *American Economic Review*, vol. 83, no. 2 (May, 1993), p. 168. "Exclusionary market power is power to raise or maintain prices above the competitive level by conduct that raises the cost or excludes competitors and thereby induces rivals to restrict their output." *Ibid.*, p. 169. Some of the exclusionary conduct is listed in section II of table 1.7.

⁵⁹Chapter 3 of David Chessler, Prefiled Testimony, Developing and Preparing Criteria for Determining Whether Services are "Competitive" under the Provisions of the Code of Virginia, Virginia State Corporation Commission, Case Number PUC920029, November 4, 1993, reports a variety of anticompetitive actions of telecommunications firms in several historic periods, from the 1890s to the present, and additional anticompetitive activities are discussed in the present chapter. Observed actions include refusals to deal with competitors (refusals to interconnect), predatory pricing (see table 3.1, reproduced herein as table 3.9), and cost-price squeezes. Some of these have required regulatory or other government interventions to protect the public interest and, where appropriate, to preserve some competition in the industry.

Even so, the study of market structure is largely confined to concentration, the number and sizes of the firms in the market. Other aspects of market structure, such as the number and sizes of potential entrants to the industry, the "barriers" to their entry, and the government regulations pertaining to the industry or the market,⁶⁰ are much less studied, mostly because they are much more difficult to study. It is difficult to measure the barriers that keep new firms from entering a market and the different barriers that keep existing firms from leaving an industry. And while government constraints upon firms are often clearly stated in statute law, it can be extremely difficult to determine whether the net effect is to promote or inhibit competition.⁶¹ Structure in relation to behavior is important, since the potential entrants are looking at the rules. Indeed, especially in this industry, government regulation is one of the most important barriers to new entry.

However, the relationship between concentration and some aspects of market behavior is well documented. In markets where there are few competitors, prices are elevated, compared to markets where there are many competitors. And in markets where there is an identifiable "dominant" firm, prices are elevated, compared to markets where there are several firms of roughly equivalent size. Moreover, it has been found that very small firms exert little influence over prices or other aspects of behavior in markets dominated by a few large firms.

Shepherd states that the larger the market share of the largest firm, the greater the profits in the industry. This is particularly true if the market share is greater than forty or fifty per cent. In concentrated industries, there is also less attention to cost control, and technical progress is retarded. Entry barriers occupy a peripheral position.⁶²

Firms accused of having "monopoly power" usually try to assert that the market is very large, either in terms of geographic area, or the types of products that are close substitutes, to make their own share seem small. Thus, in the IBM antitrust case (withdrawn in 1982), the government tried to show that the relevant market was "mainframe computers sold to private buyers," and that IBM had seventy per cent of the market; IBM averred that the market consisted of "all office equipment," and its share was only thirty-eight per cent. In the Philadelphia National Bank case (1963), the government claimed that the relevant market was "Philadelphia banking," of which the Philadelphia National Bank had thirty-six per cent,

⁶⁰Government regulation includes the legal system, the type of contracts that are legal and enforceable, pro-competitive policy (antitrust), or anticompetitive restrictions on the actions of firms (such as the patent system); it is far broader than direct regulation of some industries by commissions.

⁶¹For example, the restrictions that kept telephone companies from providing CATV service in their own service areas were intended to be pro-competitive, preventing the telephone company from extending its monopoly on switched and two-way point-to-point communications to wideband, broadcast communications. It is argued that the restriction actually serves to inhibit competition in the CATV market. However, all the discussion is speculative, and while points of evidence can be adduced for all sides of the argument, none of it is conclusive or even persuasive.

⁶²Shepherd and Wilcox, *Public Policies Toward Business*, pp. 50-52, citing Buzzell, et al., "Market Share—a Key to Profitability."

while the bank replied that the relevant market was "national banking," and its share was under four per cent.⁶³

Similarly, a study in 1954 showed that the four largest firms nationally produced twenty per cent of the "bread and bakery products,"⁶⁴ but in only three states did the four largest companies in the state produce less than thirty per cent of the baked goods; in twenty-three states the four largest firms produced over fifty per cent, and in local markets concentration was even higher. Moreover, within most industries firms tend to specialize, so the measure of concentration is usually higher for individual products than for the industry as a whole.⁶⁵

Markets are also defined in geographic terms, as the area within which transactions take place, or the area within which the buyers and sellers are found. In some instances the market is national or even international, if the buyers can and do purchase the product from any seller in a wide area. In other instances, markets are predominantly local, if buyers usually purchase the product from nearby sellers.

In the 1982 AT&T Consent Decree,⁶⁶ a market is defined in terms of Standard Metropolitan Statistical Areas (SMSAs) as defined by the Department of Commerce (see chapter 3). For other purposes, primarily relating to broadcast, CATV, and advertizing markets the FCC generally uses market areas defined commercially by the Rand McNally Company, although it also sometimes defines markets on the basis of technical quality of a broadcast signal ("grade A" and "grade B" contours).

In economics and antitrust law, the traditional definition of a geographic market for a commodity is that ninety per cent or more of the commodity consumed in a geographic area is produced in that area, and, conversely, ninety per cent or more of the commodity produced in a geographic area is consumed in that area.⁶⁷ Thus, local market area should be

⁶³Shepherd, *Industrial Organization*, Table 3.2, p. 61.

⁶⁴Whether cake is a substitute for bread is a matter of consumer perception, of course, with Marie Antoinette holding one view and the *Sans Culottes* another, but it is also a question of substitution in production: since the producers use the same equipment and ingredients to produce both, it may not be important to distinguish the markets.

⁶⁵John M. Blair, *Economic Concentration: Structure, Behavior and Public Policy* (New York: Harcourt Brace Jovanovich, Inc., 1972), pp. 9-11.

⁶⁶The Bell companies and AT&T have preferred to call this consent decree a "Modification of Final Judgement" or "MFJ", arguing that it modified an earlier consent decree of 1956. In fact, nearly all of the substantive matter of the 1982 Consent Decree is different from the earlier one, and the Telecommunications Act of 1996 consistently terms the 1982 document the "AT&T Consent Decree" and never refers to it as a modification of final judgement. Moreover, if it had been a final judgement of a court (rather than a continuing injunction), the Congress could not have overturned it by legislation (see *Telecommunications Act of 1996: Conference Report to Accompany S. 652*, House Report 104-458, p. 198. Accordingly, we use the term "1982 Consent Decree" herein.

⁶⁷Shepherd, *Industrial Organization*, p. 58. The example he gives is that in testing whether Missouri is a local beer market, one determines whether less than ten per cent of the local consumption is shipped in, and less than ten per cent of the local production is shipped out. If this were true, than Missouri would clearly be a single-state beer market. If, on the other hand, one found that sixty or seventy per cent of both the local consumption and production were in interstate commerce, than Missouri would clearly be part of a multistate beer market. In their 1987 *Merger Guidelines*, the National Association of Attorneys General used the criterion that customers satisfy seventy-five per cent of their needs from suppliers in the geographic area. Scherer and Ross, *Industrial Market Structure*, p. 192.

defined partly in terms of the serving areas of the firms in that market, and the choices available to customers, a point we return to in chapter 3.

In general, a small market area will be served by a small number of companies. For bulky, low value items that are expensive to ship, such as cement or beer, markets are relatively small. For high value, easily transported items, like computer software, markets may be national or international (reportedly most sales of computer software are now from mail-order vendors). Similarly, while there are many firms engaged in contract construction, in most cities the market is considered highly concentrated (usually a tight oligopoly in the terms of table 1.1). We return to this point in chapter 3, since most telecommunications providers can provide services only where they have constructed expensive, extensive, and generally immobile facilities: the presence of several competitive access providers in Salt Lake City is of little benefit to customers in Richfield, in the center of Utah—or even in a suburb a few miles away, if the provider has no facilities there.

Table 1.2 combines Shepherd's schema for defining a market, which stresses geographic factors, with the traditional seven factors adopted by the Supreme Court in the *Brown Shoe Case* (320 U.S. 294 [1962]).

TABLE 1.2
Specific Conditions Defining the Market

<i>Product:</i>
Sensitivity to price changes
Cross-Elasticity of demand among products
Price gaps between products
Independence of price moves
Distinct prices
Informed judgements by participants
Public recognition of the submarket
Distinct sellers and buyers
Specialized vendors
Distinct customers
Product's peculiar characteristics and uses
Unique production facilities
<i>Geographic Area</i> (local, regional, national, international):
The area within which buyers choose
Actual buying patterns
The area within which sellers ship
Actual shipping costs relative to production costs
Actual distances that products are normally shipped
Ratios of goods-shipped-into and out-of actual areas

Sources: Shepherd, *Industrial Organization*, table 3.1, p. 57. *Brown Shoe Co. Inc. v. U.S.*, 370 US 294 (1962).

In chapter 3 we apply these concepts to geographic and product markets to the telecommunications industry.

Practical Measures of Market Concentration

The market share of the largest firm is a very important measure of concentration in the industry, and is an indicator of its market power. It is defined as the percentage of the total market that is provided by the leading firm. Thus, the first step is the determination of the relevant product market and geographic market. Then the share of the leading firm must be measured: generally this is done in monetary terms, using such measures as shipments or revenues. Sometimes "value added" (sales minus purchases from other firms) is used.

However, table 1.1 mentions some very frequently encountered market conditions that are defined in terms of the market shares of several firms: "loose oligopoly," "tight oligopoly" (from the Greek for few sellers), and "monopolistic competition" (monopoly is from the Greek for single seller; there is a single seller of an identifiable item: in "monopolistic competition" there are many very similar and readily substitutable items for sale—designer clothing, for example). As is customary in the United States, the measure used is the "four firm concentration ratio." Loose oligopoly is said to exist when the four largest firms have less than forty per cent of the market: in other words, the "four-firm concentration ratio" is under forty per cent. Tight oligopoly is said to exist when the four-firm concentration ratio is sixty per cent or more.

The use of four firms stems from the publication of the Census of Manufactures, which could not report sales or shipments of individual firms, and so reported sales or shipments of four-firm aggregates: the four largest, the eight largest, and so forth. Indeed, some older texts reported four-firm and eight-firm concentration ratios for particular industries.⁶⁸ However, for other industries, in which there were fewer very large firms, with a large difference in size between the third and fourth largest, three-firm and six-firm or nine-firm concentration ratios were occasionally reported in the past.⁶⁹ In other countries, one sometimes sees reports of five-firm concentration ratios.

The four-firm concentration ratio seeks to measure the market power of the largest firms, and indicate the probable extent of their rivalrous behavior. However, we may hypothesize that, if there are two industries with similar four-firm concentration ratios, but one of them has few other firms with appreciable market shares, and the other has several additional firms with appreciable market shares, the industries may behave differently in terms of how competitive they appear to be. It is for this reason that earlier texts made some use of the eight-firm concentration ratio as well as the four-firm ratio.

⁶⁸Joe S. Bain, *Industrial Organization* (New York: John Wiley and Company, 1959), tables on pp. 127–130. Twenty-firm and fifty-firm concentration ratios are also published. Scherer and Ross, *Industrial Market Structure*, p. 71.

⁶⁹Bain, *Industrial Organization*, tables on pp. 125–126. Thus, in the domestic interexchange market of the telecommunications industry, we often speak of the three largest firms, neglecting the fourth (LDDS).

Further analysis of the effect of market share on industry behavior, required a more elaborate statistic of the market shares of the firms, reducing all the market shares to a single number. Clearly, this would be more practical than using both the four- and eight-firm concentration ratios (and perhaps the twenty- and fifty-firm ratios as well). After discussion in the economics journals, the profession settled on the Herfindahl index,⁷⁰ which is calculated as follows:

$$HHI = \sum_{i=1}^N S_i^2,$$

where S_i is the market share of the i^{th} firm, expressed as a percentage. Thus, for a monopoly, the market share is 100 per cent and HHI is 10,000 (that is, 100^2). The Census Bureau began publication of the Herfindahl index with its 1982 report.⁷¹ The Justice Department began use of the Herfindahl index with its 1982 "Merger Guidelines."⁷²

In addition to some technical advantages of interest to economists⁷³ the Herfindahl index has the advantage of being influenced disproportionately by very large market shares of the leading firms (the market shares are squared, so a firm with double the market share of another has four times its contribution to the index). Moreover, the market shares of very small firms make little contribution to the index, and so can be neglected.

DOES A DOMINANT FIRM NECESSARILY HAVE MARKET POWER?

A dominant firm industry structure is defined as one in which the largest firm has a share of forty to fifty per cent or more of the relevant market.⁷⁴ There is strong evidence that firms with such a market share usually have substantial control of the price, and there is convincing evidence that firms develop such increasing control over the price if their market shares are above thirty-five to forty per cent. Therefore, it is common to assume that a single firm with a high market share has "market power," the power to control the price in the market.

What is true in general may not be true in particular, and it is important to explore the

⁷⁰It is also called the Herfindahl-Hirschman Index (HHI) after its developers, O. C. Herfindahl and A. O. Hirschman. For its history, see A. O. Hirschman, "The Paternity of an Index," *American Economic Review*, Vol. 54, no. 4 (September 1964), p. 761.

⁷¹Scherer and Ross, *Industrial Market Structure*, p. 72.

⁷²US Department of Justice, "Merger Guidelines," Mimeo, June 14, 1982. See statement by Attorney General William French Smith, June 14, 1982, p. 5.

⁷³The increase in price over cost in certain models of oligopoly markets is directly related to the Herfindahl Index. See Viscusi, Vernon, and Harrington, *Economics of Regulation and Antitrust*, p. 151.

⁷⁴Some authorities say forty per cent; others fifty per cent. Market shares begin to be associated with an increase in profitability at about the forty per cent level. Some studies show that there is a significant shift (an additional increase) in the effect of market share on profitability when market shares exceed fifty per cent.

circumstances in which a dominant firm may have less market power than the market structure may suggest, and indeed, may have little or no actual market power. In view of the strength of the association between the dominant firm market structure and elevated prices in the market, one should be extremely cautious when rebutting the presumption of dominant firm market power.

The evidence is clear that in most instances when a dominant firm is present in an industry, prices and profits are elevated—even more so than in an industry with tight oligopoly.⁷⁵ However, the evidence is equally clear that in many instances, though far from all, firms that achieve a dominant market share at one period experience a decline to an oligopolistic market share in subsequent periods. Dominant firms that do lose market share, especially those that start from very high market shares, appear to do so at an average rate of one percentage point per year or more. Table 1.3 illustrates the decline of some of the dominant firms that appeared in the wave of mergers around the turn of the century. Many of these firms did decline, and some are no longer dominant. However, it does appear that the firms that did decline did so precipitously: they lost their share of the market at a rate of approximately one percentage point per year.⁷⁶ Those firms that did not lose market share so rapidly were, by and large, still dominant in 1935 (and many retained their dominance into the post-war era, as shown by table 1.4).

Table 1.4 extends the analysis to the post-war era. The firms on the list were still dominant in the 1980s. Again, the pattern appears that firms that lose their dominant market share do so rapidly—several of the firms that had experienced little decline between 1910 and 1935 had experienced little additional decline by 1973.⁷⁷ Some of the firms that had experienced substantial reductions in their market shares in the later period had done so as a result of antitrust and other governmental action.⁷⁸ To this we might add Western Electric

⁷⁵Shepherd, *Industrial Organization*, pp. 108-126 and Scherer and Ross, *Industrial Market Structure*, p. 446. For a somewhat opposing view, see Scherer and Ross, *ibid.*, pp. 411-412, although, *cf.*, *ibid.*, pp. 439-447.

⁷⁶The average rate of decline of market share, when unaided by antitrust or other government action, was approximately half a percentage point per year. Shepherd, *Industrial Organization*, p. 267. This includes those firms that remained dominant. Thus, Shepherd remarks that "tendency for dominance to persist or to fade only slowly is relevant to the models of dominance...." p. 268.

⁷⁷General Electric, Western Electric, Eastman Kodak, United Fruit, American Can. American Can is the sole firm on the lists that has declined from a very high market share to a nondominant market share at a rate appreciably under one percentage point per year.

⁷⁸United Shoe Machinery (two antitrust cases), ALCOA (antitrust and sale of aluminum plants built by the government during World War II), DuPont (antitrust), Standard Oil, and American Tobacco in the early period (but not U.S. Steel) were substantially restructured by antitrust suits. So were some of the firms that dropped off the list, such as Pullman.

TABLE 1.3
Dominant Firm Market Shares, 1910-1935

Company	Estimate for 1910		Estimate for 1935		Decline Over 25 %
	Market Share %	Entry Barriers	Market Share %	Entry Barriers	
U.S. Steel	60 %	Medium	40 %	Medium	No*
Standard Oil	80 %	Medium	35 %	Medium	Yes
American Tobacco	80 %	Medium	25 %	Medium	Yes
International Harvester	70 %	High	33 %	Medium	Yes
Central Leather	60 %	Low	—	—	Yes
Pullman	85 %	High	80 %	Medium	No
American Sugar Refining	60 %	Low	35 %	Low	No*
Singer Manufacturing	75 %	Medium	55 %	Low	No*
General Electric	60 %	High	55 %	High	No
Corn Products	60 %	Low	45 %	Low	No
American Can	60 %	Medium	51 %	Medium	No
Westinghouse Electric	50 %	High	45 %	High	No
E.I. duPont de Nemours	90 %	Medium	30 %	Low	Yes
International Paper	50 %	Low	20 %	Low	Yes
National Biscuit	50 %	Low	20 %	Low	Yes
Western Electric	100 %	High	100 %	High	No
United Fruit	80 %	Medium	80 %	Medium	No
United Shoe Machinery	95 %	High	90 %	High	No
Eastman Kodak	90 %	Medium	90 %	Medium	No
Alum. Co. of A. (ALCOA)	99 %	High	90 %	Medium	No

Source: Shepherd, *Industrial Organization*, table 4.4, p. 87. Last column added by present author.

Notes: * denotes loss of market share of approximately 20-25 per cent.

TABLE 1.4
Market Shares of Current Dominant Firms, 1948 to 1973

Company	Estimate for 1948		Estimate for 1973		Decline Over 25 %
	Market Share %	Entry Barriers	Market Share %	Entry Barriers	
General Motors	60 %	Medium	55 %	High	No
General Electric	50 %	High	50 %	High	No
Western Electric	100 %	High	98 %	High	No
ALCOA	80 %	High	40 %	Medium	Yes
Eastman Kodak	80 %	Medium	70 %	Medium	No
Proctor and Gamble	50 %	Medium	50 %	Medium	No
United Fruit	80 %	Medium	60 %	Medium	No*
American Can	52 %	Medium	35 %	Low	No
IBM	90 %	Medium	70 %	High	No*
Coca-Cola	60 %	Medium	50 %	Medium	No
Campbell Soup	85 %	Medium	85 %	Medium	No
Caterpillar Tractor	50 %	Medium	50 %	Medium	No
United Shoe Machinery	85 %	High	50 %	Low	Yes
Kellogg	50 %	Medium	45 %	Medium	No
Gillette	70 %	Medium	60 %	Medium	No
Babcock & Wilcox	60 %	Medium	50 %	Medium	No
DuPont (cellophane)	90 %	High	50 %	Medium	Yes
Hershey	75 %	Medium	70 %	Low	No

Source: Shepherd, *Industrial Organization*, table 4.5, p. 88. Last column added by author.

Notes: * denotes loss of market share of approximately 20 per cent.

whose dominant market share has been reduced by regulation and antitrust action. Other firms on this list have declined since 1973, possibly for other reasons.⁷⁹

If rapid decline of the market share of the dominant firm is considered to be a decline of 1 percentage point per year, it is useful to see how this translates to a change in the Herfindahl index. The relationship between the market share of the dominant firm and the associated Herfindahl index is nonlinear, because the Herfindahl index is calculated using the squares of the market shares of the firms. Thus, tables 1.5 and 1.6 show the changes in the Herfindahl index associated with reductions in the market share of the dominant firm of 1, 5, and 10 percentage points, starting with dominant firms with 90 per cent of the market and 65 per cent of the market. The data are purely hypothetical, but the initial market shares in table 1.6 (the dominant firm has a market share of 65 per cent, the other leading firms have shares of 15 and 10 per cent, and there is a fringe of firms with 1 or 2 per cent shares) is intended to broadly reflect the current state of the interexchange market.⁸⁰ The initial market shares in table 1.5, with the dominant firm at 90 per cent and the other firms sharing the remaining 10 per cent in the same proportions as they shared the remaining 35 per cent in table 1.6, are intended to broadly reflect a market in which competition is just emerging.

Thus, from an initial market structure where a firm is a near monopoly, a decline in its market share of 1 percentage point per year, distributed to the other firms in the industry, is equivalent to a decline in the Herfindahl index of about 160 to 175 points per year. From an initial market structure where the leading firm is a dominant firm, a decline in its market share of 1 percentage point per year is equivalent to a decline in the Herfindahl index of about 100 to 110 points per year.

⁷⁹Western Electric lost its market share when the FCC opened the customer premises equipment market to competition in the 1970s, and the 1982 Consent Decree eliminated its preferred status as supplier to the Bell companies. IBM may have been inhibited by the antitrust litigation, but General Motors decline is sometimes attributed to diseconomies of scale.

⁸⁰The market share of AT&T is now 55.2%; MCI, 17.4%; Sprint, 10.1%; LDDS, 3.3%; and the several hundred smaller companies (most of them resellers, though some have regional networks) have an aggregate market share of 14.0%. Federal Communications Commission, Common Carrier Bureau, "Common Carrier Competition," Fall, 1995, p. 8. (http://www.fcc.gov/Bureaus/Common_Carrier/Reports/cc4q95.w51, accessed April 23, 1995. (Pagination as printed appears to differ slightly from copies printed by the FCC due to differences in the printer-driver used.)

TABLE 1.5

Changes in the Herfindahl Index when a Near Monopoly Loses Market Share

	Initial Contrib.		1 %		5 %		10 %	
	Market To Herf.		Decline in Share		Decline in Share		Decline in Share	
	Share	Index	Market To Herf.	Later Contrib.	Market To Herf.	Later Contrib.	Market To Herf.	Later Contrib.
Firm A	90.00 %	8100.00	89.00 %	7921.00	85.00 %	7225.00	80.00 %	6400.00
Firm B	4.29 %	18.37	4.71 %	22.22	6.43 %	41.33	8.57 %	73.47
Firm C	2.86 %	8.16	3.14 %	9.88	4.29 %	18.37	5.71 %	32.65
Firm D	0.57 %	0.33	0.63 %	0.40	0.86 %	0.73	1.14 %	1.31
Firm E	0.57 %	0.33	0.63 %	0.40	0.86 %	0.73	1.14 %	1.31
Firm F	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Firm G	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Firm H	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Firm I	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Firm J	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Firm K	0.29 %	0.08	0.31 %	0.10	0.43 %	0.18	0.57 %	0.33
Total	100.00 %	8127.67	100.00 %	7954.48	100.00 %	7287.27	100.00 %	6510.69
Decline in index			173.19		840.41		1616.98	
Decline per percentage pt			173.19		168.08		161.70	

TABLE 1.6

Changes in the Herfindahl Index when a Dominant Firm Loses Market Share

	Initial Contrib.		1 %		5 %		10 %	
	Market To Herf.		Decline in Share		Decline in Share		Decline in Share	
	Share	Index	Market To Herf.	Later Contrib.	Market To Herf.	Later Contrib.	Market To Herf.	Later Contrib.
Firm A	65.00 %	4225.00	64.00 %	4096.00	60.00 %	3600.00	55.00 %	3025.00
Firm B	15.00 %	225.00	15.43 %	238.04	17.14 %	293.88	19.29 %	371.94
Firm C	10.00 %	100.00	10.29 %	105.80	11.43 %	130.61	12.86 %	165.31
Firm D	2.00 %	4.00	2.06 %	4.23	2.29 %	5.22	2.57 %	6.61
Firm E	2.00 %	4.00	2.06 %	4.23	2.29 %	5.22	2.57 %	6.61
Firm F	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Firm G	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Firm H	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Firm I	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Firm J	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Firm K	1.00 %	1.00	1.03 %	1.06	1.14 %	1.31	1.29 %	1.65
Total	100.00 %	4564.00	100.00 %	4454.65	100.00 %	4042.78	100.00 %	3585.39
Decline in index			109.35		521.22		978.61	
Decline per percentage pt			109.35		104.24		97.86	

Declining Firms

If the industry as a whole is growing more rapidly than the dominant firm, the market share of the dominant firm will decline. When a firm is losing its share of the market it is sometimes called a "declining firm," even if the firm is actually growing rapidly. To some

extent, the dominant firm can influence and even control the rate of its decline by a variety of market strategies, which include pricing and other actions.

When a firm has achieved dominance in an industry, if it elevates the price to increase its profits it may attract entry or cause the smaller firms in the industry to expand their output. To some extent, the dominant firm can limit the rate of expansion of industry output by pricing its output at less than the short-run profit maximizing price,⁸¹ thereby making investment in the industry less attractive to potential entrants. The dominant firm may also be in a position to threaten "retaliation" against potential entrants by maintaining a great deal of excess capacity.⁸²

Pricing strategies to deter entry occupy a large space in the economic literature. When analyzed, they depend on the anticipated response of the dominant firm to entry or expansion, and on the response of the nondominant firms, both in the industry and considering entry, to various stratagems by the dominant firm. This is the material of games theory, and need not be discussed here.

Ultimately, the effectiveness of any strategy depends on considerations including the barriers to entry into the industry, the barriers to expansion of existing firms, and the minimum efficient size of firms in the industry.⁸³ The choice of strategy depends on the goals of the firms in the industry, and, particularly, whether the management takes a short-run or long-run view. Managements that take short-run views will tend toward maximizing profits, and attract entry; those that take long-term views will tend toward strategies involving low prices to deter entry.⁸⁴

Thus, if the market power of any firm can be measured by the ratio of price to marginal cost, the market power of a dominant firm can be measured by the ratio of price to marginal cost, and the rate of decline in its market share. A firm with price close to marginal cost, with a rapidly declining market share, would seem to have very little market power.

⁸¹This strategy is called "limit pricing."

⁸²This was ALCOA's practice in the pre-war period.

⁸³The minimum efficient size in an industry can be defined as the smallest plant that can be built that will have its unit costs (average total cost) less than the market price. Clearly, any smaller firm will have higher costs than price and cannot enter the industry without sustaining losses. Some would hold that the minimum efficient size is the smallest firm that will have the same costs as the dominant firm, or the firm of optimum size if the dominant firm is so large as to have diseconomies of scale.

⁸⁴Regulation (conventional or price cap), by limiting profits of the dominant firm, would tend to deter entry. If, however, regulation is ineffective, so that profits of the dominant firm are above its cost of capital (and even above the average market returns for riskier enterprises), then entry will not be deterred.

Expanding Markets

The expansion of the market is generally thought to limit the market power of the dominant firm. Expanding markets are associated with relatively elastic demand for the product,⁸⁵ and often with a lack of entry barriers. Moreover, the expansion of the market makes less effective the pricing and other strategies the dominant firm uses to deter entry and prevent existing competitors from expanding. Indeed, when the market is expanding very rapidly, it may be difficult for a single firm to attract the investment capital to expand rapidly enough to fulfill the rise in market demand.

The definition of a "rapidly growing" market as used in these studies generally refers to markets that are growing much more rapidly than the economy as a whole. With respect to telecommunications, markets that are growing about 1.5 times more rapidly than the average for the industry meet the definition. The effect of rapid growth on the market power of the dominant firm is not deterministic: that is, it *may* facilitate, or make easier and more effective, competition from smaller firms. Thus, "rapid" growth must be defined by rules of thumb, and it is conservative to use a strict standard of when growth is considered so rapid as to *possibly* reduce the market power of a dominant firm.

When the expansion of the market is associated with shifts in market demand, that is, with increases in the demand for products in some submarkets rather than others, it may be particularly difficult for the established firm to be flexible enough to accommodate the changes in the market. However, many dominant firms have successfully maintained their dominant status for extended periods in rapidly expanding markets,⁸⁶ so the expansion of the market is not necessarily conclusive.

Declining Industry

A declining industry is one in which aggregate sales of all firms combined are falling. Such an industry is unlikely to attract entry that requires long term commitment to durable capital assets. Thus, even if the firms in the industry engage in short-run profit maximization, they can expect to maintain their market share. Frequently, declining industries are marked

⁸⁵The coefficient of price elasticity of demand is defined as the percentage change in sales divided by the percentage change in price. Since sales decline when price rises, it will appear as a negative number in statistical studies. The greater the elasticity, that is, the greater the decline in sales for a given rise in price, the more negative (further from zero) this negative number (the coefficient) will be. For convenience, when not discussing statistical studies we often speak of the absolute value of the coefficient (that is, we speak of the coefficient as a positive number), so that we say "the elasticity is greater," the more sales vary when the price changes.

⁸⁶For the period 1910 to 1973, ALCOA, General Electric, and Western Electric are obvious examples. For the pre-war period, 1910 to 1935, Westinghouse Electric and United Fruit can be added to that list. For the post-war period, 1948 to 1973, General Motors, and IBM come to mind.

by mergers and acquisitions of the failing firms,⁸⁷ which can further support the dominance of the largest firm, or, by combining the smaller firms, convert the industry into a tight oligopoly structure.

ENTRY BARRIERS AND PRICES

Some students have argued that a static view of industry structure as shown by concentration ratios does not tell the whole story. If it is easy for firms to enter the industry, then the firms in the industry will be unable to raise prices above the competitive levels lest such entry occur, and the increased industry output will cause prices to fall. However, the empirical evidence for this shows that the effect is weak—much less significant than actual concentration. As Shepherd and Wilcox say:

More generally, entry barriers do not seem to be central elements of market structure. They matter somewhat, but they are weaker than market share itself.... High barriers typically add only about two points to the profit rate....⁸⁸

There is an opposing view that holds that barriers are significant. For example, in tables 1.3 and 1.4, most of the dominant firms that retained their market shares in each twenty-five year period had medium or high entry barriers. As a practical matter, entry barriers are little studied because it is often hard to obtain reliable information—and even harder to assess it. For example, before airline deregulation few experts realized that control of “gate space” at hub airports could become a significant entry barrier.⁸⁹ The entry barriers into the Yellow Pages market are obscure and no one knows why there has been little apparent commercial entry into the market for maintenance of residential inside wiring (including service contracts).

If economic entry barriers are not significant, then free entry may be possible in any market where there are no government restrictions. Thus, some authors developed a theory of “ultra-free entry” and exit:

In the late 1970s, the Bailey-Baumol-Panzer-Willig group was employed by AT&T to develop concepts that would be relevant to AT&T’s interest in protecting its monopoly and reducing the limits on its freedom of action. The main new concepts this group came up with were “sustainability” and “contestability.”⁹⁰

⁸⁷Recall that profitability is directly associated with market share, so the dominant firm is likely to be the most profitable in the industry, and the smallest firms are the most likely to fail.

⁸⁸Shepherd and Wilcox, *Public Policies Toward Business*, pp. 50-52, citing Buzzell, et al., “Market Share—a Key to Profitability.”

⁸⁹The development of the hub-and-spoke system was entirely unanticipated. Viscusi, Vernon and Harrington, *Economics of Regulation and Antitrust*, p. 584. Shepherd, *Industrial Organization*, p. 452.

⁹⁰Shepherd, *Industrial Organization*, p. 510. “Sustainability” refers to the ability of a monopolist to maintain a set of discriminatory prices, and is not relevant to our discussion here.

Essentially, contestability⁹¹ is a theory⁹² that the market shares of competitors do not affect the resulting price, even if the competitors have a market share of *zero*: so long as they are “viable” the firm that is in the market will react to their existence as if they were actively in the market. This view is rather extreme, and although it is quite common among adherents of contestability theory, it does not appear to be supported by any empirical evidence.⁹³

The theory that a dominant firm will act to prevent entry of potential rivals by increasing its capacity and perhaps by lowering its price and increasing its output has a long history in economics. At least as early as the 1950s, under the name of “stay-out pricing” or “limit pricing” it was claimed that, if entry were possible, the dominant firm would lower price and increase output until the difference between actual industry output and the potential output of the industry under perfect competition would be less than the output of a firm of minimum efficient size.⁹⁴

Empirical evidence has not been adduced to sustain the theory of “stay-out pricing” as a valid description of behavior of dominant firms. Indeed, evidence exists to show that while dominant firms may maintain excess capacity sufficient to satisfy all potential industry demand, they may be content to keep this capacity idle. For example, ALCOA was accused (and convicted) of doing just that: that it maintained price and output at close to monopoly levels, even though it had the capacity to produce at close to competitive levels of output.

As discussed above, the empirical evidence that does exist shows that when the market share of the dominant firm increases, its ability to increase the market price also increases. At a market share of thirty-five or forty per cent, it may be able to raise price by five per cent; at higher market shares the anticipatable price increase will be greater.

The theory of contestability makes a number of very “strong” assumptions—assumptions

⁹¹“A perfectly contestable market is defined as one in which entry and exit are easy and costless, which may or may not be characterized by entries of scale or scope, but which has no entry barriers....” Elizabeth E. Bailey, “Foreword,” in William J. Baumol, John C. Panzer, and Robert D. Willig, *Contestable Markets and the Theory of Industrial Structure*, Revised Edition (San Diego: Harcourt Brace Jovanovitch, 1988), p. xiii. Hereinafter, *Contestable Markets*.

⁹²“Contestability theory offers an analytic framework within which the fundamental features of demands and production technology determine the shape of industry structure and many of the characteristics of industry prices. The theory accomplishes this via a process of simplification; by stripping away through its assumptions all barriers to entry and exit, and the strategic behavior that goes along with them both in theory and in reality.” Baumol, et al., *Contestable Markets*, p. 487.

⁹³“For example, we do not know how large a proportion of U.S. industry should be considered highly contestable. That is an empirical question, and no one, at least for the moment, has convincing evidence on the subject. How rapidly does an imperfectly contestable industry lose the attributes of the theoretical state of perfect contestability? There are some applicable criteria, but again, no one is sure of answers that hold universally.” Baumol, et al., “Preface to the Revised Edition,” *Contestable Markets*, p. v.

⁹⁴In this analysis, the minimum efficient size refers to the smallest possible size of a firm which will have unit costs as low as those of the dominant firm. Since output is slightly restricted according to this theory, price will be slightly elevated. The degree of elevation of price will depend on the degree of restriction of output (that is, the size of the minimum efficient firm as a fraction of industry output), and the industry price elasticity of demand.

that are essential to the internal logic of the theory, but which are difficult to justify empirically.⁹⁵ The most obvious of these, which is addressed by all the theory's partisans, is that entry and exit must be free and unlimited. This does not appear to be the case, and, in an industry such as telecommunications, which is characterized by large plant investments, construction delays assure that entry is not instantaneous, which appears to be a requirement of the theory. Indeed, these investments, which are illiquid sunk costs and which prevent easy exit from the industry, give rise to questions as to the validity, consistency and applicability of the theory.

Shepherd concludes (p. 576) that the assumptions of "ultra-free entry" (his term for the free entry assumption necessary to the theory of contestability) are inconsistent. If so, the theory is invalid, and need not be considered. He makes similar statements about the assumptions of how the existing firm or firms react to the potential entrants.

To the extent that the assumptions can be rigorously stated, they can be tested. We can determine whether the assumptions apply in the telecommunications industry. If the assumptions do not apply, we can, as Shepherd says, "revert then to the extensive literature on entry barriers for guidance in estimating the outcomes" (p. 573).

There are some theoretical economists who deny that entry barriers are important, or even that they exist. The empirical evidence does not support that extreme view; industries with measurable entry barriers do have higher prices, as noted above. Moreover, even if entry and exit barriers did not exist, the further assumptions that entry and exit be instantaneous (so the existing firms cannot react) and frictionless (without special costs or difficulties) are required to demonstrate that "viable competitors" lower prices as effectively as actual entrants.

The sources of entry barriers are many. Some are determined by the nature of the market, of the industry, and of the production process. Others are caused by strategic practices of the firms in the industry. Still others are caused by government policies and practices, though these barriers, which include licensing, franchises, and other regulatory practices, are often

⁹⁵The best known review article criticizing the theory of contestability is by William G. Shepherd, "'Contestability' vs. Competition," *American Economic Review*, vol. 74, no. 4 (September, 1984), p. 372. Subsequent research confirms its principal conclusion that there is no empirical evidence supporting the argument that any real industry is contestable. Marius Schwartz, "The Nature and Scope of Contestability Theory," *Oxford Economic Papers*, n.s., vol. 38, supplement (November, 1986), p. 37. Schwartz also states that the possibility that the dominant firm can respond quickly or even instantly to any change in price by an entrant ensures that no market *can* be contestable, and he denies that the possibility that the entrants will use long-term contracts alters his conclusion in any practical way (p. 55). Schwartz also states that the "experiments" that proponents of contestability perform and advance as evidence for the theory "cannot be interpreted as favorable or unfavorable to contestability theory.... [I]t is doubtful whether the entire experimental approach can contribute anything to appraising the empirical importance of contestability theory" (p. 50).

neglected in textbooks.⁹⁶ For example, economics texts list the factors in table 1.7 as creating barriers to entry.

The most controversial of these items may be the retaliatory action, item II. 1. The firms in the industry may raise the costs of their rivals by a variety of means. They may use litigation to deny or delay entry. They may engage in predatory pricing to discourage entry or force rivals to leave the industry.⁹⁷ In telecommunications, we have observed that often the dominant firm must be a supplier to its rivals. For many years, competitors to COMSAT had to lease transponders from that firm; not surprisingly, COMSAT won all the contracts during that period.⁹⁸ The possibility of similar cost-price squeezes and other stratagems to raise rivals costs occurring in the domestic telephone industry (and, indeed, some of the difficulties that interexchange and station equipment rivals experienced during the 1970s) was the basis for the structural changes and market restrictions of the 1982 Consent Decree.

In Virginia, for example, the Commission was charged with determining "whether competition or the potential for competition in the market place is or can be an effective regulator of the price of those services" when making a determination that telephone service is "competitive" for the purpose of applying "Telephone regulatory alternatives."⁹⁹ Other states have similar provisions, and sections 251, 257, and 271 of the Telecommunications Act of 1996 pose the same question for the FCC and all state commissions. The first question that must be answered is whether "the potential for competition" subsumes "contestability," if there is no evidence that actual entry is likely.

⁹⁶This neglect is unfortunate for our purposes, since it is obvious that franchises, licenses, "certificates of public convenience and necessity," radio frequency allocations, and the right of "eminent domain" (the right to dig up the streets) are all very important entry barriers in telecommunications. A discussion of government policies as determinants of market structure may be found in Scherer and Ross, *Industrial Market Structure*, pp. 146-151. The list includes: government purchase of goods and services, procurement practices, research and development contracts (latterly including a bias toward smaller firms that "help[ed] limit IBM's dominance"), plant construction and sale programs, granting and guaranteeing loans, financial support and bailouts, support for large firms internationally (which "sowed the seeds for OPEC"), policies in leasing mineral exploration and development rights, tax policies such as low taxes for small businesses, capital gains preferences, inheritance taxes, tax avoidance on security-swap mergers, increased depreciation on assets acquired in mergers, antitrust prohibitions against price fixing (which caused the merger wave of 1897-1904), patent rights, tariffs, regulations on air and water pollution, differential enforcement of pollution regulations favoring existing plants, paperwork (filling out forms), and limiting entry into regulated or licensed industries.

⁹⁷This category would include using market power to raise the costs of rivals, the use of litigation and other means to impede the entry or expansion of rivals, and the use of predatory pricing. The first is discussed by Steven C. Salop, in "Exclusionary Vertical Restraints Law." Predatory pricing is discussed by John Roberts, in "A Signaling Model of Predatory Pricing," *Oxford Economic Papers*, n.s., vol. 38, supplement (November, 1986), p. 75, and Alvin K. Klevorick, "The Current State of the Law and Economics of Predatory Pricing," *American Economic Review*, vol. 83, no. 2 (May, 1993), p. 162. Predatory pricing has won substantial theoretical acceptance in law and economics since about 1980: see chapter 3.

⁹⁸An analogous situation occurred in the aluminum industry when ALCOA charged less for aluminum sheet than for the cost of the ingot plus the cost of fabrication, rendering its competitors in the sheet market unprofitable. John M. Blair, *Economic Concentration: Structure, Behavior and Public Policy* (New York: Harcourt, Brace Jovanovitch, 1972), p. 29.

⁹⁹Virginia Consolidated Code Section 56-235.5(F), effective July 1, 1993.

TABLE 1.7
Common Causes of Entry Barriers

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- I. Exogenous: Economic (Natural) Causes of Barriers**
1. *High Capital Requirements* (related to plant and firm size and capital intensity)
 2. *Large Technical and Pecuniary Economies of Scale*
 3. *Product Differentiation* (occurring naturally rather than from selling expenses or other voluntary actions)
 4. *Absolute Cost Advantages* (from many possible causes, including: differential wage rates, control of unique resources)
 5. *Diversification* (giving the possibility of massing and redeploying resources among branches)
 6. *Research and Development Intensity* (very rapid invention-innovation cycle)
 7. *High Durability of Firm-Specific Capital* (giving rise to sunk costs, which make entry more risky)
 8. *Vertical Integration* (which may require entry to occur on two or more levels at once)
 9. *Research and Development Scale Economies* (the need to maintain a large research and development organization and many projects to "cover all bases")
- II. Endogenous: Voluntary and Strategic Causes of Barriers**
1. *Retaliation and Preemptive Actions* (by the use of price or other devices; this category is large and varied)
 2. *Excess Capacity* (as a basis for effective retaliation, or for threats of retaliation)
 3. *Selling Expenses, Including Advertizing* (to increase the degree of product differentiation; can also create a pecuniary advantage through media discounts)
 4. *Patents, Copyrights, Trade Secrets* (which provide exclusive control over technology; patents and copyrights are government-enforced; secrets have lesser legal protection)
 5. *Control Over Other Strategic Resources* (such as ores, locations, favored outlets, specific talents, "cornering the market" in scarce resources)
 6. *"Packing the Product Space"* (in industries with high product differentiation; related to selling expenses)
 7. *Brand Loyalty on the Part of Consumers* (the hesitance of consumers to switch brands; lack of consumer information about new products; cost to consumers of obtaining price or product information)
 8. *Control of Favored Outlets*
- III. Government: Legal and Policy Causes of Barriers**
1. *Licenses and Franchises* (service territories, certificates of convenience and necessity, eminent domain, and radio spectrum)
 2. *Tariffs* (required filings, restrictions on resale)
 3. *Loan Guarantees and Subsidized Loans* (such as REA)
 4. *Financial Stability* (regulation reduces volatility and cost of capital)
 5. *Regulatory Delay* (delay raises cost of entry)
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Sources: I. and II. adapted from Shepherd, *Industrial Organization*, table 11.1, p. 274; Viscusi, Vernon and Harrington, *Economics of Regulation and Antitrust*, pp. 161-162, 853-854; and Bain, *Industrial Organization*, p. 240; III. adapted from Scherer and Ross, *Industrial Market Structure*, pp. 146-151; author's analysis.

Examples of barriers to entry may be found in many industries. No industry has all the barriers, and sometimes the barriers may be found to act in unexpected ways. It is significant that the Telecommunications Act does not rely just on removal of legal and regulatory barriers to entry (sections 253, 257), but also tries to remove structural barriers by such means as requiring telephone number portability (section 251), resale of local services at wholesale rates (sections 251, 252, 254), sharing of "infrastructure" (poles, ducts and rights-of-way) (section 259), arbitration of disputes between carriers (section 252), and the creation of a "Telecommunications Development Fund" (section 714) to "promote access to capital for small businesses in order to enhance competition in the telecommunications industry" (section 714[a][1]).

One barrier that appears to exist in the telecommunications industry is consumer information. This manifests itself as brand loyalty, or a reluctance to switch suppliers. We see this in the reluctance of small consumers to change their presubscribed interexchange carrier, and, possibly, in the seeming retention by the local exchange telephone companies of much of the market for maintenance and repair of residential inside wiring, and the provision of service contracts (see chapter 4, below). It is thought that much of the consumer inertia is due to the cost in time (and sometimes money) to the consumer to obtain the information needed to make an informed change. Where consumers are generally satisfied with quality, and where the amounts of money at stake are small, and the information unfamiliar and hard to obtain, consumers may be reluctant to seek out alternatives. Under these circumstances, competitors may have difficulty entering the market and expanding their market shares. If this market entry barrier exists and is substantial, regulators seeking to promote workable competition may have a difficult task in disseminating enough information to cause enough consumers to consider competitors so that the rivalry becomes effective: that is, competition becomes workable in a reasonably short period of time.

We have already discussed whether the theory of contestability is logically consistent, and evidence as to whether the theory of contestability is empirically valid. The remaining issue is how we would judge whether an individual market is "contestable."

Some authorities appear to believe that the existence of "viable competitors" renders a market competitive. They do not rigorously define "viable competitor," but appear to mean a firm that has the financial and technical ability to enter a market and which might logically be assumed to be interested in doing so under some circumstances (which they do not specify). Clearly, if a firm like Teleport Communications announces it is preparing to apply for a certificate of public convenience and necessity to provide a service, it might be considered a "viable competitor" in that market, although we must recall the case of Cox Cable in Kansas, which litigated its right to provide service, won the case, and then decided not to do so.

But if a firm has not announced its interest in entering a market, should it be assumed to be a "viable competitor" if it *could* do so? Some authorities appear to believe that if Teleport Communications is interested in providing broadband private lines, we should then infer Teleport to be a "viable competitor" in the voice grade private line service as well. And should we also consider it a competitor for less-than-voice-grade circuits (packet switched circuits, low speed data circuits, alarm and telegraph circuits)?

An established interexchange carrier like AT&T or MCI has the ability to enter any market, and ever since the signing of the 1982 Consent Decree AT&T has been suspected, despite its early denials, of planning to enter local service markets. More recently, it has begun to do so in several cities, primarily but not entirely by resale, and has filed for permission to do so in all states. Furthermore, since MCI purchased the assets of Western Union, including cable ducts in about one hundred cities, that company, too, must be considered a "viable competitor." At present, ninety-nine per cent of cellular calls go through the exchanges of the local exchange telephone companies, but some have speculated that combinations of cellular carriers and interexchange carriers, along with new technologies that are beginning to be developed and implemented, will permit the interexchange carriers to become significant providers of local telephone service at some future date. Others think that cable television companies, once they solve the problems of offering two-way point-to-point services over networks that were designed for one-way broadcast (that is, one-point-to-many) transmission, will eventually become significant providers of local telephone service.

Pure contestability theory would say that all these firms, and many others, are viable competitors in any telecommunications market in a state. The "evidence" for this would be the local exchange carrier's wish to lower rates in that market, claiming competition.¹⁰⁰ The statements of participants in a market are often the best available evidence of its geographical scope, and the range of products that ought to be included in the analysis. However, paradoxically, a regulatory body must consider the potential bias that interviewees might exhibit, and the strategic considerations that might induce them to respond to regulators' questions inaccurately or misleadingly. Thus, in the TELPAK case AT&T submitted as evidence the opinions of its market managers, but the FCC had difficulty relying upon this evidence.

Even if they do exist, contestable markets are rare. As the author of the theory says:

¹⁰⁰Even if the LEC actually thought it had a perfect monopoly in all markets, according to the Averch-Johnson theory, it would seek to lower rates in markets with the most elastic demands, and raise rates in markets with inelastic demands. While much recent discussion has treated markets with elastic demands as if they were necessarily competitive, there are, in economic theory, many additional factors which might cause a demand for a product to be elastic, so we cannot infer that elastic demand means that the market must be competitive.

How many industries in reality approximate perfect contestability? There may, perhaps, be very few, just as is true of perfect competition. But no one knows yet, because only a few industries have been studied with this issue in mind.¹⁰¹

MARKET STRUCTURE AND INNOVATION

The rate of innovation is an important consequence of market structure. There is a widespread belief among some policy makers that invention and innovation are fostered by conditions of monopoly. This theory is generally attributed to Joseph Schumpeter, who emphasized the importance of innovation. Indeed, he considered it a more important form of rivalry than price competition:

But in capitalist reality as distinguished from its textbook picture, it is not [perfect] competition which counts, but the competition from the new commodity, the new technology, the new source of supply, the new type of organization ... —competition which strikes not at the margins of the profits and the outputs of the existing firms, but at their very foundations and their very lives.¹⁰²

Empirical research suggests that Schumpeter and his followers are incorrect: large firms are not more likely to innovate than smaller ones. As Carlton and Perloff say:

According to ... Gelman Research Associates large database of major innovations ... small firms are relatively more likely to make major innovations. Companies with fewer than 1,000 employees are responsible for 47.3 per cent of important innovations, [but only] 41.2 per cent of total employment. Companies with over 10,000 employees are responsible for 34.5 per cent of the innovations but 36 per cent of total employment....

Large firms in the Federal Trade Commission's (FTC) line-of-business survey account for 73 per cent of both company-financed and federal contract industrial R&D [research and development] expenditures, 55 to 60 per cent of manufacturing sales, and 56 per cent of major innovations.... [They] account for only 61 per cent of patented inventions....

The effect of size is nonlinear, however, so very small and very large firms are more R&D intensive than average-sized firms. Small firms that do research tend to patent more per R&D dollar than larger firms, and firms with large R&D programs tend to have a constant ratio of patenting to R&D.... R&D intensity varies with firm size in some industries and not others, and ... where it does vary, it may be negatively or positively related to size. Thus, these studies *do not confirm the Schumpeter hypothesis* for the United States.¹⁰³

Thus, dominant firms appear less likely to innovate: innovation is fastest in firms with more modest market shares, and larger firms are often imitators. However, we cannot know

¹⁰¹Baumol and Blinder, *Economics*, p. 305.

¹⁰²Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy* (New York: Harper and Row, 1975), p. 84, as quoted in Viscusi, Vernon and Harrington, *Economics of Antitrust and Regulation*, p. 89.

¹⁰³Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*, second edition (New York: HarperCollins, 1994), pp. 698–699, emphasis added. Much of this analysis is attributed to Scherer and Ross: see *Industrial Market Structure*, chapter 17. This is one of Carlton and Perloff's principal sources of empirical research in the summary above.

this precisely, since innovation is often difficult to measure.¹⁰⁴ The rate of introduction of new products might, therefore, be considered as evidence of the degree to which a market is competitive. There are several reasons for being cautious in reviewing such evidence, however:

1. The rate of successful innovation is partly determined by customer needs and the ability of customers to utilize innovations; this may differ with respect to different markets, especially in cases where differing customer classes are involved.
2. As noted above, excessive innovation and introduction of new products can be an anticompetitive strategy, directed at increasing barriers to entry (see table 1.7).
3. It is sometimes difficult to distinguish true innovations from relatively insignificant product differentiation.
4. It is not clear whether and how innovation in productive methods should be considered, when this does not lead directly to new products.

All in all, it does appear that an increased rate of introduction of new services and variants is an indication of a degree of competition in the market. However, it is less certain that this can be measured with sufficient precision, and associated with the degree of competitiveness in particular markets, to serve as an indicator (even an auxiliary indicator) of whether or not a market can be considered "competitive."

SUMMARY

Market power is the ability of a firm to raise its price without fear of losing all its sales: the greater the amount of market power the firm possesses, the greater the degree to which it can raise its price and continue to sell a substantial portion of its output. The literature on market power is complex because markets are complex and the behavior of firms is complex. There are two approaches to the analysis of market power: one approach looks at the structure of the industry, the number of firms, their size, barriers to entry, and infers the presence of market power from these characteristics of the firm and the market. The other approach looks at the behavior of the firms in the market, the type of rivalry they engage in, the extent to which prices do—or do not—fluctuate with changes in demand, and the level of profits, and infers the presence of market power from these characteristics. A third approach denies the existence of market power, or ascribes it only to government regulation or other action. A related view holds that potential competition constitutes an effective limitation on any possible market power that firms might exercise. These are extreme views. The first is not

¹⁰⁴For example, some innovations are unsuccessful, while others do not add functionality, but merely serve to differentiate the firm's product from its competitors'. Thus, the evaluation must be done carefully by an expert on the technology, and not by mere counts of "inventions," patents, or of the expenditures labeled "research and development." *Invention* means the creation of a new process or product; *innovation* is putting the invention into productive use for the market.

supported by the economic literature: persistent elevation of price above cost has been shown in many industries, even in the absence of government regulation or other intervention. The second seems to be of theoretical interest only, since it has not been shown that potential competition has constrained market power in any industry.

However, there are deep divisions within the economics and legal professions as to the degree to which particular structural or behavioral characteristics of an industry may be associated with exercisable market power. What is the market share that gives a firm the power to raise price? To what extent do the firms in markets characterized by the presence of a few large firms behave differently from firms in markets characterized by many small firms? What are barriers to entry, and how significant are they?¹⁰⁵ Does the presence of resellers in a market limit the market power of the large incumbents? To what extent, if any, does the presence of a fringe of small firms in the market limit the market power of the large firms? Does the presence of firms that might potentially enter the market limit the exercise of market power of incumbents?

Economists and lawyers have developed a concept of “workable competition” to describe a market in which the firms are unable to exercise market power. The largest firms in these markets have relatively small market shares. There are relatively low barriers to entry and exit. These markets seem to work about as well as the economists’ models of “perfect competition”—a construct that cannot be found in the real world.

One of the effects of rate-base-rate-of-return public utility regulation has been that the firms provide service of extremely high quality. Indeed, the immediate effect of deregulation is that quality of service falls, as firms become more “market oriented,” paying greater attention to cost control than they did in the cost-plus ratemaking environment. Thus, it is generally agreed that in the early stages of deregulation there is continued need for regulatory scrutiny of service quality, even as scrutiny of price and profits is being relaxed. As competition starts to appear in the industry, some aspects of quality of service start to improve. In some industries the record is now mixed, with some aspects of service better than under regulation, and other aspects worse, so that there are disputes as to whether the overall level of service quality is better or worse. It is thought by some that there will be an overall improvement in service quality if the deregulated industry becomes workably competitive.

¹⁰⁵Note that Singer, in table 1.3, and Hershey and United Shoe Machinery, in table 1.4, managed to retain dominant-firm status—market share above fifty per cent—despite low barriers to entry. Corn Products, in table 1.3 kept its market share above forty-five per cent despite low barriers to entry; many economists consider a market share above forty per cent as indicating that a firm is dominant—that it has market power.

Chapter II

Provisions of the Telecommunications Act of 1996 That Require Competitive Determinations

In chapter 1 we mentioned several provisions of the Telecommunications Act of 1996 that require the FCC, state regulators, legislatures, or the courts to determine whether some segment of the telecommunications industry is competitive. The economists' and lawyers' concept of workable competition¹ may not be the precise standard that some regulators adopt.² As Samuelson points out, an industry might be considered workably competitive if there are public interest benefits from permitting deviations from competitive behavior or market structure;³ however, deviations from competitive behavior in a public utility industry would appear to call for continued regulation, and the 1996 Act is explicit in stating that the antitrust laws apply:

(b) ANTITRUST LAWS.—

(1) SAVINGS CLAUSE.—Except as provided in paragraphs (2) and (3), nothing in this Act or the amendments made by this Act shall be construed to modify, impair, or supersede the applicability of any of the antitrust laws.

(2) REPEAL.—Subsection (a) of section 221 (47 U.S.C. 221[a]) is repealed.

(3) CLAYTON ACT.—Section 7 of the Clayton Act (15 U.S.C. 18) is amended in the last paragraph by striking "Federal Communications Commission."⁴

¹For a detailed definition and explanation, see Areeda, *Antitrust Analysis*, pp. 40–43.

²For example, in its AT&T Reclassification Order the FCC determined that AT&T lacks market power and is "non-dominant" in the domestic interstate, intercity communications market, even though a pattern of price leadership appears to exist, and there are some segments of the market in which AT&T continues to demonstrate the power to control price. Moreover, AT&T's large market share, and the paucity of rivals with significant market share would cause economists and antitrust lawyers to describe the industry as having a "tight oligopoly" or dominant firm market structure: market structures that are generally considered to confer market power upon the largest firm.

³Paul A. Samuelson, *Economics*, 8th edition (New York: McGraw Hill Book Company, 1970), p. 507.

⁴Section 601(b). Section 221(a) of the Communications Act had permitted the FCC to apply "public interest" criteria to insulate mergers of telephone companies from the application of the antitrust laws. Section 7 of the Clayton Act gave the FCC original jurisdiction with respect to communications. The "[Section 221(a)] was originally intended to allow competing telcos [telephone companies] to merge without facing antitrust scrutiny by the Justice Department, a source told [*Telecommunications Reports*]. The repeal 'simply end[s] the Commission's ability to confer antitrust immunity,' according to the House-Senate conference report...." "Mergers, Acquisitions Slow Out of Gate: Analysts Still Expect Industry Consolidation," *Telecommunications Reports*, Vol. 62, no. 8 (February 26, 1996), p. 6, quoting *Telecommunications Act of 1996: Conference Report to Accompany S. 652, House Report 104-458*, p. 201. Hereinafter, *Conference Report*. The conference report makes it clear that the FCC retains authority to conduct a review for Communications Act purposes—that is, for the transfer of licenses. *Conference Report*, p. 201.

Thus, the clearly stated intent of Congress was to create conditions under which a competitive market can develop in telecommunications, but that determinations as to the competitiveness of markets, and of actions by carriers in markets determined to be competitive, should be judged by the standards of antitrust law, rather than the public interest standards of public utility law.⁵ Indeed, it has long been a criticism of the FCC that it permitted mergers and acquisitions on “public interest” grounds that would not have passed muster under antitrust standards.

DETERMINING WHETHER A MARKET IS POTENTIALLY COMPETITIVE

The 1996 Act attempts to create conditions in the markets for telecommunications services so that competition can develop. In some provisions, as in requiring that Local Exchange Carriers provide facilities and open their databases of telephone numbers to their competitors, it creates obligations that go beyond neutrality: not only must the established carriers permit their competitors to operate, but they must provide aid that substantially lowers the barriers to entry. The model for this policy developed in the 1970s, when AT&T and its then-subsiary Bell Companies controlled local access lines which were needed by facilities-based interexchange carriers to originate and terminate their calls. Initial policies that called for the Bell Operating Companies (BOCs) to provide connections for MCI and Sprint on the similar terms to those on which they provided connections for AT&T’s Long Lines Division were conflated with policies permitting resale of long-distance services provided by AT&T and the Bell Operating Companies,⁶ to reduce the barriers to entry.

⁵... [T]he conferees anticipate that cable companies will be providing local telephone service and the BOCs will be providing cable service. Mergers between these kinds of companies should not be allowed to go through without a thorough antitrust review under the normal Hart-Scott-Rodino process. The new language contains a confirming change to clarify that these mergers will now be subject to Hart-Scott-Rodino review. By returning review of mergers in a competitive industry to the DoJ, this repeal would be consistent with one of the underlying themes of the bill—to get both [the FCC and the DoJ] back to their proper roles and government by consent decree....” *Conference Report*, p. 201.

⁶It is a general condition of American law that the purchaser of a commodity (a good or service) may do with it what he or she will—including re-sell it. As public utilities, telephone companies have an obligation to sell their services to all qualified customers: tariff provisions that prevented resale could be valid only so long as the regulatory commissions consented to their enforcement.

Certainly, competition developed very slowly in the years between the MCI Decision⁷ and the remand of the Execunet Decision.⁸

The slow development of competition in intercity telecommunications contrasts with the rapid development of competition in Customer Premises Equipment (CPE or "station equipment") after the Carterfone decision. With respect to station equipment, as long ago as 1986 it was clear that the market structure had changed from a near-monopoly to an oligopoly, and quite possibly a loose oligopoly. Table 2.1 shows that AT&T's market share had fallen to about 25.3 per cent in the market for complex station equipment. If we assume the market shares of its competitors were the same in the station equipment market as in the market for central office equipment (36, 9, and 2 per cent, respectively) the Herfindahl index would be 2021.09 (and the market leader would be Northern Telecom rather than AT&T, and the industry structure would have fallen from "dominant firm" to "tight oligopoly"); if we assume that the market shares of the competitors were in the same proportion to AT&T's in both markets (that is, 18, 4.5 and 1 per cent in the station equipment market), the Herfindahl index would be 985.34 (and the industry would be a "loose oligopoly").

We may compare the intercity communications market: the market shares of the so-called Interexchange Carriers (IXCs). Prior to divestiture, AT&T and the Bell Operating Companies had very nearly 100 per cent of the market. AT&T carried only interstate interexchange traffic, while the BOCs carried both interstate and intrastate traffic. There had been several emergent interexchange carriers, which were then called "Specialized Common Carriers." These carried a small amount of private line traffic prior to 1977, and small but growing amounts of message traffic thereafter. However, it was provisions for "equal access" in the 1982 Consent Decree that permitted the Specialized Common Carriers to become full-fledged Interexchange Carriers. Table 2.2 shows how market shares developed, and the resulting Herfindahl indices.

⁷The starting date of competition is somewhat arbitrary. Most authorities date the advent of toll competition to the MCI Decision (18 FCC 2nd 953 [1969] and 21 FCC 2nd 190 [1970]) and the Specialized Common Carriers Decision (29 FCC 2nd 870 [1971]), but others refer to the Above 890 Decision (29 FCC 2nd 359 [1959]), or the development of private microwave systems in the early 1950s, or public mobile system competition in the 1940s, or competition between Western Union and Postal Telegraph until Postal Telegraph declined and merged with Western Union in 1943, or even the competition between Western Union and the Bell Interests before 1913. See *Economic Implications of Competition*, Docket 20003 (61 FCC 2nd 766 [1976]), para. 36-41, 44-49. The advent of competition in station equipment is usually dated from the Carterfone Decision (13 FCC 2nd 420 [1969]), but some authorities date the advent from the reversal of the original Hush-a-Phone Decision (*Hush-a-Phone v. U.S.*, 238 F. 2nd. 266 [U.S. Court of Appeals, District of the District of Columbia, 1956]), even though there was little competitive activity in the thirteen years between Hush-a-Phone and Carterfone.

⁸The FCC had specifically and summarily rejected message toll competition in the Execunet Decision, 60 FCC 2nd 65 (1976). Only after the courts remanded the FCC's decision on the grounds that the FCC had never made a "public interest" determination that MTS and WATS were best offered under conditions of monopoly, did the FCC open the switched, "common network" services to competition. Gerald W. Brock, *The Telecommunications Industry: The Dynamics of Market Structure* (Cambridge, Mass.: Harvard University Press, 1981), pp. 225-229. Steve Coll, *The Deal of the Century*, pp. 83-91, puts forward at length the thesis that MCI "duped" the FCC, based on interviews with the FCC staff.

TABLE 2.1
Manufacturers' 1986 Market Shares in PBXs, Key Systems, and Central Office Equipment
(Dollars in Millions)

	<u>PBXs</u>	<u>Key Systems</u>	<u>Central Offices</u>
AT&T	24.0% \$717	26.6% \$550	50% \$2,500
Northern Telecom	NA	NA	36% \$1,800
GTE	NA	NA	9% \$450
Stromberg-Carlson	NA	NA	2% \$100
Others	76.0% ^a \$2,268	73.4% ^a \$1,520	3% \$150

Source: NATA, *Statistical Review* (1987), tables III and VII. Fredric Paul, "U.S. Switch Market: This party's about to be crashed," *CommunicationsWeek*, March 23, 1987, p. C4.

Notes: NA denotes statistic is not available.

^aThese include sales of AT&T equipment by Bell and Independent Operating Telephone Companies.

TABLE 2.2
Market Shares in Interexchange Telecommunications, 1984–1995

Company	1984		1988		1993		1995	
	Market Share %	Contrib. to Herfind.	Market Share %	Contrib. to Herfind.	Market Share %	Contrib. to Herfind.	Market Share %	Contrib. to Herfind.
AT&T	90.0%	8100.00	75.4%	5685.16	61.0%	3721.00	55.2%	3047.04
MCI	4.9%	24.01	9.9%	98.01	18.7%	349.69	17.4%	302.76
Sprint	3.1%	9.61	6.2%	38.44	9.6%	92.16	10.1%	102.01
LDDS	NA	—	NA	—	NA	—	3.3%	10.89
Other	2.0%	—	8.5%	—	10.7%	—	14.0%	—
Total	100.0%	8133.62	100.0%	5821.61	100.0%	4162.85	100.0%	3462.70

Notes: NA designates data not available; — designates not applicable.

Sources: Market shares for 1984, 1988, 1993: Viscusi, et al., *Economics of Regulation*, p. 495, citing Arsen J. Darnay and Marlita A. Reddy, *Market Share Reporter—1994* (Detroit: Gale Research, 1994), and *Fortune*, June 13, 1994.

Market shares for 1995 from FCC, Common Carrier Bureau, "Common Carrier Competition," Fall 1995, p. 8. Herfindahl indices calculated by present author.

AT&T's market share has been declining steadily. In the 4 years between 1984 and 1988, it declined at a rate of 3.7 percentage points per year. In the 7 years between 1988 and 1993, it declined at a rate of 2.9 percentage points per year. Even though AT&T's market share remains above 50 per cent, and the Herfindahl index is above 3,400, so that nearly all economists and antitrust lawyers would characterize the industry as a "tight oligopoly" or as having "a dominant firm" market structure, and even though it has observed some of the

pricing characteristics of non-workable competition, the FCC has declared AT&T non-dominant.

In chapter 1 we observe that when industries are being transformed from dominant firm market structures to tight or loose oligopoly, the leading firm generally loses at least one percentage point of market share per year. By these standards, the telecommunications market is becoming more competitive, and it may well be that AT&T has less market power than its market share would suggest. However, in this industry the three large firms have a market share of 82.7 per cent, down from 89.3 per cent in 1993, 91.5 per cent in 1988, and 98.0 per cent in 1984. This is clearly a very tight oligopoly, and the leading firms' collective market share is declining much less rapidly than that of AT&T taken alone. Thus, we must not dismiss the possibility that, while AT&T may have less market power than its individual market share would suggest, the leading three firms retain a very substantial amount of collective market power. Analysis of the degree of market power retained by the leading firms must go beyond the market share of AT&T alone, and should give substantial weight to the market and pricing behavior of the firms.

We can speculate as to why the station equipment market was so much quicker to develop than the market for interexchange services during the 1970s, even though it was so slow to develop after Hush-a-Phone.⁹ The FCC has been permitting alternative companies to provide competitive access for certain interstate and even intrastate services since the mid-1980s, but it reports that the market share of these providers is presently 3 per cent (and that 84 per cent of the alternative local access is being provided by toll carriers).¹⁰ As the FCC says, "it may be argued that the development of competition in local services is roughly a dozen years behind the development of competition in long distance."¹¹

The Telecommunications Act directs the FCC and the states to remove barriers to entry into all telecommunications markets. These include any remaining restrictions on entry into interexchange markets, as well as the more highly publicized opening of entry into local telephone service and CATV service. However, once open entry has occurred state commissions and the FCC will have to determine policy with respect to the need for

⁹There were foreign (Northern Telecom [which was Northern Electric in Canada at the beginning of the period], Nippon Electric [NEC], Hitachi) and small domestic companies (GTE Automatic Electric, Stromberg-Carlson) manufacturing such equipment for the non-Bell telephone companies. Moreover, there were many electronics manufacturers (Panasonic) prepared to enter segments of the market. The interexchange market, by contrast, required substantial investments before any service could be supplied, and enormous investments before the most significant markets could be served.

¹⁰The FCC reports that the "interstate access" market is \$23 billion. Of that, 71% is provided by the Bell Operating Companies, 26% by other Local Exchange Carriers, 2.48% by toll carriers, 0.41% by "Competitive Access Providers" (including CATV companies and other "Alternative Access Providers"), and 0.07% by wireless. FCC, Common Carrier Bureau, "Common Carrier Competition" (Spring, 1995), (http://www.fcc.gov/Bureaus/Common_Carrier/Reports/ccq2q95.w51, accessed April 23, 1996, p. 6).

¹¹*Ibid.*, p. 5.

economic regulation, consumer protection, and inter-carrier relations.¹² In this chapter we discuss the economic and competitive determinations that the Act calls for.

REMOVAL OF BARRIERS TO ENTRY

The 1996 Act adds new language to the Communications Act of 1934, entitled "Development of Competitive Markets," and calling for removal of barriers to entry into telecommunications markets.¹³ The competitive determinations required by the law as amended are in the sections titled "Interconnection" (Section 251), "Removal of Barriers to Entry" (Section 253), and "Market Entry Barriers Proceeding" (Section 257). While the requirements are couched in terms of removal of regulatory barriers to local service, in fact they are not so limited. Some of the provisions, such as the ones on access to facilities (section 251[b][4] [Access to Rights of Way] and section 251[c][6] [Collocation]), create new obligations that go beyond the traditional removal of restrictions on resale: these have never been offered as services. The requirement that all services be offered at "wholesale rates" (section 251[c][4][A]) is also a new requirement: it calls for a discount from retail rates based upon "avoided costs,"¹⁴ This begs the question of whether the retail rate in question is fully compensatory to begin with: important local service rates are customarily determined as a residual, and are thought to be "subsidized." Thus, this clause appears to conflict with the general requirement that the rates for interconnection and network element charges shall be "based on cost" and "may include a reasonable profit" (Section 252[d][1]) The effect of these two requirements, taken together, will probably be to force states to raise rates for services that may be resold (a service may not be resold to another class of customers over the opposition of the carrier, so residential service (claimed to be the recipient of most of these implicit subsidies) may not be resold except to residential customers.¹⁵ There is a general requirement (section 254[k]) that competitive services not be subsidized that might be applied to preserve some subsidies, if these can be made explicit. See below.

Other provisions, such as those on number portability (section 251[b][2] and section 3[r][46]) are also of this nature.

¹²FCC preemption of state statutes and regulations is largely limited to removal of barriers to entry. Where a regulatory practice does not constitute a significant barrier to entry, the FCC generally has no authority to preempt it. In particular, section 2(b) of the Communications Act of 1934 remains in effect: state commissions retain authority over intrastate tariffs and rates, other than for mobile services. See P.L. 104-104, section 253.

¹³Section 101 of the 1996 Act amends Title II of the 1934 Act by adding new language dealing with competition after section 229 (47 U.S.C. 229).

¹⁴"For the purposes of section 251(c)(4), a State commission shall determine wholesale rates on the basis of retail rates charged to subscribers for the telecommunications service requested, excluding the portion thereof attributable to any marketing, billing collection and other costs that will be avoided by the local exchange carrier" (section 252[d][3]).

¹⁵Section 251(c)(4)(B).

While, as noted above, the FCC is inclined to prescribe a single set of rules to apply nationally¹⁵ the statute actually says:

PRESERVATION OF STATE ACCESS REGULATIONS.—In prescribing and enforcing regulations to implement the requirements of this section, the Commission shall not preclude the enforcement of any regulation, order, or policy of a State commission that—

- (A) establishes access and interconnection obligations of local exchange carriers;
- (B) is consistent with the requirements of this section; and
- (C) does not substantially prevent implementation of the requirements of this section and the purposes of this part (Section 251[d][3]).

It appears, therefore, that states will have substantial freedom to prescribe interconnection regulations, although some litigation may be required to determine the limitations on the FCC's preemptive authority. However, the state regulations must be specifically intended to remove entry barriers, or, to the extent that they create an entry barrier, the barrier must be *insubstantial* and there must be a clear showing of public benefit that far outweighs the impediment. This is a new type of showing. As the *Conference Report* says:

New section 253(b) clarifies that nothing in this section shall affect the ability of a [s]tate to safeguard the rights of consumers in addition to consumers of telecommunications services, ... this includes [the other fixed] utilities, to the extent such utilities chose to provide telecommunications services. Existing state laws or regulations that reasonably condition telecommunications activities of a monopoly utility and are designed to protect captive utility ratepayers from the potential harms caused by such activities are not preempted under this section. However, explicit prohibitions on entry by a utility into telecommunications are preempted under this section.¹⁶

Entry barriers are summarized in table 1.7. Those of most concern here include:

- *Franchise requirements* (as distinguished from a more general licensing requirement; franchises usually require the applicant to make extensive showings of fitness to serve, and of unmet needs)¹⁷
- *Access to rights of way* (Section 253(c) recognizes management of rights of way as a state

¹⁵An illustrative but incomplete list in the FCC Notice of Proposed Rulemaking, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, (FCC mimeo 96-182, released April 19, 1996), includes paras. 29, 33, 36, 47, compared with paras. 52, 59, and especially 65, 69, and 81.

¹⁶*Conference Report*, p. 127.

¹⁷While franchises do not appear to be specifically prohibited, section 253(a) states: "No State or local statute or regulation, or other State or local legal requirement, may prohibit ... the ability of any entity to provide any interstate or intrastate telecommunications service." However, in rural areas state commissions may require that entrants qualify as "eligible carriers" under the new section 214(e)(1) of the Telecommunications Act (Section 253(f); new section 214 of the Communications Act is in section 102 of the Telecommunications Act). "Eligible carriers" are those eligible to receive support from the Universal Service Fund: see sections 253(f) and 214(e)(1). Also, rural carriers are generally exempt from the requirement that they offer their services at wholesale rates for resale, nor need they provide services to alternative access providers, if it would be economically burdensome to do so (see sections 251(f) and 259(d)), subject to certain conditions in sections 251[f][1][C] and 253(f)]. Thus, the act retains barriers to entry in rural areas.

and local matter, but the regulation must be nondiscriminatory)¹⁸

- *Resale* (by permitting and encouraging resale of the services of the incumbent carrier, capital requirements for entry are reduced)¹⁹
- *Number portability* (this makes it easier for the entrant to market its services to new customers, who might otherwise be reluctant to change telephone numbers in order to change local carriers; the lack of such portability is claimed by the competitive access providers to be a major barrier to entry)

State commissions will have to make determinations in these areas, and for arbitrating disputes between carriers. The applicable legal standard would appear to be whether the regulation or practice constitutes a barrier to entry. In most instances, except as provided by an explicit provision of the Act, no action need be taken to attract entry: it suffices to show that the policy is truly neutral—that it does not unreasonably advantage the incumbent, and that certain of the incumbent's inherent advantages have been neutralized. Certainly, any prohibition that may apply to entrants (such as a refusal to grant them the right of *eminent domain*) must be compensated by an advantage or benefit (the right to lease the plant and to resell the services of the incumbent).

It must be recognized that in some instances competition will be slow to develop. In such instances continued regulation of the incumbent, coupled with surveillance of market structure, is the only supportable policy.²⁰ In particular, lack of consumer awareness can create "brand loyalty," and brand loyalty is a recognized barrier to entry. A pro-competitive policy might have to include educational efforts to increase consumer knowledge: one cannot assume that legislative removal of barriers to competition will create competition if the economic conditions are not yet ripe.

¹⁸Nothing in this section affects the authority of a State or local government to manage the public rights-of-way or to require fair and reasonable compensation from telecommunications providers, on a competitively neutral basis, for use of public rights-of-way on a nondiscriminatory basis, if the compensation requirement is publicly disclosed by such government" (Section 253[c]). It is arguable that the most important right conveyed by the "certificate of public convenience and necessity" is the right to dig up the streets. It is also obvious that space under the streets (or beside them) is limited, and only one or a few companies can be granted direct access: the traffic congestion that results when one utility seeks to upgrade its plant demonstrates the importance of this. Thus, restrictions on the direct access to the public rights-of-way imply that there must be reasonable possibilities of indirect access by competitors to duct space, pole lines, or even cables owned by a carrier that has been granted such direct access: generally, the incumbent LEC and CATV companies.

¹⁹The Act requires the incumbent LECs to offer access to their networks only to "qualifying carriers" (section 259[a]), defined as a carrier that "lacks economies of scale or scope" and "offers telephone exchange service, exchange access and any other service that is included in universal service, to all customers without preference throughout the service area for which such carrier has been designated an eligible telecommunications carrier under section 214(e)" (section 259[d]).

²⁰As discussed in chapter 1, there is little or no empirical evidence in support of the theory that the existence of potential entrants to a market will cause incumbents to lower prices in that market. Some economists deny the existence or importance of entry barriers, but removal of such barriers is the specific objective of the Act, and the policies it calls for.

THE COMPETITIVE CHECKLIST

The Telecommunications Act of 1996 contains a "competitive checklist" of fourteen items (section 271[c][2][B]). If the Bell companies meet the terms of this checklist, they will be permitted to provide long distance services outside their franchised territories, and to engage in "manufacturing," as that term is defined in the 1982 Consent Decree.

- (i) Interconnection in accordance with the requirements of sections 251(c)(2) and 252(d)(1).²¹
- (ii) Nondiscriminatory access to network elements in accordance with sections 251(c)(3) and 252(d)(1).
- (iii) Nondiscriminatory access to the poles, ducts, conduits and rights-of-way owned or controlled by the Bell operating company at just and reasonable rates in accordance with the requirements of section 224.¹⁶
- (iv) Local loop transmission from the central office to the customer's premises, unbundled from local switching or other services.
- (v) Local transport from the trunk side of a wireline local exchange carrier switch, unbundled from switching or other services.
- (vi) Local switching unbundled from transport, local loop transmission, or other services.
- (vii) Nondiscriminatory access to—
 - (I) 911 and E911 services;
 - (II) directory assistance services to allow the other carrier's customers to obtain telephone numbers; and
 - (III) operator call completion services.
- (viii) White pages directory listings for customers of the other carrier's telephone exchange service.¹⁷

²¹This requirement calls for interconnection of the networks at all local service providers. The quality of such connections is to be equal to the quality each carrier provides itself, so that there will not be a repetition of the service quality problems faced by the interexchange carriers prior to AT&T's divestiture of the Bell Operating Companies pursuant to the 1982 Consent Decree. Furthermore, the rates for such interconnection are to be just and reasonable. The phrase "additional costs of terminating such calls" in section 252(d)(2)(A)(ii) suggests that an incremental cost standard is intended, even though section 252(d)(2)(B)(ii) prevents the collection of precise information on the costs of originating and terminating calls. According to the *Conference Report*, the intent is that the traffic settlements be based on "reciprocal compensation" (p. 126). It appears that the intent of Congress is that these settlements agreements (for that is what they are) will be negotiated, and not subject to a drawn-out ratemaking process.

¹⁶These two clauses seem to be intended to ensure that competitors can obtain access to all facilities of the established local operating company. (The clauses following just make them more explicit.) The reference to "network elements" requires that the competitors be allowed access to any element of plant or service, whether or not such access has ever been tariffed as a service. Thus, local exchange companies will be forced to provide whatever elements their competitors need to provide service, including service that is in whole or in part resale service. Furthermore, with respect to poles, conduits, and rights-of-way, it appears that the expectation of the bill's drafters is that the entrants (the new competitors) will not normally own such facilities. There does not appear to be a provision to require non-telecommunications companies (electric and gas utilities, or landlords) to permit access to their property on the part of the new competitors, but if they do not, the telephone company will have to sublease or offer under tariff to its competitors whatever rights it has for access to the property in question. There are a lot of questions this raises with respect to rights-of-way and access arrangements on private property, and the restrictions on use that may be contained in access contracts; these are not addressed in the Act (or the *Conference Report*), either in these sections or in section 259 on infrastructure sharing.

¹⁷There is apparently no requirement for Yellow Pages listings, which may be even more crucial for business customers. Since it appears that Yellow Pages is a monopoly or near-monopoly in most metropolitan areas, this may be an important omission, constituting a barrier to entry. Presumably state or federal regulators can extend the checklist by requiring such listings before acting in some matter that is important to the LEC.

(ix) Until the date by which telecommunications numbering administration guidelines, plan, or rules are established, nondiscriminatory access to telephone numbers for assignment to the other carrier's telephone exchange service customers. After that date, compliance with such guidelines, plan, or rules.

(x) Nondiscriminatory access to databases and associated signaling necessary for call routing and completion.

(xi) Until the date by which the Commission issues regulations pursuant to section 251 to require number portability, interim telecommunications number portability through remote call forwarding, direct inward dialing trunks, or other comparable arrangements, with as little impairment of functioning, quality, reliability, and convenience as possible. After that date, full compliance with such regulations.

(xii) Nondiscriminatory access to such services or information as are necessary to allow the requesting carrier to implement local dialing parity in accordance with the requirements of section 251(b)(3).

(xiii) Reciprocal compensation arrangements in accordance with the requirements of section 252(d)(2).

(xiv) Telecommunications services are available for resale in accordance with the requirements of sections 251(c)(4) and 252(d)(3).¹⁸

Note that there is no actual requirement that there be even a single competitor¹⁹ in any service area. Certainly, there is no requirement that the Bell company be a non-dominant carrier under the current FCC rules, much less a requirement that the market be workably competitive in the legal and economic sense. The requirements of the Act amount to the removal of the major economic entry barriers to the provision of telephone service. Barriers stemming from the legalities and practices of public utility regulation are also removed by the statute,²⁰ though their removal is not part of the checklist.

¹⁸Section 271(c)(2)(B). The offering of services for resale at "wholesale rates" that are calculated by discounts from tariffed rates, less the *incremental* costs of a few, *specified*, cost elements, means that these services will be taken whenever the wholesale rate is less than the tariffed rate for network elements (which is, itself, based in incremental cost). Thus, tariffed rates will have to be brought more in line with costs, particularly for those services now being offered at reduced, discounted, promotional, or eleemosynary rates—or the support mechanisms for the discounts will have to be made more explicit: residual ratemaking will have to be phased out in most instances. (Residual ratemaking is the common practice of setting rates for a favored class of customer as the residual of the revenue requirement, without explicit reference to cost, after most of the revenue requirement has been established on the basis of markups over measured cost.) Note, too, that the presence of a *single* facilities-based competitor of *any size* in a *single* market in the service area does not eliminate the need for the Bell company to meet the competitive checklist for the whole state (section 271[d][3][A][i]). The requirements that the Bell company negotiate in good faith, and that the state commission arbitrate (section 252) ensure that the requirements of the competitive checklist will be met eventually.

¹⁹Section 271(c)(1)(A) provides that a Bell Company will be permitted to engage in inter-LATA interexchange service *in its own region* if it is providing access services to a *facilities-based exchange-service* competitor (defined as one that provides its services "predominantly" over its own facilities. However, this requirement will be waived if no qualified (as determined by the state commission) facilities based competitor has materialized, *or* the Bell company is offering services under terms that meet the requirements the competitive checklist, even if there are no takers (sections 271[c][1][B] and 271[c][2][A]).

²⁰Requirements that can clearly be shown to protect the public against such perils as financially unstable or technically incompetent entrants would appear to be permissible (section 253[b] and 253[c]), but these requirements must be imposed on a "competitively neutral basis and consistent with section 254" and "nondiscriminatory." Similarly, the state may continue to enforce "service quality standards or requirements," (section 252[f][2]) and reject agreements that "discriminate against a telecommunications carrier not a party to the agreement" or are "not consistent with the public interest, convenience, and necessity" (section 252[e][2][A]). Indeed, there appears to be a call for continued state commission regulation of quality of service (sections 252[e][3] and 253[b]).

Thus, a showing that the terms of the competitive checklist have been met is not equivalent to a showing that there is any competition, much less that the Local Exchange Carrier is a non-dominant carrier according to the FCC's rules. States will have to make their own findings as to the current state of competition in each market or service and trends in competitiveness, when deciding the appropriate form of regulation. Markets do not all become competitive at the same rate, and potentially competition does not provide the same consumer protections as actual workable competition. Moreover, as we have seen, the FCC accepted AT&T's claims to be a non-dominant carrier, even after admitting that the industry exhibits a pattern of price leadership. A pattern of price leadership is not consistent with a finding that the price leader (or largest firm) lacks power over price: the economic evidence demonstrates that when there is a dominant firm (one with a market share over 50 per cent), or an industry pattern of tight oligopoly (the largest 4 firms have over 60 per cent of the market), prices are raised (at a 70 per cent market share the profits of an unregulated firm may be treble the competitive rate).²¹ Indeed, in the international market, while AT&T's market share has fallen in the past few years, prices have not fallen by nearly as much as in the domestic market and profits are extremely high. Still, the FCC declared AT&T non-dominant internationally as well.²²

STATE REGULATORY OPTIONS IN THE ACT

It is clear that states have no option other than to remove barriers to entry into all communications markets. This includes any remaining barriers to entry into interexchange markets, or cable television. The state may continue to issue certificates of public convenience and necessity and define franchise areas, but a company may apply for (and receive) franchises in any number of areas.²³

With respect to tariffing, the state authority is nominally unaffected. The state may continue to set tariffs for any intrastate telephone service, using price caps, traditional rate of return regulation, or any other means of setting rates. However, the requirement in section 251(c)(4) that wholesale discounts be offered for all services, and that these rates be based on a discount from the retail (end user) tariffs to reflect marketing, billing, collection and other avoided costs (section 252[d][3]) amounts to a requirement that services for resale be priced at full costs. The common practice of pricing access services for residential customers and

²¹See table 1.1 and Shepherd and Wilcox, *Public Policies Toward Business*, pp. 50-52, citing Buzzell, Gale, and Sultan, "Market Share—a Key to Profitability."

²²See Motion of AT&T to be Declared Non-Dominant for International Service, Order, FCC Mimeo 96-209 (May 14, 1996) (ORDER59.5 in <http://www.fcc.gov/Bureaus/International/Orders/fcc96209.zip>, accessed May 25, 1996).

²³With the exception for certain rural areas served by a rural telephone company, where the entrant may have to meet the requirements for being an eligible communications carrier under section 214(e)(1) of the Communications Act (see section 253[f] of the Telecommunications Act).

sometimes small business customers, on a residual basis without measuring their actual costs²⁴ appears to have been effectively eliminated, unless these rates can be removed from the resale requirement. If resale of all tariffs is required, this will force states to make substantial revisions of the methods of subsidizing customer classes: the subsidies will have to be made explicit, with levies on the tariffs of all carriers to be credited to the customers against their bills, or paid to the carriers serving those customers.²⁵

With respect to the federal (and presumably any state) Universal Service Fund, the state commission retains authority to determine which carriers may receive support payments. Generally, the Act suggests that a carrier must serve its entire service area to be eligible for support, and determination of the service areas remains part of the franchise-granting authority of the state commission.²⁶

The tariffs for rate elements for interconnection and network services provided by the Local Exchange Carriers to alternative access providers

(A) Shall be—

(i) based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element (whichever is applicable), and

(ii) nondiscriminatory, and

(B) may include a reasonable profit.²⁷

This appears to require that the profit not be determined on the basis of rate-base-rate-of-return regulation, though it is hard to see how a regulated profit can be determined to be "reasonable" on any other basis. Perhaps state commissions will use the same mark up over full costs for these services that they use for other, similar services for which they are not so

²⁴After the overall revenue requirement is determined, rates for most services are set, based upon a markup over their costs. The revenues from these services are calculated, subtracted from the revenue requirement, and then the rates for a few favored services are set to recover that remainder. For details and discussion, see David Chessler and Li-kung Ferng, *State Commission Choice of Costing Methods for Telecommunications: Widespread Acceptance of the Marginal Cost Concept; Limited Acceptance of Marginal Cost Studies*, (Bethesda, Md.: David Chessler and Associates, 1986), abridged as "On the Limited Acceptance of Marginal Cost Pricing in Telephone Regulation," in Jane L. Racster, ed., *Issues in Regulating Imperfectly Competitive Telecommunications Markets* (Columbus: National Regulatory Research Institute, 1986).

²⁵The general requirement that all rates and conditions of service be nondiscriminatory calls for such complex arrangements. The state exchange carriers' associations can serve as a mechanism for payments, and it would appear to be permissible to require all local carriers to join that association. Section 254(d) requires all interstate interexchange carriers to make payments "on an equitable and nondiscriminatory basis" to the FCC's Universal Service Fund or other support mechanisms. This requirement may be extended to providers of interstate telecommunications that are not carriers "if the public interest so requires."

²⁶See section 254(e) of the Telecommunications Act which requires that a carrier be eligible under new section 214(e) to receive payments from the federal Universal Service Fund.

²⁷P.L. 104-104, 110 Stat. 64, section 252(d)(1).

constrained.²⁸ Where calculations of costs are required (as for transportation and termination of traffic in section 252[d][2][A], or in the elimination of avoided costs in the calculation of wholesale rates in section 252[d][3]), there is an implied preference for incremental costs. The *Conference Report* emphasizes that section 252 is intended to apply to negotiated agreements (p. 127). Where ordinary ratemaking can be used, state ratemaking practices will still apply.

There are other anomalies in the Act. As noted, the charges for transportation and termination of traffic must be compensatory, based upon a "reasonable approximation of the additional costs of terminating such calls," but this does not authorize any regulatory body "to engage in any rate regulation proceeding to establish with particularity the additional costs of transporting or terminating calls."²⁹

OTHER REGULATORY AUTHORITY

The Telecommunications Act augments state commission powers in some important areas. The FCC has long required regulated dominant carriers to provide competitive services through a separate subsidiary.³⁰ Moreover, under the divestiture pursuant to the 1982 Consent Decree, the Bell Operating Companies established many subsidiaries, some of which controlled what had previously been telecommunications services, and others of which provided unregulated services, some of which are nongermane to the communications industry.³¹

²⁸This is an application of a pricing model commonly used in retailing. Generally, telephone companies present studies as to the embedded direct cost or incremental cost of each of a large number of services. Then they propose rates which will earn a multiple of the direct costs. The difference is applied to corporate overheads; shared, common and joint costs; and return on investment. As a practical matter, the ratio between the revenue from the service and the direct costs (or fully allocated costs, which include recovery of the overheads, shared costs, and return) may be calculated. Some services (notably residential service, and particularly the "subsidized" components of residential service, such as lifeline service), will recover not much more than their direct costs (and may even recover less). In this case the markup may be 20%, if the revenues are 120% of direct costs. Certain data services, PBX trunks, and other business services may get much higher markups; perhaps 100%, if revenues are 200% of direct costs. Markups may be even higher for some discretionary services, such as call forwarding, call waiting and other software-based services with low recorded costs. The state commission *could* apply to the access services the markup calculated for unsubsidized business services that use comparable technologies, such as PBX trunks. For an example of the application of this to determining an appropriate markup for a services, see David Chessler, *Prefiled Supplemental Testimony on Private Line Service*, Alaska Public Utilities Commission, Docket U-92-6, January 15, 1993.

²⁹Section 252(d)(2).

³⁰David Chessler, "New Directions in Structural Regulation In Telecommunications," *Transportation and Public Utilities Group, American Economic Association* (December 29, 1984). *Idem*, "The Choice Between Accounting and Structural Approaches to Regulation," *Institute of Internal Auditors* (October 7, 1985).

³¹David Chessler, "Yellow Pages Subsidiaries of the Bell Regional Holding Companies," *National Regulatory Research Institute Quarterly Bulletin*, vol. 7, no. 1 (January, 1986). *Idem*, *Comments on the NYPSC/NECPUC Investigation of Relations Among Bell Operating Companies, Their Regional Holding Companies and the Central Services Organization* (Columbus: National Regulatory Research Institute, 1984). *Idem*, "Suggestions for a Sample Project Plan for an Investigation by a State Commission into Relations Among A Bell Operating Company, the Central Services Organization, and Certain Other Entities," Report to the NARUC Committee on Communications (Columbus: National Regulatory Research Institute, 1984). David Chessler, "Appropriate Strategies for Regulating the Bell Regional Holding Companies and Bell Communications Research, Inc.," in *New Directions: State Regulation of Telecommunications: Symposium Proceedings* (Olympia: Washington State Legislature, Joint Select Committee on

(continued...)

The Telecommunications Act will result in further proliferation of such separate subsidiaries, since it requires the Bell companies to offer any inter-LATA interexchange services and information services and perform any manufacturing through separate subsidiaries.³²

The authority of state commissions to investigate such subsidiaries and transactions between them and the regulated subsidiaries of the telephone companies has sometimes been disputed.³³ The Telecommunications Act provides that the separate subsidiaries it orders for inter-LATA services and for manufacturing will be subject to a joint compliance audit by the FCC and state commissions every two years, through an independent auditor, emphasizing compliance with the separate accounting requirements (section 272[b]) with full commission access to the auditor's work papers (section 272[d]). Moreover, all transactions between the separate subsidiary and the telephone utility shall be at "arms length ... reduced to writing and available for public inspection" (section 272[b][5][3]). The electronic publishing subsidiary is subject to similar separations requirements (section 274[b]), and both the telephone utility and the affiliate shall have an annual compliance audit by an independent entity, with the results available for review by any "lawful authority" (section 274[b][8]).

Moreover, the Telecommunications Act of 1996, in section 103, adds a new part 34 to the Public Utility Holding Company Act of 1934 (15 USC 79) that establishes a new type of entity: an "Exempt Telecommunications Company." These are companies that are recognized by the FCC as providing telecommunications services or information services, or products or services incidental thereto, either directly or indirectly through affiliates. State commissions are given authority (section 34[b]) to prevent the sale of regulated public utility assets (electric or gas) to such exempt holding companies. The FCC does not have jurisdiction over transactions between an exempt telecommunications company and a registered holding company, except in matters of allocation of overhead costs (section 34[e][3]). However, if the FCC obtains information from any registered holding company (because of concerns about its financial stability), it may respond to a state request for that information (sections 34[f][2], 34[f][3]).

Section 34(i), titled "Protection Against Abusive Affiliate Transactions" provides that

³¹(...continued)

Telecommunications and University of Washington, Graduate School of Public Affairs, 1984). David Chessler, Brian K. Clark, and Li-Kung Ferng, *Unregulated Enterprises of the Bell Regional Holding Companies* (Columbus: National Regulatory Research Institute, 1986). David Chessler, "The Public Interest and the Affiliates of the Bell Regional Holding Companies," Utah Public Service Commission, Third Annual Conference on State Utility Regulation, Salt Lake City (February 2, 1987). David Chessler, "The Public Interest and Diversification by the Bell Regional Holding Companies," Phillips Publishing, *Cashing in on Diversification: Winning Strategies in the New Telecommunications Marketplace* (April 23, 1987).

³²Sections 272 and 274.

³³The FCC has not generally had such difficulties: its authority to investigate under sections 215 and 218 extends to affiliates of all sorts.

A public utility company may enter into a contract to purchase [telecommunications or information services or services under FCC jurisdiction] described in subsection (a)(1) from an exempt telecommunications company that is an affiliate or associate company of the public utility holding company only if—

- (1) every State commission having jurisdiction over the retail rates of such public utility holding company approves such contract....

Section 34(l), titled "Books and Records" provides

(1) Upon written order of a State Commission, a State commission may examine the books, accounts, memoranda, contracts and records of—

- (A) A public utility company subject to its regulatory authority under state law;
- (B) any exempt telecommunications company selling products or services to such public utility company or to an associate company of such public utility company; and
- (C) any associate company or affiliate of an exempt telecommunications company which sells products or services to a public utility company referred to in subparagraph (A), wherever located, if such examination is required for the effective discharge of the State commission's regulatory responsibilities affecting the provision of electric or gas service in connection with the activities of such exempt telecommunications company.

Section 34(m), titled "Independent Audit Authority for State Commissions" provides that

(1) ...Any State Commission with jurisdiction over a public utility company that—

- (A) is an associate company of a registered holding company; and
 - (B) transacts business, directly or indirectly, with a subsidiary company, and affiliate or an associate company that is an exempt telecommunications company,
- may order an independent audit to be performed,... of all matters deemed relevant by the selected auditor that reasonably relate to retail rates: *Provided*, That such matters relate, directly or indirectly, to transactions or transfers between the public utility company subject to its jurisdiction and such exempt telecommunications company.

The Act specifies that these authorities are *in addition* to any that the state commission may have under state law (sections 34[j], 34[1][4][A], and 34[n]).

SUMMARY

Competition does not develop with equal speed in all markets. It developed much more quickly in station equipment than it did in interexchange services. Indeed, prices for domestic interstate interexchange services still exhibit some elements of price leadership. Prices for international interexchange services, despite aggressively pro-competitive policies on the part of the FCC, and AT&T's market share having fallen substantially since 1991, have not fallen nearly as much as prices for domestic services. Thus, state commissions will have to make individual determinations as to the competitiveness of each product or geographic market, when deciding on regulatory and ratemaking practices with respect to the established, still-dominant, local exchange carriers.

The Telecommunications Act does require the FCC and state commissions to engage in pro-competitive policies. Regulators will have to remove entry barriers and allow all kinds of firms to provide telecommunications services. However, it is not necessary to grant to new local service providers the right of eminent domain, or the right to place plant on public property: the states have the right to control sharing of the "infrastructure"—pole lines, ducts, and rights-of-way. Where sharing arrangements are not used, the established local exchange carriers will have to offer access to elements of the infrastructure through unbundling arrangements of network elements, or through resale of tariffed services. The expectation of the Act is that most inter-carrier arrangements will be negotiated, and there are specific requirements that ratemaking methods not be used, even though the resulting arrangements are supposed to be "profitable."

State authority over intrastate ratemaking is supposed to be unaffected by the Act, but there are provisions limiting ratemaking practice with respect to negotiated rates for network elements. This appears to be an area of exclusive state authority, but with some constraints. Disputes over state arbitrations of the access to network elements are appealed to the courts, not the FCC.

In a major exception to the pro-competitive policies of the Act, rural telephone companies that are recipients of revenues from the universal service fund are not required to offer unbundled network services to their competitors. The designation of rural carriers that will or will not be subject to competition is in the domain of the state public utility commissions.

There are provisions for federal and state audits of telephone holding companies, called "exempt telecommunications companies" in the Act, and transfers of telecommunications plant or mergers among telephone carriers, including the exempt companies, are subject to state approval before they can take place.

The Act contains a competitive checklist that must be met before the Bell Operating Companies can provide interexchange services outside their normal operating territories, or engage in "manufacturing" (as the term is defined in the 1982 Consent Decree). This list amounts to the removal of certain entry barriers; there is no requirement that competition actually occur, much less that there be a particular degree of competition or a particular market structure.

Chapter III

Measuring Competition in the Real World

In this chapter we apply the economic and legal definitions of a market and of competition to the telecommunications industry. As a public utility, telecommunications has not usually been subjected to antitrust scrutiny; when it has, the scrutiny has usually been in reaction to complaints as to a firm's rather than from concerns about market structure. Now regulators will have to systematically define geographical and product markets and assess the competitiveness of each, in order to determine whether the market has become sufficiently *workably competitive* so that the regulators may *forbear* from regulation—to the extent that forbearance is permitted by their governing statute and is in the public interest.¹

The classic list of facts and circumstances to be considered in defining a market may be found in the Brown Shoe Case:

The outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it.² However, within this market, well-defined submarkets may exist, which, in themselves, constitute product markets for antitrust purposes. *United States v. E. I. duPont de Nemours & Co.*, 353 U.S. 586, 593-595. The boundaries of such a submarket may be determined by examining such practical indicia as industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors.³

In table 1.2 we combined these factors with others that economists may consider,

¹Nothing in the Telecommunications Act of 1996 requires a state commission to forbear from regulation of any telephone service or company: the state's authority under section 2(b) of the Communications Act of 1934 (47 U.S.C. 152) is unimpaired. However, if an industry really is competitive, traditional rate regulation can only impede the competition and disadvantage the competitors subjected to it. The most difficult situations arise when an industry is partially competitive. For example, there may be a dominant firm, but several strong competitors (as in the interexchange market today), or a tight oligopoly (as the interexchange may become if AT&T continues to lose its market share). Appropriate regulatory strategies for partially competitive markets, where the firms have market power (the power to control the price) that is substantial but less than total, are likely to be among the most vexing that regulators will face in response to the Act.

²The cross-elasticity of production facilities may also be an important factor in defining a product market within which a vertical merger is to be viewed....

³*Brown Shoe Co., Inc. v. U.S.*, 370 U.S. 294 (1962), quoted in Irwin M. Stelzer and Howard P. Kitt, *Selected Antitrust Cases: Landmark Decisions*, fourth edition (Homewood, Ill.: Richard D. Irwin, 1972), p. 134. Footnote in the original.

particularly in the determination of geographic markets. The purpose of this chapter is to outline in a systematic way the information that regulated telephone companies or other intervenors should provide in order to sustain their burden of proof for claims that particular services or markets are competitive and the criteria by which the evidence should be evaluated and the claims judged. By systematizing the presentation of the information, and assuring that all relevant information is included (or that the reasons for its omission are addressed), the companies and other intervenors will facilitate the task of evaluating the competitiveness of the markets, and the market power of the dominant firms, so that the commission can base its decision on an adequate record.

This chapter is written to help regulators, courts, and legislators deal both with competition that comes from within the telephone industry and with interindustry competition. The methods of analysis are the same: telephone companies that allege they are subject to competition from firms not in the industry (perhaps other firms in the communications sector, Standard Industrial Classification (SIC) code 48; perhaps firms from outside the sector) would present the same type of information to support their claimed service definitions, competing services, and geographic markets, as if the competition were from another telephone company. One must perform similar analyses evaluating the allegation, whether the competition comes from within or without the telephone industry.

SERVICE AND PRODUCT MARKETS IN TELECOMMUNICATIONS

Within telecommunications, there are many "services" listed in the tariffs, as well as some services that are not tarified. A "service" can be defined as a functionality or set of functionalities provided by a communications company, as defined in the company's tariffs. Thus, MTS, WATS, and some of the newer discount services may appear to be close substitutes or even identical in the eyes of customers, but are sold at different prices because they appear on different tariff pages. Moreover, it is generally the case that the common carrier defines the functionality and how it is to be provided, and can use any available equipment at its discretion.⁴

Furthermore, telephone companies sometimes refer to "rate elements" as services. Rate elements are functionalities or features that are added to an underlying service, but which cannot be ordered separately. For example, a telephone company's "I.Q."⁵ services are

⁴This was a notorious situation when telephone companies tarified station equipment, and the customer could not specify which equipment would be used. Some years ago, "Data Under Voice" service was defined in terms of a "bit error rate," but could be provided by means of the digital data channel or an analog voice channel.

⁵This is the term used by Bell Atlantic for services such as caller-id, call waiting, call forwarding, conferencing and the like. Other telephone companies use different names for similar services.

features of local services, but cannot be ordered by someone who does not subscribe to some local access service.

Even services that are clearly distinguishable technically and perceptually may have elements of substitutability. Many customers use point-to-point private lines as "tie lines" to carry voice or data traffic that might otherwise have used switched services, such as MTS or WATS. And switched services on the common network, such as "switched 56 service" are often used as "backups" for private line services. Some parties will stress these similarities, and argue that "telecommunications" is the relevant service. Other parties will stress the differences, and point out that, while there may be substitutability within broad categories, the vast majority of traffic cannot readily be changed from one service to another. While direct evidence of the cross-elasticity between services is generally unavailable, particularly where one of the services is new, specific estimates of the amount of traffic that is susceptible to transfer can be illuminating.

While enhancements to services do not constitute services in themselves, it may sometimes be useful to consider some of these "enhancements" separate from the underlying service. Even though an enhancement or feature cannot be purchased without first purchasing a related service, it does not necessarily share all the attributes of the fundamental service. In particular, many of the special features are of lower value to consumers (they are less "essential"), or have more readily available substitutes. Thus, the telecommunications company may have differing degrees of market power with respect to different portions of the service.

When we examine examples of actual services, we often find that many of the purported substitutes for all or part of a service involve the purchase of additional services from the same telecommunications carrier. For example, the substitutes for call waiting, call forwarding, and three-way calling involve the purchase of additional access service (multiple access lines) for use with additional or more sophisticated station equipment. Not surprisingly, we find that those features are much more popular with residential customers and perhaps single-line businesses than with multi-line business customers who obtain the equivalent service from their multiple lines and advanced Private Branch Exchange (PBX) or key systems, or from CENTREX services.⁶

Thus, the demarcation between services is not always clear and distinct. For some purposes several services that appear separate because they are offered under different tariffs

⁶More specifically, business customers of voice mail provided by vendors other than the telephone company must have certain CENTREX features applied to their lines so that their service is the full functional equivalent of the voice mail provided by the telephone company. The telephone company's ability to "bundle" these features ("call forward, busy," and "call forward, no answer") with its voice mail service strengthens the market position of the telephone company's service vis-a-vis the alleged competitors: voice mail from other vendors, voice mail from customer premises equipment, and answering machines.

must be combined in the analysis. For other purposes, it may be appropriate to disaggregate portions of services (that is, groups of features) that appear in the same tariff.

The major key element is *substitutability*: If the "service" or "feature group" has many substitutes available *in their entirety* from other companies, then it is more likely that the service may be considered separately. If the substitutes involve the purchase of additional services that are available only from the same telecommunications company, then it may be appropriate to consider the service and its substitutes as a combination service. If a group of features, or a service, is unique, in having few close substitutes, then this circumstance suggests that it be considered a separate service. Alternatively, if two groups of features, or two portions of a service, differ markedly in the availability of substitutes, and in whether or not the substitutes require essential elements available only from the same company, then this circumstance suggests that the two groups of features be considered separate services.

Another key element is whether the feature group *stands alone*, or can be purchased only in combination with some underlying service. If a group of features cannot be purchased separately, for technical reasons, then this circumstance argues against its being considered a separate service. Hence, the underlying reasons for the bundling of features should be examined: are they technical, or a reflection of market power?

We should make explicit what the discussion above states implicitly: the competitiveness of a service may differ for different classes of customer. The practicality and availability of the substitutes may differ for residential customers, single line businesses, and various classes of multiline businesses. Moreover, the degree to which the service is "essential" may differ among the several customer groups. Thus, services cannot be considered in the abstract—they must be considered in the context of the customers who purchase them.⁷

Finally, when evaluating substitutes, one must evaluate the degree to which substitution is possible at market rates and at alternative sets of rates as well. As Koch states, there is no fixed standard for elasticities of substitution, such that products with coefficients above some value are considered close enough substitutes to be in the same market.⁸ The 1992 Merger Guidelines consider a product and geographic market to be defined by the possibility that, if there were only one firm in the market, it could make a "small but significant and non-

⁷Any set of rates that is restricted by law or tariff provision to a particular customer class must be considered a separate service, but the separateness is artificial. Moreover, if a carrier can effectively prevent some customers from availing themselves of that set of rates, whether because of the nature of the customer, or other services to which the customer subscribes, or the type of terminal equipment the customer will attach to the line, or the intended use the customer will make of the functionalities to which the set of rates applies, then the carrier's ability to so discriminate should be taken as *prima facie* evidence that the service in question is distinct and noncompetitive: such price discrimination is impossible in competitive markets.

⁸James V. Koch, *Industrial Organization and Prices* (Englewood Cliffs, N.J.: Prentice-Hall, 1974), p. 14.

transitory" increase in price and profits, but "small" and "significant" are never defined.⁹ Scherer and Ross point out that substitution may occur only in certain price ranges, and these may not be the price ranges we actually experience. We may be unable to tell whether an increase in price above the competitive level would induce substitution. Since the effect of price changes outside the range we normally experience is difficult, "[a]s a result, economists sometimes fall back upon commonsense devices such as searching for a marked qualitative gap in the chain of substitutes, as Mrs. [Joan] Robinson recommended [in *The Economics of Imperfect Competition*.]"¹⁰

It is often said that the rapid advance of computer and communications technologies has blurred the distinctions between various telecommunications services. The regulator, as a result, is faced with the difficult and sometimes annoying problem of determining the range of overlap between several services and then trying to discover a rational basis for placing them in separate tariff classifications.

As explained above, economists' first thoughts are of the cross-elasticity of demand, but this concept has often proved difficult to measure in practice. Thus, economists are forced to look to the actual segmentation of the market as shown in the behavior of buyers and sellers. As Scherer said in the quotation above, a starting point for the distinction between products, and hence markets, was suggested many years ago by the British economist, Joan Robinson.¹¹ Her idea was to identify significant gaps in the range of substitutes for a given product. Following this line of argument, we then must find ways and means of identifying such gaps. One possibility would be to examine the behavior of users of a particular product. For example, why does a customer choose flat rate residential service rather than message rate service or timed rate service? Looking at the other side of the market, we may ask: Why does the seller choose to offer those particular classes of service? Can we discern gaps on both the demand and supply sides of the market? On the demand side for plain old telephone service, we could ask why there is a distinction between business and residential service, with the former being priced higher than the latter. Perhaps answers would involve considerations such as the amount of pressure each generates at the peak calling hour or the fact that only business users can count their telephone charges as a tax deductible expense. Furthermore, the business call is intended to generate revenue, whereas a residential call generally is not. However, there are mixed calls, namely, business to residence and residence to business. Then we ask why services are classified only by characteristics of the originating

⁹Department of Justice, "Department of Justice and Federal Trade Commission Merger Guidelines," mimeo, April 2, 1992, p. 7.

¹⁰Scherer and Ross, *Industrial Market Structure*, pp. 75-76. As they point out, an effective monopolist would raise its prices until just below the price at which competitors might start to enter the market.

¹¹Joan Robinson, *The Economics of Imperfect Competition* (London: MacMillan and Company, 1933), p. 5.

user. Here, convenience seems to be the answer. Going a step further, is there an acceptable rationale for the separate classification of calls of a one-to-many type or a many-to-one type, more specifically, Out-WATS and In-WATS? On the demand side, perhaps; on the supply side, perhaps not.

This much at least is clear: Both sides of the market for a service must be examined to find its distinguishing characteristics. We may find that suppliers are concerned mostly with time on the line and pressure at the peak, and that buyers are concerned mostly with quick access, fast switching and accurate transmission. Going a step further, the unique characteristics of certain users can and do give rise to differing classes of service, for example, amplifying instruments for the hard of hearing or visible readouts for the totally deaf. But aside from services requiring very unique types of equipment, most others may be found in the future to be almost completely transparent. Assuming that acceptable quality standards are universally effective, charges for all services can be designed in terms of time on the line and pressure at the peak, so as to make the entire system function with optimum efficiency.

As suggested above, in discussing substitutes, one of the characteristics of monopoly is the ability to make and enforce distinctions. When essentially similar services are sold at different prices to different customers this is evidence of discrimination. Were market forces at work, the customer paying the lower price could resell the product to the customer paying the higher price, undercutting the suppliers. This is arbitrage, and is a risk-free method by which a competitive market ensures that there are no differences in price that cannot be attributed to differences in the cost of serving the customers. Thus, it should be considered a *rebuttable presumption* that any products which are claimed to be different on the basis of the classification of customer, the customer's use of the product, or the geographic location of the customer, are actually a single product.

Similarly, if industry experts, whether buyers or sellers, are asked to list the substitutes for a commodity in rank order, the close substitutes and the distant substitutes will be readily apparent subjectively. The test can be made more objective by estimating the share of the market for a given product that would go to each of its substitutes, if the product did not exist.¹² Thus, if residential lines were unavailable, nearly every customer would take business lines. If Integrated Services Digital Network (ISDN) service becomes available, what percentage of customers for point to point "voice grade" private lines will accept this switched service instead? At some point in the list of "substitutes," there will be a negligible gain in the number of customers for the substitute. This is the "gap in the chain of

¹²This approach was suggested in the 1982 "Merger Guidelines" of the Justice Department, and later in the 1987 *Merger Guidelines* of the National Association of Attorneys General. Cf. Shepherd, *Industrial Organization*, p. 65 and Scherer and Ross, *Industrial Market Structure*, p. 192.

substitutes" of which Joan Robinson wrote. If there is no alternative service that would get a very high percentage of the customers, then the service is relatively unique.¹³

This analysis is actually an informal variant on the cross-elasticity of demand analysis. However, it does not require as much specific information on cross elasticity of demand, which can be extremely difficult to measure statistically. (Indeed, where a product is relatively new, so there is no historical experience, no statistical study can be done: the coefficient of price elasticity of demand must be inferred from studies of related products—and which are the related products is precisely the question to be answered!)

In the past the service definitions in the tariffs were acceptable. There was switched voice service (local or toll Message Telecommunications Service [MTS]). Private line services existed as telegraph grade, voice grade, and several wider bandwidths. All of these were defined by tariffed series. But, with new marketing capabilities came new service definitions, many of which were merely bulk discounts or quantity discounts applied to the older services. Wide Area Telephone Service (WATS) was a quantity discount on MTS, with some reduction in the billing information.¹⁴ TELPAK was a bulk discount on private lines. Now services with somewhat different functionalities have been defined, which may be interchangeable for many uses. Moreover, hybrid services, such as switched data services and reconfigurable private lines, blur some of the earlier distinctions. One alternative may be the use of the Standard Industry Classification (SIC),¹⁵ and the more detailed product classifications.¹⁶ We discuss this approach below.

While standardized definitions of services, whether from the tariffs or from government lists, may be useful in some instances, the difficult cases will involve new services, or services with new functionalities, that do not fit neatly into the established definitions. For these services, the functionalities and uses of the service will have to be determined and listed, and for each potential use or functionality, the alternatives listed in rank order. It may be expected that in most instances there will be some point on each list where the alternative

¹³It is possible that a company will have differentiated its products to such an extent that many so-called "services" are close substitutes, and none of them gets an appreciable gain in customers when a service is hypothetically eliminated. This situation may manifest itself in a group of services all getting approximately equal shares of the service being hypothetically eliminated, and these shares totaling a very high percentage of the sales of the service in question. Alternatively it may manifest itself in a great deal of dispute as to the rankings of the services that are identified as close substitutes, and a great deal of dispute about the market share that these services would gain: if there is no convincing evidence to the contrary, the services should all be considered differentiated versions of a single larger service. If the service and its alternatives are freely available to all customers, and the customers choosing the service can be shown to be different (to constitute a different class) from the customers choosing the alternatives, it can be assumed that the services are different. Finally, if the services are freely available to all, and only a few customers chose the service, the service may be distinct—or it might just be greatly overpriced.

¹⁴Inward WATS now offers *more* and more-timely billing information than does MTS.

¹⁵Office of Management and Budget, *Standard Industrial Classification Manual: 1987* (Washington: Government Printing Office, 1987).

¹⁶Department of Commerce, *Industry and Product Classification Manual: 1992* (Washington: Government Printing Office, 1992).

seems to the sophisticated and knowledgeable observer to be "far fetched." When all such discontinuities have been identified, the service and its reasonable substitutes will have been defined.

Standardized Classification of Industry and Service

The Standard Industrial Classification (SIC) manual is designed by a committee of experts from various departments of the federal government to permit the classification of *establishments* in all fields of economic activity. It is intended to facilitate the uniform classification of establishments, for the collection, classification and presentation of data. As such, it is not directly applicable to *enterprises*, which will consist of all establishments having more than fifty per cent common ownership and control (and thus, an enterprise corresponds roughly to a firm). Neither is it directly applicable to the classification of products.¹⁷

Most studies of concentration, dominant firms, and, indeed, all aspects of industrial organization use the industry definitions of the standard industrial classification. These are available at varying degrees of specificity. Thus the communications industry is defined in the current manual as shown in table 3.1.

TABLE 3.1
Classifications in the Communications Industry

Group No.	Industry Group No.	Industry No.	Description
48	481		Communications
		4812	Telephone Communications
		4813	Radiotelephone Communications
	482		Telephone Communications, except Radiotelephone
		4822	Telegraph and Other Message Communications
	483		Telegraph and Other Message Communications
		4832	Radio and Television Broadcasting Stations
		4833	Radio Broadcasting Stations
	484		Television Broadcasting Stations
		4841	Cable and Other Pay Television Services
	489		Cable and Other Pay Television Services
		4899	Communications Services, Not Elsewhere Classified
			Communications Services, Not Elsewhere Classified

Source: OMB, *Standard Industrial Classification Manual: 1987*, pp. 292-293.

A revised manual is being prepared, the most extensive revision since the 1930s (the

¹⁷Office of Management and Budget, *Standard Industrial Classification Manual*, p. 11. See also Department of Commerce, *Industry and Product Classification*. There is also Department of Commerce, *Numerical List of Manufacturers* (Washington: National Technical Information Service, 1993).

revision in 1987, to reflect the growth of the service sector, was relatively minor). Reportedly, it will make very significant changes and improvements in the classification of firms involved in telecommunications and the "information industries." The new manual is available for public comment at the Office of Management and Budget, and is expected to take effect in 1997. In most instances, industries will be grouped on the basis of production similarities in the forthcoming SIC manual.¹⁸ The analysis here is of the current edition; undoubtedly the new edition will have its own benefits and problems.

In most industries, classification is based upon the primary activity at an establishment, so in many industries it is possible for a firm, composed of several establishments, to be classified differently from any of its establishments, based upon secondary activities at each establishment (this does not happen in telecommunications). Some activities which are of importance to the communications industries are classified entirely separately. For example, telephone answering services (which are related to paging services [4212] and voice mail from telephone companies [4813]) are classified as Services (Industry 7389). Online information retrieval services are classified as Services (Industry 7375), rather than as electronic mail (Industry 4822). The basis for the classification is value of receipts or revenues.

The choice of the level of aggregation is important. Most recent studies are done at the four digit level, because the three digit level has been found to be too heterogeneous, so that the firms cannot be compared. At the three digit level, concentration ratios are generally low, and its effects are hard to measure. Indeed, studies of market power seem most successful in measuring and predicting behavior when done at the five digit (product group) level.¹⁹

In any event, for established services, the five digit product groups and the seven digit products may be appropriate definitions (and will usually correspond to the tariffs or other traditional definitions). For services with new functionalities, or for new services which have not been classified (and the uses for which may not be fully understood even by the designers), then other methods of analysis may be required. Unfortunately, the services of the communications industry itself have not been classified beyond the four-digit level. However, more detailed classifications can sometimes be found for competing services from firms in other industries.

¹⁸Martha M. Hamilton, "The Economy Gets a New Taxonomy: Analysts Welcome a SIC Transit to '90s Realities," *Washington Post*, June 28, 1996, p. F1.

¹⁹Shepherd, *Industrial Organization*, p. 123. Harold Demsetz's 1973 study purported to show that larger firms were more efficient. Shepherd argues that, because Demsetz used 3-digit industry groups, which "have only a tenuous connection with genuine competitive patterns," his results are in error. Harold Demsetz, "Industry Structure, Market Rivalry, and Public Policy," *Journal of Law and Economics*, vol. 16 (1973). Even so, Demsetz shows that industries with 4-firm concentration ratios in excess of 50 per cent have higher rates of return on assets than those with lower concentration ratios, and that industries with concentration ratios over 60 per cent have rates of return about twice as high as industries with concentration ratios under 50 per cent. There are other technical difficulties with Demsetz's study, but some economists claim that Demsetz has proved that dominance reflects superior efficiency.

It is instructive to examine the classification of the "electronic mail" service to see the difficulties of defining services and industries. Electronic mail service is available from a variety of providers, and sufficient interconnection exists so that it is usually possible for the customer of one supplier of the service to transmit an electronic mail message to a customer of another supplier. Electronic mail service is listed in the *SIC Manual* as a product of the telegraph industry (4822). At the time of the adoption of that manual, the largest firm providing this service was AT&T, and the second largest firm was MCI, both of which are classified as in the telephone industry (4813). Indeed, with AT&T's purchase of Western Union's *Easylink* service, it appears that telegraph companies play a minor role in the provision of this service. However, it is widely believed that the firm that is the most important single provider of electronic mail service is CompuServe, which is classified as an online information retrieval service (7375). Even so, the greatest volume of electronic mail is probably moved on the "Internet," which is not an enterprise at all, but a loose association of networks, universities, and other organizations (AT&T, MCI, CompuServe and most other commercial electronic mail services connect to the Internet).

Geographic Markets in Telecommunications

There are no statewide providers of local communications services in most states.²⁰ While the Bell company²¹ serves most of the state, including most of the major market areas, there are many communities which it does not serve. And the same is true for any of its alleged competitors. In general, no single cable television company or other alternative access provider serve an entire state. Neither does any single competitive cellular service provider serve every community in most states. And, whatever the viability of the *One Book* alternative Yellow Pages directory in a few major municipalities,²² alternative directories in the rest of the nation are published by local concerns, often different in each community, although there are some small national publishers as well.

²⁰The exceptions are Maryland and Connecticut, in which the areas served by small independent telephone companies are negligible (small parts of Connecticut are served by NYNEX and an independent company), Hawaii, all of which is served by Hawaiian Telephone, a subsidiary of GTE, the District of Columbia, all of which is served by Bell Atlantic, and Rhode Island, all of which is served by NYNEX.

²¹Alaska is also served only by independent (non-Bell) telephone companies.

²²This alternative Yellow Pages directory began as one of many established by SouthWestern Bell in the years immediately after divestiture. (SouthWestern Bell claimed at that time to have the most successful Yellow Pages operations of any of the Bell Companies.) David Chessler, "Yellow Pages Subsidiaries of the Bell Regional Holding Companies," *National Regulatory Research Institute Quarterly Bulletin*, Vol. 7, no. 1 (January, 1986). David Chessler, Brian K. Clark, and Li-Kung Ferng, *Unregulated Enterprises of the Bell Regional Holding Companies* (Columbus: National Regulatory Research Institute, 1986). SouthWestern Bell soon closed most of its alternative Yellow Pages operations, and recently sold the Washington Metropolitan Area *One Book* to Reuben P. Donnelly, Inc., a company that has long been active in producing Yellow Pages directories for telephone companies (including some Bell Companies, such as Illinois Bell in Chicago), and had been active in producing alternative Yellow Pages as well. Thus, the profitability and long-term viability of alternative Yellow Pages may be questioned.

A customer is essentially concerned with whether a service is competitive at his location. For the customer ordering an access line in Columbus, Georgia, the activities of the New York Teleport (Teleport Communications Group, TCG, now a subsidiary of TCI), are of no interest. Indeed, even for the customer ordering an access line in Chicago, Illinois, (which is served by TCG), the activities of alternative access providers in other major cities are of academic interest only.

Of all the communications companies active in most states, only the interexchange carriers and vendors of complex station equipment²³ are known to operate statewide. Most communications companies have been constrained by licenses to specific service territories, and sometimes to specific types of service offerings. These constraints may be lifted by the 1996 Telecommunications Act, but the companies must apply for licenses to serve additional service areas and supply the services. Even companies that may not be legally constrained are limited by their equipment and technologies to particular markets—particular territories and service offerings—and cannot expand quickly. As a practical matter, then, most communications markets other than the market for interexchange services, are less than the whole state.

In the court's discussion of the 1982 Consent Decree, it explains that the term "exchange" is used differently there than was traditional in the telephone industry. The parties, AT&T and the Justice Department, interpreted "exchange" to mean "an entire community." They took the definition of community, in turn, from the Department of Commerce's list of "Standard Metropolitan Statistical Areas" (SMSA), which are defined as large cities with their suburbs and satellite communities, generally constituting a single area for businesses marketing their products and in which their workers commute. While the definition is sometimes imperfect, since market areas can overlap, each SMSA was taken as the core of a "Local Access and Transport Area" (LATA). With few exceptions²⁴, each SMSA became a LATA. Many rural counties are not part of SMSAs, and these were assigned to LATAs based on proximity. The LATA concept did not apply, initially, to independent telephone companies that were not parties to the 1982 Consent Decree, but they were quickly assigned to LATAs based on proximity.

However, except for toll service and cellular carriers, there are very few communications

²³Plus chain retailers, such as Sears and Radio Shack. AT&T, which once had a national chain of retail stores, has recently closed them.

²⁴The Washington, D.C. metropolitan calling area is one of the few interstate LATAs, permitted because it was a pre-existing local calling area. (Others are in New York City–New Jersey, Philadelphia–Camden, Chicago–Northern Indiana, and Kansas City, Missouri–Kansas.) However, it is not otherwise an exception, since it was a single SMSA. There are anomalies in the Washington LATA, such as exchanges that are in both the Washington and Baltimore LATAs, and the Washington and Baltimore SMSAs have since merged—without causing the LATAs to merge as well.

companies that operate in all parts of any single LATA.²⁵ The same constraints that keep communications companies from operating statewide also keep them from operating LATA-wide: licensing restrictions (which would seem to have been abolished by the 1996 Telecommunications Act, and the location of their plant. It is probably true that the Bell company serves most parts of most of the SMSAs in each state²⁶ but it is probably the only local communications company, other than the cellular carriers, to do so: the cable companies have usually been constrained to market areas no larger than a county (although they may serve several contiguous or noncontiguous counties). Television and FM Broadcasters, which do provide some data services on their blanking intervals and subcarriers, respectively²⁷, are constrained by their technology and legally imposed power limitations to fixed geographic areas. Direct broadcast of television programming from satellites is becoming significant competition to CATV companies, but not (at least, as yet) to telephone companies. Telephone service may be provided by satellite (such as INMARSAT), but this is not, as yet, significant competition in most telephone markets: the fact that it is very expensive is evidence of poor substitutability.

The traditional definition of a geographic market for a commodity is that ninety per cent or more of the commodity consumed in a geographic area is produced in that area, and, conversely, ninety per cent or more of the commodity produced in a geographic area is consumed in that area.²⁸ Clearly, this measure cannot be applied directly to telecommunications services, which are not actually shipped,²⁹ but a local market area

²⁵ Those few local exchange carriers that serve an entire state are obvious exceptions. Also, some Bell companies serve the whole of a few LATAs. The most obvious example is NYNEX which serves the whole of the New York City LATA without serving the whole of New York State; there are a few similar examples in other states.

²⁶ But independent telephone companies do serve parts (usually rural or suburban) of many LATAs. There are a few SMSAs that are predominantly or entirely served by independent telephone companies. These are not usually separate LATAs.

²⁷ It is doubtful whether the broadcast of stock market data to specially equipped radio receivers is significant competition to the telephone company. Indeed, it is uncertain whether the transmission of large amounts of data from satellites will constitute important competition, particularly in the near term: the next five years or more. There are two questions: (1) what is the share of the telecommunications market that these alternative suppliers attain, and, (2) given the difference in cost and price, could the telephone company have served these markets?

²⁸ Shepherd, *Industrial Organization*, p. 58. The example he gives is that in testing whether Missouri is a local beer market, one determines whether less than ten per cent of the local consumption is shipped in, and less than ten per cent of the local production is shipped out. If this were true, then Missouri would clearly be a single-state beer market. If, on the other hand, one found that sixty or seventy per cent of both the local consumption and production were in interstate commerce, then Missouri would clearly be part of a multistate beer market. In their 1987 *Merger Guidelines*, the National Association of Attorneys General used the criterion that customers satisfy seventy-five per cent of their needs from suppliers in the geographic area. Scherer and Ross, *Industrial Market Structure*, p. 192.

²⁹ Telecommunications is essentially a transportation industry with "messages" or "information" the product being transported. It is possible to distinguish long distance (intercity) transport from local transport, but, since these are generally not substitutable services from the point of view of the customer, long distance and local transportation are considered separate markets. Indeed, the separation of these markets to be served by separate companies, because of differences in the potential for competition, was the basis for the 1982 Consent Decree. But this Decree, while forming the basis for subsequent policy on both the federal and state levels, merely ratified what had been an emerging national policy over the previous decade. See chapter 3 of David Chessler, Prefiled Testimony, *Developing and Preparing Criteria for Determining Whether Services are "Competitive" under the Provisions of the Code of Vir-*

(continued...)

could, in principle at least, be defined partly in terms of the serving areas of the firms in that market, and the choices available to customers.³⁰

What is apparent from this analysis is that the smaller the market area that is considered, the more likely it is that it is served, in its entirety, by a small number of communications companies. Conversely, the larger the area that is considered, the more communications companies that will serve parts of it. And there are many markets in each state; how many there are depends on whether one considers the relevant market to be an entire LATA or to be limited to each individual county or even each municipality. In short, when assessing competition in a market, it is important to determine the relevant geographical bounds of that market.

SYSTEMATIZING THE EVIDENCE

Chapter 1 describes in detail the way economists now think of markets, products, and competition. It also summarizes the empirical evidence as to what market conditions are conducive to noncompetitive behavior on the part of the firms in the market. In this part of the current chapter we reduce the narrative of chapter 1, and the discussion of the telephone industry, above, to a series of tables.

Here we present in tabular form *rebuttable presumptions* about the competitiveness of telecommunications markets, with the evidence that might be adduced to support or rebut the presumptions. The presumptions are those that might be made in the absence of any evidence about the market: they reflect the preconception that most markets in the telecommunications industry are not competitive at the present time, the reality that effective competition has emerged in some segments of the industry, and the suspicion that some segments of the industry may have been incorrectly characterized in the past.

In general, within each table the evidence is listed from the strongest to the weakest. Thus, several items of evidence from the lower part of a table would be required to rebut evidence from the upper part of the table. To assist the companies and intervenors in making

²⁹(...continued)

ginia, Virginia State Corporation Commission, Case Number PUC920029, November 4, 1993, and Idem, *The Effect of Toll Competition on Prices, Costs and Productivity of the Telephone Industry in the United States: Report to the Canadian Radio-television and Telecommunications Commission and the Joint Federal-Provincial Examination of Competition in Public Long Distance Telephone Service* (Hull, Que.: Canadian Radio-Television and Telecommunications Commission, December, 1988 [The "Sherman Commission Report," Volume 4], and Bethesda, Md.: David Chessler and Associates, January, 1989), chapter 2. Indeed, while the basis for the differentiation is constitutional, the regulatory schema of the 1934 *Communications Act* (47 USC 152) has the effect of imposing different regulations upon long distance and local communications.

³⁰One problem with the definition is that "Smart Buildings" may act as communications aggregators or resellers for their tenants, but their service areas are limited to single buildings. From the tenants' point of view, however, all the "Smart Buildings" in a community can probably be taken as a single class of vendor: the tenant decides to patronize a smart building, and then locates an appropriate one in his community. Thus, the smallest relevant market is probably the individual community. A "community" would appear to be a municipality, but might be a bit larger. It is almost certainly smaller than a county, except in well-defined Standard Metropolitan Statistical Areas.

their cases, and the Commission in evaluating the filings, the evidence in the tables is categorized as "strong," "intermediate," or "weak." The tables are not fully independent: evidence that prices are not competitive can reinforce conclusions that the underlying market structure is not competitive (although in this example, evidence of a competitive market structure would not necessarily preclude finding evidence that prices are, nonetheless, "administered.")

Distinguishing Services

Table 3.2 deals with the first question that has to be addressed: whether a "service" is an actual service, or part of another service. It is also possible that two or more distinct services might be bundled together, and this analysis will also help distinguish them. Table 3.2 consists mostly of qualitative information. Reviewing the items considered "strong" evidence, consider the authority of the tariffs as to whether an offering is one service or two. In the past it was usually the case that tariffs were logically ordered, and the presence of two "services" in the same tariff indicated that they were really aspects or options or rate elements of the same service. However, the contrary is often not the case. MTS and WATS have long been in separate tariffs, although WATS is considered by most observers to be a bulk discount on MTS. Similarly, voice and data grade private lines were functional equivalents, differing only in the presence of "line conditioning" which facilitated the use of the lines for data, although its absence did not prevent the lines from being so used. Now private line and data services appear in a wide variety of tariffs, so the degree to which they are functional equivalents or near equivalents must be evaluated on other grounds. Thus, the use of several tariffs for the services being considered is classified as weak evidence.

The application of five and seven³¹ digit product codes is potentially helpful, but the absence of five digit codes for telecommunications products (product group 48) means that, in most instances, the Commission will not have the benefit of the considered judgement of

³¹The seventh digit is actually a check digit, so only four, five, or six digits of the code are significant.

TABLE 3.2
What is the Telecommunications Service?

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Services are distinct	Strong	
	In same tariff set	One service
	In same 7-digit code	One service
	In same 5-digit code	Close substitute
	Functional Equivalent	Close substitute
	Does not stand alone	One service
	Substitutes require other services	One service or close substitute
	No close substitute for features	Separate service
	Intermediate	
	Distinct customer class	Separate service
	Distinguish customers by preventing resale	One service
	Distinguish customers by location	One service
	Distinguish by customers' use	One service
	Same plant and equipment	One service
	Prices very different (unless no resale)	Separate service
	Prices move separately	Separate service
	Weak	
	In different tariffs	Separate service
	In different 7-digit code	Separate service
	In different 5-digit code	Not close substitute

industry experts who draw up the categories. Moreover, services are categorized according to the primary activity of the firm, and in many instances the five digit distinctions are not actually made.³² Thus, Communications Equipment Installation is Code 173100 9, but when done by a contractor, is coded as industry number 1731, Electrical Work. Similarly, Cable Television Hookup Contractors are Code 173100 9. Electronic mail (a telegraph service, Industry 4822) may be provided by Information Retrieval Services (Industry 737500 9) which is not further subdivided. However, Computer Related Services, Not Elsewhere Classified (Industry 7379) is divided into Computer Consulting (Industry Code 73790 0), and Computer Related Services, Not Elsewhere Classified (Code 737990 2), which includes the data base developers whose products are sold by the Information Retrieval Services. Thus, the five digit codes, where available, may help obtain information on the industries that compete with

³²We may hope that the forthcoming revisions to the *SIC Manual* will improve the categorization for our purposes.

telecommunications companies, for those services where interindustry competition occurs. However, the coding gives little guidance in identifying such interindustry competition, and similar products or services may appear in widely different industry codes. Hence, while the use of a single code to classify an industry or group of products is strong evidence that they are similar, the use of multiple codes is, by itself, weak evidence. By use of judgement and the other criteria, it may be possible to identify groups of codes which should be considered competitive in particular situations: where such groupings can be made authoritatively, the SIC coding may be considered strong evidence.

Generally, if two services are functional equivalents, or if one of the services does not stand alone, but requires *for technical reasons* that the second service also be used, then the two services are probably aspects of the same service. On the other hand, a service that has no close substitute for some important features (that is, features used by most of its customers) is probably a separate service. If one of a group of services has substitutes, but to make use of these substitutes a customer must subscribe to other services (particularly other services in the group), then it should not be considered a separate service.

The intermediate evidence in table 3.2 includes distinctions based on customer class. Often these are simply forms of price discrimination, so the distinction is potentially significant only if the customer chooses the class, rather than the utility. Thus, the division between residential and business customers is not evidence, since business customers cannot choose the residential service. Distinctions based on customer class are important for reinforcing conclusions based on functional differences between services: if services are functionally different, and are selected by different customer classes, they may be different. Care must be taken, however, since functional distinctions that do not appear significant (that is, if the services appear to be close substitutes, viewed abstractly) are probably attempts at discrimination.

On the other hand, if distinctions between customer classes are found, and the terms of the service govern which class the customer may choose, or if the customers are prevented, legally or technically, from reselling the service, then it is likely that the service is actually a single service. The existence of restrictions on customer actions with respect to categorization or resale implies that such activities would occur, and that the services must therefore be very close substitutes or identical. Such restrictions are also evidence that the utility has substantial market power.

Attempts to distinguish customers by their use of the service (the equipment which they attach, or the type of information they transmit) are also evidence that the distinctions are not really important. And such attempts are evidence that the utility has market power.

Where prices for services are different, and there are no artificial attempts to restrict customer purchases, this is evidence that the services are actually different in customer

perception. Such evidence is bolstered when the prices can be shown to move independently. When prices move together, this is possibly evidence that the services are substitutes. However, because of the regulated nature of telephone prices, similarity of prices between two regulated services, or similar movements of regulated prices, may merely be an artifact of the regulatory process.

A related question is determining whether there are any close substitutes for a given service. Table 3.3 lists the evidence that supports or rebuts the presumption that two services are distinct and not close substitutes. The high cross-elasticity of demand is classic data, as recognized by the courts in the duPont Cellophane case,³³ but such information is rarely available. Thus, the cross elasticity must be inferred from other evidence.

TABLE 3.3
Are Services Substitutes?

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Not close substitutes	Strong	
	High cross-elasticity of demand	Close
	Different customers	Not close
	Different competitors	Not close
	Intermediate	
	Restriction on resale	Close
	Different quality	Not close
	Few customers use similar functions	Not close
	Many different functions	Not close
	Prices very different (unless no resale)	Not close
	Prices move separately	Not close

Most of the "intermediate evidence" in table 3.3 that services are close or distant substitutes is similar to the evidence that would be adduced to demonstrate that they are the same. However, where the services have been determined to be different, the main use that is made of the evidence is to rank the degree of difficulty in substituting the alternative product for the one under consideration.

However, we note that if two services attract different groups of customers, and if the

³³United States v. E.I. duPont de Nemours and Company, 351 U.S. 377 (1956). Much more detail can be found in the lower court decision, 118 F.Supp. 41. As the court held, "[t]his interchangeability is largely gauged by the purchase of competing products form similar uses considering the price characteristics and adaptability of the competing commodities." (quoted in Stelzer and Kitt, *Selected Antitrust Cases*, p. 42.)

identified competitors for the services are different, then the cross-elasticity of demand between the services is probably low.³⁴

The 1984 "Merger Guidelines" considered that, if in the course of a year a hypothetical price rise of ten per cent led to a "significant" shift of five per cent of buyers to specific substitute goods, the market should be redefined to include those specific substitutes, and that such redefinitions should continue until no more "significant" shifts occurred.³⁵ Unfortunately, the information to do this calculation is not readily available, and the standards (ten per cent, one year, five per cent) are arbitrary, and lacking in theoretical or empirical justification. Other standards would lead to other results.

The National Association of State Attorneys General included product substitutes in its definition of the market "if they were comparably priced and suitable for substitution by seventy-five per cent of relevant customers."³⁶ There is no theoretical justification for this percentage, either; the evidence would be judgemental.

INFERENCE EVIDENCE AS TO THE SUBSTITUTABILITY OF SERVICES

In some instances, particularly with new services, it will be difficult to draw up a list of potential substitutes. Certainly, it can be hard to state how far the circle of potential substitutes should extend. Thus, for all services alleged to be competitive, there should be supplied a complete list of substitute services provided by the company claiming the service to be competitive, and by its known competitors. This list should be arranged in rank order, from the closest substitute to the most distant.

As a rule of thumb, it can be said that if the addition of a new service will cause a decline of five per cent or more in sales of another service, then the service should be on the list of substitutes. Or, if the withdrawal of a service would cause a rise of five per cent or more in the sales of another service, the services are substitutes. Experience may dictate that, given the imprecise nature of these estimates, which are based on the various editions of the merger guidelines, only closer substitutes need be considered.

Given the inelastic demand for most telecommunications services at present prices, services should certainly be considered substitutes if a ten per cent increase in the price of

³⁴Note that substitution can be evaluated by this method only at prices near the current ones. At very different prices, completely different alternatives may prove feasible. See Scherer and Ross, *Industrial Market Structure*, pp. 75-76 (the passage quoted in chapter 1).

³⁵Shepherd, *Industrial Organization*, p. 65.

³⁶Scherer and Ross, *Industrial Market Structure*, p. 192, referring to *Horizontal Merger Guidelines of the National Association of Attorneys General* (Washington: March 10, 1987).

one service will lead to a five per cent increase in the sales of another.³⁷ In this regard we recall that in the Hi-Lo case, in the workpapers associated with the filing, AT&T assumed that a price premium of five per cent for its private line services would have little effect on sales, and that reported price premiums for MTS in the range of one to five per cent have caused AT&T to lose market share to its competitors at a rate of approximately three to six percentage points per year (see table 2.2). Thus a smaller percentage shift might be justified as indicating that services are substitutes in some instances, especially if supported by additional evidence.

The Geographic Market Area

For antitrust purposes, the relevant geographic market can be defined as in terms of what would happen if there were a single firm serving it. If there are no identifiable close substitutes for the product, and if there is no easy way of bringing supplies of the product from other areas, then the market is distinct.

A market is defined as a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future producer or seller of these products in that area likely would impose at least a small but significant and nontransitory" increase in price, assuming the terms of sale of all other products are held constant. A relevant market is a group of products and a geographic area that is no bigger than necessary to satisfy this test. The "small but significant and non-transitory" increase in price is employed solely as a methodological tool for the analysis of mergers: it is not a tolerance level for price increases.³⁸

As discussed above, it has long been recognized that telephone market areas are predominantly local. Thus, the Local Access and Transport Areas (LATAs) were defined to include exactly one Standard Metropolitan Statistical Area (SMSA) in each LATA, except for states which had no SMSAs or only one, in which case the LATA is the entire state. However, most communities are not in SMSAs (though most of the population is), nor are most LATAs served in their entirety by a single local exchange telephone company.

We have observed that the distribution areas of telephone directories usually correspond to market areas as perceived by the customers and the telephone companies. They represent a balance between including neighboring communities with which firms do business, and excluding distant communities with which little business is done. In some instances practical considerations dictate that an area be covered by several telephone directories, but in these

³⁷This is equivalent to a coefficient of elasticity of substitution of 0.5. See the definition and treatment in Shepherd, *Industrial Organization*, p. 55. and Koch, *Industrial Organization and Prices*, p. 14. Note that there is no accepted standard as to the significance of a coefficient of 0.5.

³⁸Department of Justice, "Department of Justice and Federal Trade Commission Horizontal Merger Guidelines," mimeo, April 2, 1992, p. 7.

few cases the customers are automatically given several of the directories and offered the remaining ones without charge. Thus, using the classic definition that a "market" is the area within which ninety per cent of the sales take place, the distribution area of the telephone directories may be presumed to be the geographic market in most instances. Where a Standard Metropolitan Statistical Area is larger than the distribution area of the directories, it may be appropriate to consider the SMSA the market area for some services, after a showing.

Interexchange services could be considered to be LATA-wide, statewide or nationwide. In most instances, the interexchange carriers operate nationally (the exceptions are the Bell Local Exchange Carriers, which are, at present, restricted to operating only LATA-wide, although they operate in all LATAs of the state). However, in the past the terms of operation permitted the interexchange carriers are different within each state and interstate. The relevant access charges are different, so their cost of operating is different. The terms of presubscription may be different. Some of these differences may continue, despite the Telecommunications Act of 1996. At present, the interexchange carriers are restricted from operating openly and lawfully³⁹ in the intra-LATA markets in some states, but this will change as a result of state actions to remove entry barriers and the Telecommunications Act. Thus, it appears appropriate to presume that the relevant market for a state commission to consider for interexchange operations is normally the entire state, recognizing that, government policy (see table 1.7) has segmented the market and created a barrier to entry in the intra-LATA segment—a barrier that is now being eliminated.

The reason for considering the competitiveness of local markets is that for many services competition appears to have arrived in some local areas without having arrived in others. Indeed, it is quite possible that competition in many services may not occur in rural areas for a long time, if it ever occurs. To the limited extent that alternative service providers are active, they provide service only in the largest of metropolitan areas, or in limited locales where concentrations of demand may be found.

However, recognizing differences in the degree of competition in different geographic markets may give rise to a policy problem: the logical consequence may be rate deaveraging.⁴⁰ If competition exists in a limited market, the regulators will have to consider whether to use alternative regulation only in those markets, or statewide (including markets where competition does not exist), or to base its policy on the markets without competition. Using alternative regulation in a selective manner will certainly deaverage rates in different

³⁹There are ways for customers to use IXC networks to provide intrastate and intra-LATA services that the IXCs have made showings that they cannot prevent.

⁴⁰The *Telecommunications Act* takes a strong stand against rate-deaveraging (section 254(g)); interstate interexchange carriers shall offer service in rural and urban areas, and in all states that they serve at the same rates. Other provisions (sections 245(b)(3) through (4)) require continued support for rural telephone companies to reduce the rate disparity between urban and rural telephone companies.

markets in the state. Preserving uniform statewide rates may require new support mechanisms, lest the requirement impose a strain on the telephone company, whether it is required to continue to use regulated rates in the markets with competition (presumably losing some of its market share in those markets), or whether it is required to apply the alternative rates in markets without competition (and possibly, though not certainly, earning a subnormal return in those markets). Which alternative will be least damaging to the company must depend on the nature and extent of the competition, and the importance of the service in the markets with and without competition. Alternatively, some other form of support mechanisms may be required.

With that caveat, table 3.4 lists the conditions which might cause regulators to modify a presumption that the relevant geographic market area is the distribution area of the telephone directories.

TABLE 3.4
What is the Geographic Market?

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Distribution area of directories	Service is interexchange	LATA or statewide
	Customers purchase 90 per cent in area	Distribution area
	Multilocation customers	LATA or statewide
	Competitors do not operate beyond area	Distribution area
	Competitors do not advertize beyond area	Distribution area

Interexchange services are normally statewide, but, for a commission that regulates intra-LATA and inter-LATA interexchange services differently, the relevant market area may be the LATA in some instances. Where most of the customers for the service have multiple locations, the relevant market area may be LATA-wide or statewide. Similarly, where most of the identified competitors operate beyond the local community, the geographic market area, the area within which ninety per cent of the sales⁴¹ occur, may be larger than the distribution area. Finally, where the geographic area served by the competitors is hard to ascertain, it is helpful to consider the communities in which the competitors advertize.

⁴¹Generally this means that the firms in the geographic area sell ninety per cent of the product sold in that area (that is, no more than ten per cent is imported), and that the firms in the area sell ninety per cent of the product that they produce in the area (that is, no more than ten per cent is exported).

DETERMINING WHETHER A MARKET IS COMPETITIVE

A fundamental question to be answered in deciding whether an alternative to conventional regulation is justified is whether and to what extent the dominant firm or firms have market power.

Market shares are the primary indicia of market power but a judgement ... is not to be made by any single qualitative or quantitative test. The [firm] must be viewed functionally in the context of the particular market involved, its structure, history and probably future. Where a [firm] is of such size as to be inherently suspect, elaborate proof of market structure, market behavior and probably anticompetitive effects may be dispensed with....⁴²

Structural Evidence of Market Power

The most important market structure is the presence of a dominant firm, with forty per cent or more of the market (indeed, many observers find that the power of the dominant firm increases significantly if its share is above fifty per cent). For markets where there is no dominant firm, industry concentration is the important consideration: the market shares of the leading firms in the industry. There are two measures of industry concentration in common use: the four firm concentration ratio, and the Herfindahl index. Table 3.5 summarizes the structural evidence which must be examined to ascertain whether a firm or group of firms have market power.

Markets are considered to be fully competitive if the 4-firm concentration ratio is under 40 per cent, because when the concentration ratio is higher than 40 per cent some studies show the firms to have market power—the ability to increase their prices and earn above-normal profits. Alternatively, the 1982, 1984 and 1992 Justice Department merger guidelines used a Herfindahl index of 1000 as indicating full competition (10 firms with 10 per cent of the market), and 1800 as a measure of a tight oligopoly in an industry, corresponding to approximately 6 firms of equal size (each with about 16 per cent of the market).⁴³ The standards are not equivalent. An industry with 4 firms, each with 16 per cent of the market, will have a concentration ratio of 65 per cent. On the other hand, the 1982 merger guidelines considered a Herfindahl index over 2500 (corresponding to 4 firms with 25 per cent each, or

⁴²United States v. Continental Can Co., et al., 378 U.S. 441 (1964), quoted in Stelzer and Kitt, *Selected Antitrust Cases*, p. 150.

⁴³These were the standards of the 1982 and, somewhat modified, the 1984 Merger Guidelines. In 1987, they were adopted, with a different set of collateral considerations, by a group of state attorneys general. Scherer and Ross, *Industry Market Structure*, p. 192, citing *Horizontal Merger Guidelines of the National Association of State Attorneys General*, 1987. They were unchanged in 1992: see Department of Justice, "Horizontal Merger Guidelines," mimeo, p. 28.

approximately an industry with 4 firms, with 40 per cent, 25 per cent, 15 per cent and 10 per cent⁴⁴) to indicate that the market power in the industry was probably significant.⁴⁵

TABLE 3.5
Is the Market Structure Competitive?

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Market is not competitive	Strong	
	Dominant firm over 40 per cent	Not competitive
	Herfindahl under 1800	Possibly competitive
	4-Firm Concentration under 65 per cent	Possibly competitive
	Herfindahl under 1000	Competitive
	4-Firm Concentration under 40 per cent	Competitive
	Intermediate	
	Herfindahl falling rapidly	Competitive
	Market leader losing 1 per cent/year	Competitive
	Actual entry from major firms (over 2 per cent)	Competitive
	Patent protection	Noncompetitive
	Entry restricted by licenses, franchises	Noncompetitive
	Other entry barriers	Noncompetitive
	Weak	
	Potential competitors not entering markets	Noncompetitive
	Potential competitors entering this market	Competitive
	Potential competitors entering other markets	Competitive
	Entrants small (under 1 per cent)	Noncompetitive
	Potential competitors poorly managed or financed	Noncompetitive
	Market growing rapidly	Competitive

As discussed in chapter 1, dominant firms often lose their market shares relatively rapidly

⁴⁴There is an observation that firms in many industries are exponentially distributed, so that each firm will have half the market share of its next larger rival. For example, GM had 40 per cent, Ford 20 per cent, and Chrysler 10 per cent. Many industries do have this size distributions, but there are also many industries where the dominant firm is 5 or 6 times the size of its rival (IBM, Campbell's Soup).

⁴⁵See the extensive discussion in Shepherd, *Industrial Organization*, pp. 65-67. See also the caveats, suggesting that both the concentration ratio and the Herfindahl index should be considered when concentration is high, in Scherer and Ross, *Industrial Market Structure*, pp. 72-73.

(in excess of one percentage point per year), until they lose their dominant position.⁴⁶ There are very few instances in which dominant firms have lost their market share markedly faster than about one percentage point per year. In many cases, however, dominant firms retain their market share for extended periods. If a dominant firm is losing its market share this is an indication that its competitors may be limiting its exercise of market power, although it is *not* an indication that the dominant firm wholly lacks market power. There are studies that show that firms with market shares above forty per cent have elevated price/cost ratios and profits do not distinguish between firms with declining market share and those with stable market shares.

Furthermore, a firm with a declining market share in one period might successfully arrest that decline in a later period. Thus, if evidence of declining market is relied upon, it must be reexamined each year.

Potential entrants may be significant in a few instances, but empirical research demonstrates that they do not have as much of an effect upon the behavior (the prices) of the dominant firm, or the large firms in the industry, as do the presence of other competitors of significant size (over two per cent market share). Thus, only actual entry by major firms, with the appropriate managerial capabilities, and the financial ability to expand rapidly in the market, should be considered of even intermediate importance, and then only if the firm achieves a two per cent market share and continues to grow. Small entrants, and weak entrants should be considered no more than weak evidence of competitiveness. Firms that are actually entering the market in question are more significant than the existence of firms entering other markets elsewhere, which may not be comparable for many reasons: for example, the other markets may be larger and more attractive, or the dominant firm weaker.

The presence of entry barriers in a market is a very important reason to discount the claimed existence of potential competitors. Licenses and franchises that may take years to acquire prevent the potential competitor from having any effect on the present prices charged by the firm or firms now in the industry. The 1996 Act should serve to greatly reduce the time lag. At some future time, when the entrant has all necessary licenses and permissions and has begun to operate, the situation can be reevaluated in terms of the entrant's market share and ability to gain additional market share (including the entrant's financial resources to pay for expansion).⁴⁷

⁴⁶Tables 1.6 and 1.7 show this to be equivalent to a decline in the Herfindahl index of 100 to 175 points per year, depending on the initial market share of the firm. The equivalence is nonlinear because the Herfindahl index is based upon the squares of the market shares of the firms.

⁴⁷When the entrant is a national firm, its total resources may appear large. When divided among all the markets in which the firm is active, its resources may not be sufficient to finance rapid expansion in any of them. This must be evaluated in each individual case.

Behavioral Evidence of Market Power

A monopolist has the opportunity to engage in price discrimination, to charge elevated prices, earn elevated profits, degrade the quality of the product, and slow the rate of innovation. In this section we discuss price behavior and related actions that suggest that a firm has market power.

The ability of a firm to discriminate is partly a function of the nature of the market and the product. Thus, restaurants are able to charge higher prices at dinner than at lunch, despite the competitiveness of the industry. However, in industries with dominant firms, and particularly in the fixed utility industries, where customers are tightly—usually physically—connected to their suppliers, price discrimination does serve as one indicator of market power. Table 3.6 lists the forms of price discrimination. Generally, if prices differ for customer classes, particularly if they do so by more than the cost differences,⁴⁸ this is evidence of discrimination. Restrictions upon the customers may be taken as evidence that the firm intends to discriminate and has the power to do so.

TABLE 3.6
Are Prices Discriminatory?

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Prices are discriminatory	Different prices for customer classes	Discriminatory
	Costs differ for customer classes	Non-discriminatory
	Costs differ by more than prices	Discriminatory
	Prices differ by more than costs	Discriminatory
	Restrictions on resale	Discriminatory
	Restrictions on purchase	Discriminatory

Table 3.7 summarizes the way price levels and price fluctuations provide indications of the competitiveness of an industry. Evidence of price leadership is strong evidence that an industry is noncompetitive. If one firm is usually the first to announce price changes, or if price announcements of any of the larger firms are usually responded to by formal announcements from the other firms within a short (and relatively fixed) period of time, this may be taken as evidence of price leadership, which suggests that the firms have market power, and may be collectively “negotiating” price to earn higher profits. If there are formal

⁴⁸In some circumstances, even though it may be more expensive to serve some customers than others, the price charged would be the same in a competitive market. This result will occur if the customers can readily sell the product to each other: the customers are not restricted, the costs of the transaction are low, and the customers do not compete with each other, so that the low prices to the favored customers do not confer a competitive advantage.

schedules of discounts, usually in "even" amounts, and if prices tend to be at price points that are in even amounts, this is also evidence that price competition is not occurring. For this reason it is important to collect information on formally announced (list) prices, and on prices actually paid, since there may be special rebates or discounts where price negotiation is permitted. The presence of restrictions on the uses the customer may make of the service, such as who may purchase the service, or whether the service may be resold. If a large firm is able to enforce such restrictions without driving its customers to competitors, this suggests that the competition is not effective.

TABLE 3.7
Are Price Levels Competitive?

Presumption	Evidence	Suggestion
Prices are noncompetitive	Evidence of price leadership (following)	Noncompetitive
	Prices do not vary often	Noncompetitive
	Periodic discounts in "even" percentages	Noncompetitive
	Subnormal profits where competition exists	Noncompetitive
	Supernormal profits where no competition	Noncompetitive
	Prices decline in weak markets	Competitive
	Uniform prices from all suppliers	Depends on product differentiation and other factors

If price negotiation is not permitted for example, as in communications markets where tariffs are required, then prices that do not change often, and prices that do not change when demand falls (as in recessions), should be taken as evidence that price competition does not occur.

There are several behavioral aspects of competition that may serve as evidence of the effectiveness of competition in an industry. The right-most column in table 1.1 describes succinctly aspects of rivalrous behavior as the market structure varies from perfectly competitive markets through monopoly markets. Generally, we may associate "workable competition" with loose oligopoly, but if the rivalry in the market is strong, structures that might be associated with tight oligopoly may still be workably competitive. Table 3.8 lists forms of rivalrous and pricing behavior that may be considered.

TABLE 3.8
Innovation and Quality of Service

<u>Presumption</u>	<u>Evidence</u>	<u>Suggestion</u>
Competition is not workable	Quality of Service, previously good, is declining	Not Workable
	Inventions are slow to be put into service (innovation is slow)	Not Workable
	New products and services appear frequently (innovation is rapid)	Workable
	Quality of service has begun to improve, after a decline	Workable
	Advertizing and marketing expense high	Possibly workable
	Attempts at product differentiation	Possibly workable
	Productivity increasing more rapidly; costs declining	Becoming more competitive
	Reported profits declining (if previously unregulated)	Becoming more competitive
	Product proliferation	Depends (reinforces conclusions)

Note that these are listed in the approximate order of their strength as indicators of whether an industry should be considered workably competitive, with some bias toward the historic market characteristics of the communications industry. They should not be considered as overly strong.

Advertizing and marketing expenses are generally high in workably competitive industries: they are usually low in perfect competition or monopoly. However, firms that sell most of their products to a limited number of large firms may have low advertizing expenses, but fairly high marketing expenses. Similarly situated firms that sell to consumers (or whose products are purchased by consumers in original form, and not as unrecognizable components of other products)⁴⁹ Thus, these measures may be useful for intertemporal comparisons of the same markets and submarkets, but may be less useful for comparisons between distinct markets, and almost useless for inter-industry comparisons. The same may be said about efforts at product differentiation: they are more practical and effective in some markets than in others. Moreover, when competition is regulated, as it was in the

⁴⁹These are called "intermediate goods" by economists. They may include raw materials, or industrial goods like steel sheet, bulk plastic, or automobile parts. In the communications industry, bulk services like private lines and WATS are probably of this nature, and we note that they are rarely advertized, even in the trade press.

transportation industry, sometimes product differentiation was the only means of rivalry possible: when more effective forms of rivalry are allowed they supplant it.⁵⁰

Quality is observed to decline initially if the industry had previously consisted of rate-regulated monopolies. If the monopolies were not rate-of-return regulated, important aspects of quality would quite likely have been low initially.⁵¹ As the industry becomes workably competitive, quality becomes an important form of rivalry, and quality is expected to begin to improve again. However, the aspects of quality that are important for rivalrous behavior in competitive markets may be very different from the aspects that were important when competitive markets were regulated, or when the firm was a rate-base-rate-of-return regulated monopoly.

As a practical matter, if the firm is highly profitable, in some circumstances this may be taken as evidence that it has a significant degree of market power. For this reason, the profitability and the price/cost ratio should be measured in all market segments, to determine where the firm has market power. It must be recognized that the public utility firm can potentially manipulate this ratio, since its overall profitability is constrained, and it may also have secondary regulatory constraints upon its profits in its monopoly services. Thus, the public utility can earn subnormal profits in some services to preserve its market share, while maintaining its overall profitability with higher profits in the monopoly services (the profits of which are not constrained by market forces).⁵² Moreover, profit levels even for unregulated firms may be understated: unregulated firms with market power have been shown to engage in "wasteful" activities, resulting in "X-inefficiency," and firms may, for a variety of internal reasons, allocate costs and overheads to show profits in some lines of business and losses in others.

Low profits or losses in the more-competitive lines of business is a behavior that has been

⁵⁰Hence the decline in airlines competition for the best meals, and the largest premiums for travelers: during the 1950s and 1960s, these forms of rivalry were among the few possible, and so were eventually constrained by the International Air Travel Association (IATA) and other industry groups. Note that the end of these forms of rivalry are often cited as declines in the quality of service. See the discussion of service quality in Viscusi, Vernon and Harrington, *Economics of Regulation and Antitrust*, p. 583, and Kahn, *Economics of Regulation*, Vol. 2, p. 59, which fail to recognize that some of the excessive quality under regulation was a form of rivalry.

⁵¹One may compare the consumer response of the telephone and CATV industries in the United States, the former subject to rate-of-return regulation, and the latter regulated in other respects, but not rate-of-return on its rate-base. Also, telephone companies abroad were in the past mostly subject to rate controls, but not profit controls, and exhibited some quality problems that are similar to those of the CATV industry in the U.S.

⁵²There are several definitions of predatory pricing, which we need not deal with here. It is sufficient to note that, contrary to the views of some attorneys that were prominent in the late 1970s and early 1980s, there are reasonable theoretical models and observable market situations in which predation is a rational behavior for a dominant firm. Certainly, predation is observed frequently, and is widely accepted in the economics profession as a description of behavior that is rational in some circumstances. This theoretical acceptance has largely come about since 1980. J. Roberts, "A Signaling Model of Predatory Pricing," *Oxford Economic Papers*, n.s., vol. 38, supplement (November, 1986), p. 75. See also, Alvin K. Klevorick, "The Current State of the Law and Economics of Predatory Pricing," *American Economic Review*, vol. 83, no. 2 (May, 1993), p. 162; and Kara Swisher, "Wal-Mart Loses Suit over Pricing: Ark[ansas] Judge says store sold goods below cost," *Washington Post*, October 13, 1993, p. C1.

observed in the telephone industry, as shown in table 3.9.⁵³ Profits above the average for industrial firms (regardless of the cost of capital) must be considered to be evidence of above average market power in the markets in which they occur. As noted above, if the profits are five per cent above average for a sustained period, the evidence should be considered significant.

Product proliferation is normally evidence of attempts at competition. However, in highly concentrated industries, "packing the product space" is sometimes used as a strategy for creating entry barriers (see table 1.7).

TABLE 3.9
Bell System Interstate Earnings by Service, 1964 to 1974

Service	August 1964	Late 1965	Late 1967	Late 1969	July 1971	August 1972	Decem. 1973	Aug. 1974
Message Toll	9.7%	8.8%	8.2%	8.4%	8.6%	8.2%	8.8%	8.9%
WATS	13.4%	12.9%	13.7%	10.3%	9.4%	9.3%	12.6%	12.3%
TWX	3.4%	3.7%	6.1%	4.9%	—	—	—	—
P.L. Teleph.	4.7%	4.3%	4.2%	4.2%	4.0%	4.5%	5.5%	5.5%
P.L. Telegr.	1.4%	1.4%	5.6%	7.4%	5.3%	4.7%	1.4%	(0.4%)
TELPAK	0.3%	(0.8%)	2.1%	5.6%	5.4%	4.9%	8.2%	8.2%
Audio/Radio	—	—	4.9%	2.5%	3.0%	0.4%	2.0%	1.9%
TV	—	—	4.1%	5.3%	4.9%	3.7%	2.9%	2.0%
Other	0.9%	0.8%	12.1%	11.4%	3.1%	11.1%	3.2%	3.3%
Total Interst.	7.5%	7.8%	7.4%	7.8%	7.8%	7.7%	8.6%	8.7%

Source: Recommended Decision of the Chief of the Common Carrier Bureau, Docket 18128, 41 FR 4320 (January 29, 1976), Attachment D.

It must be admitted that the possession of monopoly power has sometimes been found to coincide with low rates of return on investment. As Judge Learned Hand said in the ALCOA case:

The judge found that, over the whole half century of its existence, "ALCOA's" profits upon capital invested, after payment of income taxes, had been only about ten percent.... This assumed, it would be hard to say that "ALCOA" had made exorbitant profits upon ingot, if it is proper to allocate the profit upon the whole business proportionately among all its products—ingot, and fabrications from ingot. A profit of ten per cent in such an industry, ... could hardly be considered extortionate.

There are however, two answers to any such excuse; and the first is that the profit on ingot

⁵³The telegraph investigation initiated by the FCC in the early 1960s (Docket 14650) gave rise to the Seven-way Cost Study which was based on a Bell System full allocation of costs among its services, divided into seven separate categories. The study results indicated that rates of return were high on Bell's monopoly services (such as message toll telephone) but very low on services competitive with those of Western Union. Report of the Telephone and Telegraph Committees of the Federal Communications Commission in the Domestic Telegraph Investigation, (Docket 14650, 1966) pp. 202-3. Between 1964 and 1974, eight different cost studies consistently reported similar results, which the FCC reported in tabular format in Recommended Decision of the Chief of the Common Carrier Bureau, Docket 18128, 41 FR 4320 (January 29, 1976), Attachment D, reproduced here.

was not necessarily the same as the profit of the business as a whole, and that we have no means of allocating its proper share to ingot...⁵⁴

It is also possible that high profits for the leading firm are the result of superior efficiency, or economies of scale.⁵⁵ However, a firm that has these advantages would be expected to gain market share against its rivals. Thus, claims that high profits are not the result of market power should be evaluated in the context of other evidence, such as the trends in the market shares of the firms and the costs of the firms.

⁵⁴United States v. Aluminum Company of America, 148 F.2d 416 (2d Cir. 1945), quoted in Stelzer and Kitt, *Selected Antitrust Cases*, p. 27.

⁵⁵Thus the low profits of ALCOA might be the result of diseconomies of scale or inefficiency, and its sustained high market share may be attributable to its practices of foreclosing competition. ALCOA was convicted of engaging in a cost-price squeeze on its competitors in fabrication. Its efforts to control the supply of bauxite (ore), cheap hydroelectric power, and to maintain overcapacity were found not to be unlawful.

Chapter IV

Evaluating the Competitiveness of Some Actual Telecommunications Markets

In this chapter we apply the method of analysis developed in chapters 1 and 3 to several significant submarkets: Yellow Pages (classified) telephone directories, inside wiring, and interexchange services. These are products that have been declared presumptively competitive at various times, the first two largely upon evidence of potential competition or the existence of a small fringe of actual competitors.

YELLOW PAGES

With respect to Yellow Pages there are two immediate questions of market definition: (1) what are the competing products, and (2) what are the geographic markets.

With respect to the competing products, there are small Yellow Pages-like directories in most markets. These directories do not seem to have a significant market share, and the empirical evidence suggests that, in most industries, firms with market shares under two per cent have little influence on price. Thus, the evidence of competition consists of SouthWestern Bell and Reuben C. Donnelly companies, both publishers of directories in other regions. Both were potential competitors, and both actually entered some large municipal markets in service territories of some Bell companies (but no small markets). A priori, one would have thought that the principal barrier to entry was control of the list of subscribers. However, this does not appear to have been an obstacle, since white pages listings are not covered by effective copyright, and the established telephone companies have been leasing their lists. Other obstacles are financial: the yellow pages are distributed "free," with the white pages, and the most basic listing is bundled with a business line. The completeness of listings in the telephone companies' directories made the competitors' seem of lower value both to advertizers and consumers. None of these barriers appear particularly high, yet the fact remains that two experienced and well-financed potential competitors failed.

The relevant market is clearly the distribution and coverage area of telephone directories.¹ While entry occurred, SouthWestern Bell later withdrew from all markets other than the Washington, D.C. LATA, and then sold its *One Book* entrant in that market to Donnelly. There is no evidence that the market share of any Local Exchange Carrier declined as a result of the entry of SouthWestern Bell or Donnelly, or that it has declined subsequently, or that the market shares of any of the smaller Local Exchange Carriers in the LATA have been affected.

There is some question of the degree to which other forms of advertizing should be considered competitive with telephone directories. We note that telephone directory distribution is in the "Services Not Elsewhere Classified" section of the Standard Industrial Classification, along with such miscellaneous forms of advertizing as convention bureaus.² Thus, there is no prima facie evidence to consider directories in the same industry as newspaper and television advertizing. Secondly, we note that most Yellow Pages advertizers do little advertizing in the other media, and some of the largest advertizers in other media (such as supermarkets and department stores) do little advertizing in the Yellow Pages. Finally, it appears that the changes in the price of Yellow Pages advertizing are not closely associated with changes in the price of other advertizing.³

Thus, Directory Advertizing appears to be a distinct service, not closely related to other services, and is apparently noncompetitive. Yellow Pages may or may not be a *public utility* service, however that is defined, but it does appear, as discussed in chapter 2, above, that it should have been included in the Competitive Checklist (P.L. 104-104, section 271[c][2][B]). That is, the crafters of the 1996 Telecommunications Act erred in not requiring the local exchange carriers to offer access to Yellow Pages advertizing to customers of local access providers and interexchange carriers.

The Telecommunications Act does not require that there be a unified "white pages" for a community. Thus, consumers may be burdened with multiple telephone directories, and businesses that take service from alternative network providers may have the added

¹This is a bit complex in some very large LATAs, where telephone company directories cover only parts of the metropolitan area (for example, in the Washington LATA, Bell Atlantic's Yellow Pages cover the "states" of Northern Virginia, Washington, and Suburban Maryland; white pages cover Northern Virginia, Washington, and, separately, Montgomery and Prince Georges counties in Maryland; at one time Donnelly's *One Book* covered the entire area and claimed this as an advantage—more recently it has also issued multiple volumes; in New York City, NYNEX issues five directories to cover the entire city, and even more directories to cover the rest of the LATA). However, many firms advertize in out-of-area directories, so the rule (see chapter 3, discussion preceding table 3.4) that 90 per cent of all business be encompassed by the "market" would probably require that the entire LATA be considered the market, and probably also the "distribution area."

²Department of Commerce, *Industry and Product Classification Manual*, industry 7389, product 738990 1.

³Bureau of Labor Statistics, *Producer Price Indexes: data for July 1987* (Washington: Government Printing Office, 1987), industries newspapers, classified advertizing, local commercial advertizing) 2711-71, 2711-722 or commodities 0931-0211 and 0931-0222; and directory advertizing, industry 4811-911. By 1987 directory advertizing had risen nearly 50 per cent more compared with the base period (1967) than had newspaper advertizing.

expense of advertizing in the white and Yellow Page directories of the established local exchange carrier. However, in monitoring (and arbitrating) the negotiations between local exchange carrier and alternative access providers, states can impose requirements for unified directories—and for requirements that the customers of the competing local access providers be allowed to advertize in directories provided by the established local exchange carriers—if they find that such requirements will promote local competition.

INSIDE WIRING

There are several segments to the inside wiring markets. These are (1) the installation of new inside wiring in commercial buildings, (2) the installation of new inside wiring in residential buildings, and (3) the maintenance and repair of complex commercial inside wiring, (4) the maintenance and repair⁴ of simple commercial inside wiring, and (5) the maintenance and repair of residential inside wiring.

These are distinguishable because they are technologically different, done for different customers, and done by different suppliers. Inside wiring in commercial buildings is installed for the tenants, usually, by electrical contractors or specialized contractors. Because businesses now use inside wiring for data services⁵ and because different types of customer premises telephone equipment (and CENTREX) require different wiring layouts, this work is most often done by specialized contractors to the customer's order. Small business wiring may be done by the electrical contractor when the space is remodeled. When residential buildings are built, the telephone wiring is often installed by the electrical contractor. Thus, these installation markets appear to be competitive. It is not known whether the local telephone companies have large market shares in any of these markets.

Complex inside wiring for PBXs, key systems and data systems is often maintained and repaired by the supplier of the equipment, or by specialized wiring contractors. Thus, the market would appear to be as competitive as the equipment market. It is not known whether the telephone companies have large shares of submarkets of these markets.

⁴"Maintenance" has two meanings: (1) the offering of maintenance contracts for the correction of faults in the wiring at no further charge, and (2) handling moves and rearrangements (not involving major construction, that is, it is not usually performed as part of a construction or remodeling project coordinated by a general contractor, which is better grouped with "construction," because of the presence of a general contractor and the likelihood that formal bids were obtained). "Repair" means correcting faults that occur. The two meanings of maintenance, and the repair function are all distinguishable activities, and some might be competitive while others are not. Without a factual investigation, it is difficult to determine whether these activities, which are logically separable, are distinguishable in the market. In the discussion that follows, maintenance and repair will be treated as a single market activity, because it appears that the LECs are the overwhelmingly dominant providers of all three facets of the service. Further investigation might provide some basis for distinguishing the facets of maintenance and repair, but at present there is no evidence to suggest a reason for doing so.

⁵While many computer local area networks (LANs) use "twisted pair" wiring, often called "telephone" cable, the standards for cable used for data service are different from and higher than those for telephone service. Moreover, some customers use digital PBXs for voice and data, so their wiring must meet higher specifications than for other types of PBXs, including other digital PBXs.

Simple inside wiring for residences and businesses is known to be maintained (in both senses of "maintenance") by the telephone company, which does sell "maintenance plans." These are similar to "service contracts" sold in the home appliance industries. Potentially, electricians, specialized wiring contractors, handyman, and the retailers of station equipment *could* provide maintenance service (both "moves and rearrangements" and "service contracts"), so entry is possible. There is little or no evidence, however, that any of these potential competitors are actually providing maintenance and repair services for inside wiring, especially in the residential market or with respect to the "service contract" facet of maintenance. Consumers appear to be providing much of the installation of new equipment and moves and rearrangements and even some repair service for themselves, but the extent of this is completely unknown. Telephone company maintenance charges (particularly for "service contracts") have been rising, but it is not certain whether telephone company service contract charges, or telephone company hourly charges for maintenance (in the sense of moves and rearrangements) and repair (in the sense of correction of faults) have been tracking similar charges from the above types of firms, most of which are classified in the construction industries or wholesale trade.

Accordingly, there is no evidence that the maintenance and repair of simple inside wiring, especially in the residential market, has any significant commercial competition, or that a significant amount of commercial entry is actually occurring anywhere.⁶ It would appear that this segment of the overall inside wiring market is distinguishable from the construction segments, and from the complex inside wiring segment, and is probably noncompetitive, surprising as this may be. As explained above, there are three facets of the maintenance and repair market, which do not appear to be distinguishable as economic submarkets on the basis of the evidence presently available, but which might prove to be distinguishable on further investigation.

The reason for the lack of alternative commercial providers of residential telephone wiring maintenance and repairs is unknown. There are no licensing or technical barriers to entry: tools and supplies are readily available and cheap. Certainly, surveys suggest that many consumers are ignorant of their alternatives. Quite possibly the more aware consumers do much of their own work. However, the lack of handymen and handywomen advertizing

⁶A review of the Bell Atlantic Washington, D.C. *Yellow Pages* for 1996–1997 shows only two electrical contractor advertizing "commercial and residential" and "telephone wiring." Five firms advertize "computer wiring," and one that mentions "telephone and cable TV" does not specify residential (though it does advertize "senior citizens discounts." There are six and one-half pages of electrical contractors' advertizing. Under telephone equipment and systems dealers and service and repair, only two firms advertized "voice and LAN cabling" or "installation, relocation, repair" and "commercial and residential"—these were the only firms advertizing residential service. Four of the firms did advertize "moves and rearrangements" but all of these specified "business" (one included "home office installations"). There are eight pages of telephone systems advertizing.

the service is puzzling.⁷ It may well be that the market for residential maintenance and repair is too small for most customers to concern themselves with, so firms that do the work do not advertize it. Certainly, some moves and rearrangements occur in conjunction with other remodeling, when an electrical contractor would be involved. The price of the telephone company's service contracts may be low enough so that it is too expensive (in time and money) for many residential customers to bother seeking alternatives, while competitors do not have the telephone company's advantage of billing the customer monthly for other services.⁸ In sum, the evidence suggests that entry is easy but there is little actual competition, and that what competition does exist (from do-it-yourselfers and the few commercial services that bother with the market) does not effectively constrain price increases by telephone companies providing the service. It is arguable that this is a failure of the regulatory—or rather, the deregulatory—process. The anomalous situation in residential inside wiring should remind us that, while legislators or regulators can announce a pro-competitive policy, competition will arrive on its own schedule. In the case at hand, it is possible that improved customer education would improve the situation, but this is far from certain.

INTEREXCHANGE SERVICES

The market for interexchange services is dominated by three national giants (AT&T, MCI, and Sprint), one small national facilities-based carrier (LDDS), and, for intra-LATA services, by the Bell Operating Companies. There are very many other firms with minuscule market shares, but they are almost all resellers, although some have regional networks (see table 2.2).⁹

Since AT&T's market share for interstate services has been falling very rapidly (averaging 2.9 percentage points per year since 1984), one might think that it lacks effective market power, despite a dominant-firm market share of 55 per cent in late 1995. Against this must be weighed a very high 4-firm concentration ratio of 86 per cent (and a 3-firm concentration

⁷There are only three advertizements for "Handyman Services" in the Bell Atlantic Washington, D.C. *Yellow Pages*. None lists telephone wiring. Few of the repairmen distributing cards on community bulletin boards mention telephone wiring among the services they perform.

⁸Telephone companies do appear to earn significant amounts of money from these service contracts. Thus, it is surprising that other firms that bill monthly, such as electric utilities or CATV companies do not offer them as well. These companies *could* offer to maintain telephone wiring as well as their own, but none do so. Although the situation arose as a historic artifact, its continuation in the face of deregulation and workable competition in station equipment and the other submarkets of inside wiring remains puzzling.

⁹Federal Communications Commission, Common Carrier Bureau, "Common Carrier Competition," Fall, 1995, p. 8. (http://www.fcc.gov/Bureaus/Common_Carrier/Reports/ccc4q95.w51, accessed April 23, 1995. (Pagination as printed appears to differ slightly from copies printed by the FCC due to differences in the printer-driver used.)

ratio of 82.7 per cent).¹⁰ Thus, the industry remains a tight oligopoly, and tight oligopolies remain associated with market power for the larger firms.

Virginia appears to be the only state that systematically collects information on the market shares of the inter-LATA carriers operating intrastate. Generally, its experience tracks the interstate reports, but cannot be extrapolated to other states that may be permitting inter-LATA competition under very different operating procedures. Clearly, states will have to assess the competitiveness of their intrastate markets, both inter-LATA and intra-LATA, and should immediately begin a program of compiling and publishing information on the market shares and price trends of competitors, similar to the ones developed by the Virginia Corporation Commission, and the Common Carrier Bureau of the FCC.

Administered prices are one behavioral attribute of firms with market power that is relatively easily assessed. With respect to small customers, prices have been rising for several years, despite relative price stability for the economy as a whole, price cap policies of most regulators, and reported productivity improvements on the parts of all carriers. Moreover, access charges, by far the largest expense of the interexchange carriers, have generally been dropping. While discount plans exist, and increasing numbers of customers take advantage of them, it is by no means clear that, overall, prices have been falling for small customers, residential or business.¹¹ Moreover, the FCC has found that AT&T does appear to have power to control some prices in the relevant market.¹² Thus, there appears to be a pattern of "tacit price coordination" (or price leadership) among the leading carriers. As the FCC said:

We find that the evidence in the record is conflicting and inconclusive as to the issue of tacit price coordination among AT&T, MCI, and Sprint with respect to basic schedule rates or residential rates in general. For example, as noted, certain evidence shows that the lock-step increases may be due to the fact that price caps have kept basic schedule rates below cost, and that any price leadership by AT&T is a function of the current asymmetric regulatory scheme. To the extent, however, that tacit price coordination may be occurring, the Commission would view this as a matter of serious concern. We believe, however, that this problem, to the extent it may exist, is a problem generic to the interexchange industry and not specific to AT&T. We thus believe these concerns are better addressed by removing regulatory requirements that may facilitate such conduct, such as the longer advance notice period currently applicable only to AT&T, and by addressing the potential issues raised by these concerns in the context of the proceeding we intend to initiate to examine the interstate, domestic, interexchange market as a whole. Because they relate to the industry as a whole, these issues do not precluded our concluding that AT&T lacks the power to raise residential prices unilaterally above

¹⁰Ibid.

¹¹The evidence for price leadership and lock-step increases, and apparent tacit collusion, particularly in residential rates is admitted by the FCC in Motion of AT&T Corp to be Reclassified as a Non-Dominant Carrier, FCC mimeo 95-427 (released October 23, 1995) ("AT&T Reclassification Order," reconsideration pending), paras 78-85, although the FCC's analysis comes to a different conclusion from ours.

¹²See also "AT&T Reclassification Order," paras. 20, 24, for example.

competitive levels. Thus, the evidence regarding residential pricing supports our finding that AT&T lacks market power.¹³

In short, the FCC has found that there is evidence of price leadership in the industry, but has found that, since price leadership is not evidence of monopoly in that the leader does not act unilaterally (though nearly all economists would say price leadership and possible "tacit collusion" are evidence of monopoly *power*), it may forbear from regulation of AT&T. Of course, interexchange telecommunications remains a common calling to the extent that the interexchange market still meets the usual public utility standards of "businesses affected with a public interest": "a particularly close relationship to the public as a whole,"¹⁴ essentiality, social overhead,¹⁵ direct connection, and involvement in some way in *transportation*.¹⁶ Under such circumstances, consumer protection would still appear to be warranted to prevent rate discrimination, refusals to serve, and other failures to meet the duties usually imposed upon public utilities. Thus, it is important that the FCC is proposing to open a docket to address the issue of how to deal with a market for public utility services in which a tight oligopoly—rather than a monopoly or a dominant firm—exercises the market power. Note that, while AT&T's market share has declined substantially in table 2.2, the combined market share of the three large facilities-based carriers has declined much less rapidly.¹⁷ The market share has fallen from 98.0 per cent in 1984 to 82.7 per cent in 1995 (1.3 percentage points per year)¹⁸ with nearly half the decline in the last 2 years.

With respect to intra-LATA interexchange competition, the situation is more confused, and much less is known. In some states it is still nominally prohibited, although it does occur, often in conjunction with some form of alternative access. In some states, the market share of

¹³FCC, Motion of AT&T Corp to be Reclassified as a Non-Dominant Carrier, Order FCC Mimeo 95-427, October 23, 1995, para. 83. (http://www.fcc.gov/Bureaus/Common_Carrier/Orders/fcc95427.wp, accessed April 30, 1996). Footnote omitted.

¹⁴Paul J. Garfield and Wallace F. Lovejoy, *Public Utility Economics*, (Englewood Cliffs, N.J.: Prentice-Hall, 1964), p. 2.

¹⁵"The services provided by public utilities are essential for economic growth and development ... as 'social overhead capital.'" Martin T. Farris and Roy J. Sampson, *Public Utilities: Regulation, Management, and Ownership* (Boston: Houghton Mifflin, 1973), p. 3.

¹⁶Garfield and Lovejoy, *Public Utility Economics*, p. 8. This includes transportation of communications or information. As Charles F. Phillips, Jr. points out "[t]he regulated industries can be divided into two major classes: '(1) those enterprises which supply ... continuous or repeated services through more or less permanent physical connections ... and (2) the public transportation agencies.'" *The Economics of Regulation: Theory and Practice in the Transportation and Public Utility Industries*, Revised edition (Homewood, Ill.: Richard D. Irwin, 1969), p. 4, quoting James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961), p. 4. Bonbright (p. 5) also makes the point that communications (and electric and gas distribution) are forms of transportation.

¹⁷Moreover, there is always a question of whether resellers provide effective competition, since they can be subjected to cost-price squeezes, as in the ALCOA case.

¹⁸Note that AT&T's loss of market was most rapid between 1984 and 1988, 3.7 percentage points per year, compared with 2.9 percentage points per year for the rest of the period.

the Bell company has declined substantially.¹⁹ However, it is not clear that the Bell companies have been reacting to this loss of market share in any systematic or effective way. Thus, it appears that the Bell companies are still behaving as dominant firms—or monopolies—in the intra-LATA market.

The FCC has also reclassified AT&T as non-dominant in international service. According to the FCC, AT&T's market share declined as shown in table 4.1.

TABLE 4.1
AT&T's Interstate Domestic and International Market Shares, 1984-1995

	<u>1984</u>	<u>1985</u>	<u>1988</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
Domestic	90.0%	—	75.4%	—	—	61.0%	—	55.2%
International	—	98.5%	—	72.7%	68.8%	63.2%	59.0%	—

Sources: Domestic market shares for 1984, 1988, 1993, Viscusi, et al., *Economics of Regulation*, p. 495, citing Arsen J. Darnay and Marlita A. Reddy, *Market Share Reporter*—1994, and *Fortune*, June 13, 1994. Domestic market share for 1995 from FCC, Common Carrier Bureau, "Common Carrier Competition," Fall, 1995, p. 8. International market shares from Motion of AT&T to be Declared Non-Dominant for International Service, Order, FCC Mimeo 96-209, May 14, 1996, para. 37.

According to the FCC, AT&T's market share in most major markets is under 70 per cent in the 50 largest markets, amounting to over 90 per cent of U.S.-billed traffic.²⁰ However, AT&T's competitors are dependent upon AT&T for access to capacity on the TAT-12/13 trans-Atlantic cable and other facilities.²¹ Moreover, there are still some concerns that foreign administrations, which do have market power (they are usually legally protected monopolies), may have incentives to discriminate in favor of AT&T because of its size, and for other reasons, though the FCC believes its policies can control any such tendencies.²² With respect to pricing, the FCC says:

We agree that U.S. international calling prices are at the very high end of the "zone of reasonableness." Indeed, residential IMTS [international message telecommunications service] pricing is significantly higher and more profitable than U.S. domestic long distance calling prices, and some IMTS prices have risen over the past several years. AT&T's average revenue per minute (ARPM) for international services is \$0.98, which is six times the ARPM for domestic services. This provides some evidence to suggest that either AT&T has the ability to set price, or that there are other significant problems with the structure, conduct and performance of the

¹⁹In Vermont, a single-LATA state, and one of the most rural in the country, NYNEX's absolute number of intrastate toll minutes has actually declined in recent years. Brian J. Welsh, Director, State Regulatory Department, NYNEX, personal communication, September 29, 1995. However, NYNEX's toll rates per minute, are still about triple those of their competitors. J. Riley Allen, Vermont Public Service Board staff, personal communication, September 29, 1995.

²⁰Motion of AT&T Corp. to be Declared Non-Dominant for International Service, Order, May 14, 1996, para. 31 (Order 59.5 in <http://www.fcc.gov/Bureaus/International/Orders/fcc96209.zip>, accessed May 25, 1996).

²¹AT&T Non-Dominant International Order, paras. 58-61.

²²Ibid., paras. 68-73.

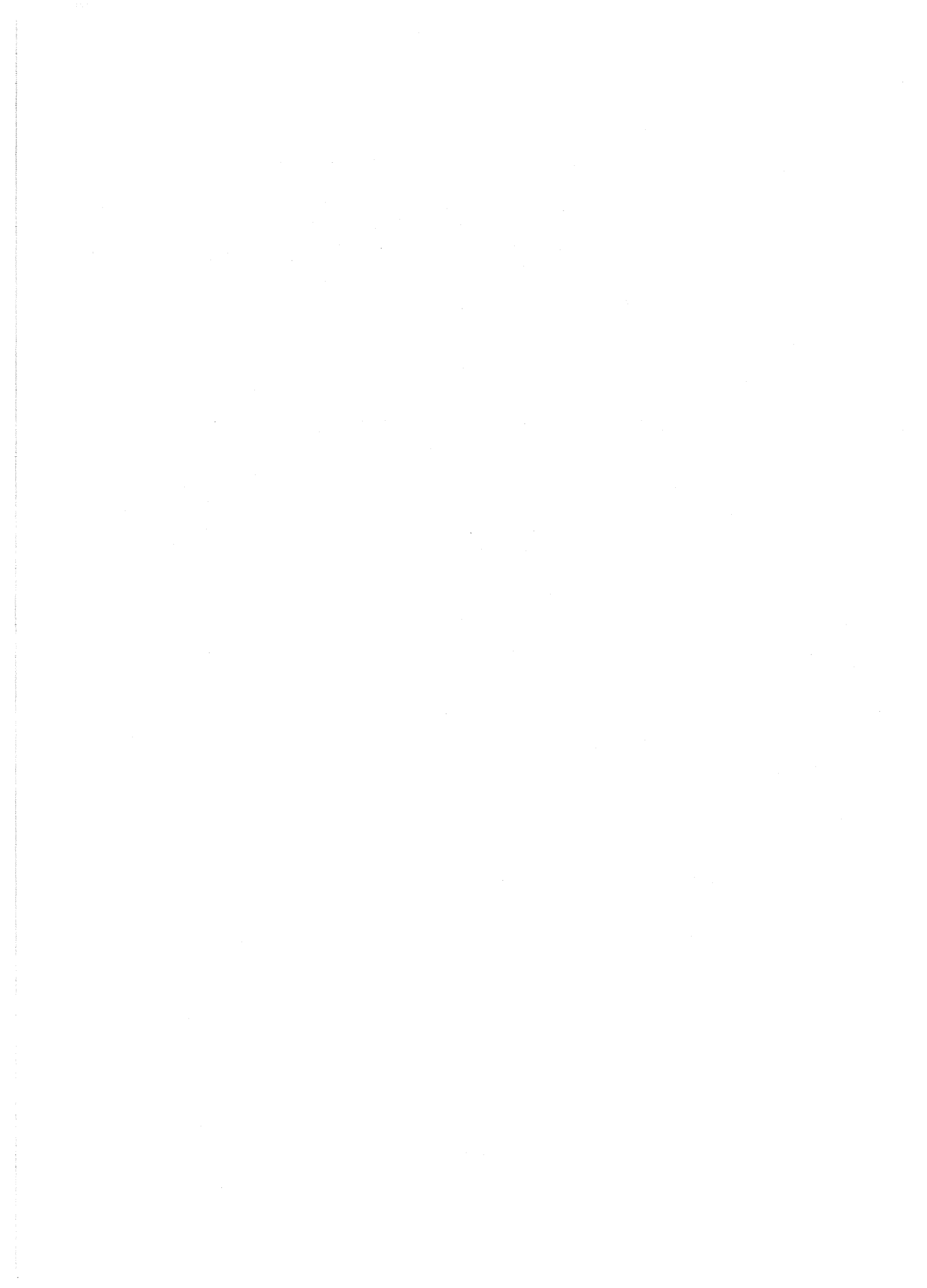
international market that result in prices higher than they would be in a more competitive market....

We remain concerned about the apparently large profits that U.S. international carriers make as a result of imperfections in the U.S. international market. It appears that AT&T's competitors, including WorldCom, could chose to sacrifice some of their profitability to increase their market share, but have not done so.²³ As a result, we believe that it will be necessary to expedite the entry of additional U.S. competitors to the U.S. international market as provided for under the 1996 Act. Additional competition is the best way to reduce high U.S. international calling prices.²⁴

Thus, it appears that the international market is not as competitive as the domestic market. Not only are prices and profits high, but there are admitted structural problems that prevent competition from being effective. While the FCC is forbearing to regulate AT&T as a dominant carrier, it has obtained commitments from the company to refrain from raising prices, particularly residential prices. Perhaps more importantly, the FCC is planning to open another inquiry into the structure of the domestic market, recognizing that the problems are not simply "bad behavior" on the part of the present firms. A similar inquiry into the structure of the international market would appear to be needed even more urgently. Indeed, it appears that the problems in the market are exactly what one would expect from a tight oligopoly or dominant firm market structure: market forces are not protecting the public from unjust, unreasonable, and possibly discriminatory rates.

²³WorldCom and its predecessor companies, for example, provided a total return to investors of 57.3 per cent per year during the past decade. *Wall St. Journal*, February 19, 1996, p. D2.

²⁴*Ibid.*, paras. 82, 86. Most footnotes omitted.



Chapter V

Suggested Data and Reports Relating to Competition

In order to monitor the status of competition in telecommunications markets, regulatory authorities must have access to a continuing and consistent compilation of relevant data. If markets are well-defined and stable, the task of gathering appropriate data is relatively easy. But in a situation of fluid market boundaries and rapid changes, as in telecommunications, the task is much more difficult. The problem is compounded by the fact that firms in a "competitive" environment ordinarily place a high premium on confidentiality and are often reluctant to disclose information that they feel could work to the advantage of their competitors. Thus, we often find that the firms in a particular industry work through associations, so as to release information only in broad aggregates which conceal the detailed data on any one firm or small group of firms. When a market is seen as "competitive," then, the firms therein seek confidentiality as a matter of course.

MARKET ENTRY REPORTS

Because the state regulators must arbitrate the negotiations between the Local Exchange Carriers (LECs) and those seeking use of the LECs' access facilities, and promote the entry of new competitors, they will need frequent, regular reports of the status of negotiations, and of the quantities of access facilities used by the competitors.¹ Since one of the alternative criteria by which the Bell companies may be permitted to serve interexchange markets involves the presence of predominantly facilities-based competitors in the service area of the telephone company (but not necessarily in the state), regulators should require from each LEC regular reports about the access facilities of various types being provided under contract:

1. leases of infrastructure (pole space and duct space)

¹There is nothing in the Act to suggest that the state commissions' responsibility to arbitrate these negotiations expires with the initial round. Indeed, section 271(d)(6)(A) requires the commissions to continually monitor Bell company compliance with the competitive checklist. Until such time as there are alternative sources of local exchange facilities, and probably until the industry becomes workably competitive, commissions will have a responsibility to remove barriers to entry and encourage competition.

2. use of local loop plant (metallic and fiber) with electronics (complete loops and partial loops)
3. use of loop plant (metallic and fiber) without electronics ("dark"; complete loops and partial loops)
4. use of switching plant (the volume of traffic, including volumes of the traffic caused by the activities of alternative access providers)²
5. use of interoffice transport plant (with and without electronics; switched and unswitched)

The commission will also need information from facilities based competitive access providers on the amount of plant they have installed, and on the number of customers they serve. This may be difficult to obtain for commissions that lack legal authority to regulate the firms in the local exchange market. Note that regulation may be necessary until the market is actually competitive and that quality-of-service regulation is encouraged by the 1996 Telecommunications Act. Facilities reports such as these are usually required on an annual basis.

MARKET DEFINITION REPORTS

The regulator needs data and reports that will help define relevant markets. This means that the product or service of each market must be identified and that significant gaps in the array of substitutes must be detected, so as to define the market boundaries. Concurrently, he will also require data on the geographical boundaries of the market: the trading area for a given service or the region of customer accessibility.

Thereafter, at first glance, it would seem to be a relatively easy task to count the number of firms in each market. But there may be overlaps. Some firms may turn up in more than one market, creating questions of how the firm divides in serving each of them. But once such questions are settled, a count of firms can be made. This is a first step in ascertaining the extent of the market.

The extent of each market is also measured by such size variables as sales (operating revenues), capital investment (net or gross), number of employees, or extent of physical plant, for example, circuit-miles of various types of transmission facilities or numbers, sizes and types of switching machines. Undoubtedly, the measure (or measures) of sales would be most important. Sales can always be denominated in dollars, but for many purposes it is important to have sales in units (number of calls, or minutes, or number of leased lines of various grades, for example).

Variables used for determining the extent of the whole market are also used for

²A problem may arise because section 252(d)(2)(B)(ii) forbids the collection of detailed information on the cost of transporting and terminating calls, or requiring the carriers to collect such information. However, there appears to be no problem collecting information on the volume of traffic, including the volume of traffic handled by remote call forwarding or other alternatives to eventual full number portability.

determining market shares and measures of concentration. Once the degree of concentration in each market is determined, then data on prices and profits become important for testing the relationships between these three variables. Statistics collected over time can indicate how the impacts of concentration on prices and profits have changed, with resultant implications as to changes in the nature and extent of competition.

The regulator needs data on the established market rules which guide and constrain the behavior of sellers and buyers.³ As we have seen, market definitions in terms of product and geographical bounds are important, but once these elements are defined, we may characterize a market as a set of rules governing the exchange of a given good or service. The present American stock exchanges, which are often said to be the best experiential analogues of perfect competition, are some of the most rule-burdened and regulated markets in the history of economics. Without the rules, they do not function well and are subject to all sorts of manifestations of market power and anti-competitive behavior. Thus there are many definitions of a "free market." The particular set of rules preferred by a given individual is his or her definition of a "free market." There are those who would, in the case of the stock market, prefer the present set of rules accompanied by total lack of enforcement! Potential entrants in telecommunications markets may seek changes in the rules so as to help create business opportunities for themselves. Established firms may seek changes in the rules to maintain or enhance their positions of stability in the market.

The regulator needs data on technological change. Measurement of technological change is difficult and its impact will vary from one market to another. It may have the effect of causing products and services to become more nearly alike and more highly integrated, as in the case of computers and data transmission, leading to more and more homogeneity in the so-called "information industry." On the other hand, it can give rise to novel industries which were formerly not thought possible, as was the case in aircraft manufacturing and air transportation. Close scrutiny of the range of substitutes for a given product (or service) and significant gaps therein--as in the case of market definition--can reveal new breaks, widenings or narrowings that are caused by technological change. This is part of the dynamics of market supply. The federal National Technical Information Service (NTIS), in the Department of Commerce, is a good source of information on current technological developments.

The regulator needs data on customer preferences and their interaction with technological change. Demographic data are important here, such as population densities, migration patterns, age and sex distributions, changes in customs, outlooks and expectations. Interactions with technological change is seen, for example, in the case of automatic

³These rules will be developed in the course of the negotiations, which the commissions must arbitrate and monitor.

telephone dialing and multi-frequency push-button key pads, developments which changed the telephone from a speech transmit-receive instrument to a versatile node in the data transmission path, with an impact on human communication habits that is little short of revolutionary. This is part of the dynamics of market demand. Data on this aspect of the market can be obtained, in part, from the Current Population Survey reports published by the U. S. Department of Commerce. Of particular interest would be the series on population characteristics and personal income by states. Also, such sources as the University of Michigan survey on the consumer outlook would be valuable.

To sum up, then, the regulator needs data to help define the market. These data may relate to the geographical extent of the market or to the nature of the product (or service) that is exchanged. In addition, the regulator needs data on the relevant rules that guide and constrain the behavior of sellers and buyers in the marketplace. Next, regulators need to have data that will help to determine the nature and extent of competition in the market. Finally he needs data on the dynamics of (1) demand and (2) supply. Technological change is very important in its impacts on both factors; demographic elements and buyer preferences have a larger impact on the demand factor.

CONTINUING OR REGULAR REPORTS FROM LECs

Much of the information required for geographical market definitions was formerly found in the service area information accompanying the Annual Report Form M. Such information is neither complete nor wholly relevant in the present day. A new type of report is needed in this instance. However, presently required periodic reports and tariffs should supply useful facts concerning the *product* market definitions. This is especially so for regulated services offered under tariff. But emphasis should be placed on the accurate reporting of sales (revenue) by each and every service (product) category, whether regulated or not. Sales will have to be the key variable in estimating the extent of the market and the degree of concentration. For certain questions such as those related to the movement of prices as a result of shifts in industry demand, it is preferable to use firm and industry sales information denominated in actual units, such as calls, or minutes, or lines, in the various services. Relating degree of concentration (or market share) to rate of profit will be extremely difficult in the absence of a cost allocation system permitting the determination of rates of return by service category. Reports on prices and units of service sold for each type of service offered are needed to relate price levels to market shares of the various firms. Data on telecommunications prices are tracked and reported by the FCC and basic aggregated data are available at the U. S. Department of Labor Statistics. In the modern environment it is important to collect information on the actual prices charged in the markets--revenue per unit of sales rather than catalog price. Moreover, despite the difficulty in collecting information on

cost associated with product lines, monitoring the extent of market power will require regular reports on the unit cost and profitability of lines of business. The Line of Business reports collected by the Federal Trade Commission in the late 1970s are an example of this type of monitoring information.

Specific regular reports should include:

1. A list of services offered, including service descriptions and separation by regulated and unregulated categories (semiannual).
2. A bivariate frequency table, with services listed on one axis and counties or other market areas on the other. Each cell should contain two numbers: (1) the number of customer stations or connecting blocks (interfaces), and (2) the number of customers billed (semiannual).
3. Quality of service reports for major services and customer classes. These are particularly important for those services that are "essential" or related to public utilities, or which are offered to residences and small businesses, until such time as competition is *clearly* workable. Such reports are also very important for services that are not fully regulated—or where forbearance from regulation is being exercised—because there are concerns about deteriorating quality of such services,⁴ and about the overall quality of services to small customers (monthly).
4. Detailed balance sheet (annual).
5. Detailed operating statement clearly setting forth items counted above the line and below the line. Revenues by service category should be included (annual).
6. Sales in units and revenues by service category (semiannual for noncompetitive services; monthly for competitive and unregulated services).
7. Operating ratios by service category (if at all feasible) (annual).
8. Price information (revenues per unit) by service category (monthly).
9. Report of access facilities owned—total capacity by type (annual).
10. Report of access facilities provided to others—total capacity by type (annual).
11. Report of access facilities acquired from others—total capacity by type (annual).
12. For unregulated services, reports on all announced price or discount changes, with dates of change (monthly).
13. An organization chart showing all holding company and other relationships, including ownership and control (annual).

⁴Recall that there are reasons to believe that quality of service will *improve* as competition becomes workable. However, the improvement may be in different aspects of quality from those that were stressed when the industry was a monopoly. Thus, quality of service reports during the monopoly period will have to be modified to be most useful in the competitive period. In particular, rate-base-rate-of-return regulation provides incentives for firms to stress those aspects of quality that require investment in plant and equipment: competition will cause firms to stress those aspects of quality that are readily perceived by customers, and that can be used to convey marketing advantage.

CONTINUING OR REGULAR REPORTS FROM IXCS

The FCC, from time to time, has considered the question of the types of information to be required of the IXCs other than AT&T.⁵ Such information would be of considerable value to State regulatory commissions seeking to ascertain the status of competition in the IXC market. If such information is forthcoming at the federal level, it should be a relatively simple matter to require it at the state level as well, by way of regularly filed reports. As in the case of LECs, regular reports of revenues and units of service for each service offered are needed to relate price levels and, if possible, profits to market shares.

Specific regular reports should include:

1. A descriptive list of all services offered (semiannual).
2. A bivariate frequency table with state market areas (such as counties) listed on one axis and services on the other. Each cell should contain two numbers, (1) the numbers of customer stations or connecting blocks (company terminations), (2) the numbers of customers billed (semiannual).
3. Quality of service reports (monthly)
4. A condensed balance sheet (annual).
5. A condensed operating statement giving revenues by service categories and (if at all feasible) operating ratios by service categories (annual).
6. An organization chart showing ownership and control relationships among any holding companies and subsidiaries (annual).
7. A statement of relationships with other carriers: purchases, leases, billings, other contracts, indicating the services involved and whether offered under tariff by the other carrier or not (annual).
8. Sales in units and revenues by service category (monthly).
9. Price information (revenues per unit) by service category (monthly).
10. For unregulated services, reports on all announced price or discount changes, with dates of change (monthly).
11. Report of access facilities owned—total capacity by type (annual).
12. Report of access facilities provided to others—total capacity by type (annual).
13. Report of access facilities acquired from others—total capacity by type (annual).

SPECIAL REPORTS OR SHOWINGS FOR NEW SERVICES

When the LECs seek to offer new services, reports are needed which will reveal the potential in the new market and give some indication of the possibility of cross-subsidization from other services. Items to be submitted would include (1) the extent of customer requests for the new type of service, (2) similarities and differences with respect to services already offered, (3) judgements as to the extent of substitutability for extant services as indicated by

⁵See Gary H. Anthes, "FCC Mulls New Tariff Rules," *Computerworld* (26:47, February 17, 1992).

the evidence in (2); (4) prices and terms of sale, (5) estimates of costs and revenues, so as to provide evidence on possible cross-subsidization, as well as self-sustainability.

When the IXCs seek to offer new services, the special types of information required should be the same as for the LECs, except that there would be less need for evidence on the question of cross-subsidization.

SPECIAL REPORTS FOR RECLASSIFICATIONS OF SERVICES

Special Reports or Showings for Carrier-Initiated Reclassifications of Services

Here the primary need is for reliable evidence on the similarities and differences between the old classification of services and the proposed new one. In this instance, one must make judgements as to substitutability. On the demand side, one should ask if there has been an expressed desire or need for the new packages on the part of customers or potential customers. The regulator must be concerned about possible discrimination between classes of customers. That is, a regulator should ask whether certain classes of customers will be favored over others as a result of the reclassification. Large buyers with power in the market are prone to bring pressure on the carriers for special concessions in rates or conditions of service. They may also imply that they might build their own systems, and thereby cause the carrier to claim "competitive necessity" as a basis for giving favored treatment. Thus information on numbers of buyers and portions of sales to be taken by each are important in this instance. Also, information on the cost impact of the reclassification is important. Will there be cost savings as a result of the reclassification? Will there be cross-subsidization?

A very useful specific report in this instance would be a size distribution (amount of billings in a given period) of each customer for each service category. This report could take the form of a two-way table, with services listed on one axis and customers listed on the other. Size (dollar amounts) of billings would be entered in the cells.

Special Reports or Showings for Commission or Intervenor-Initiated Inquiries into Classification of Services

First of all, one requires information on the nature of the expressed need for the inquiry regarding service classifications. Did it arise out of customer complaints? If so, are the complaints valid? If initiation is by way of an intervenor, what is the basis of his need for the inquiry. Does he allege unfair competition? In short, one needs to know what forces in the market gave rise to the initiation of the inquiries.

Technological change may be at the basis of a need to examine service classification. The

probable trend is toward fewer classifications and greater homogeneity on the supply side and more imaginative use of equipment and applications on the demand side. Thus as the classifications simplify and uses of service proliferate, carriers may be concerned largely about the accurate switching and transmission of bit streams having minimal error rates and ask only of their customers that they pay for time on the line and pressure at the peak; and do no harm to the network. Useful specific information in this regard would be a descriptive listing of all patents, trademarks, copyrights currently in force and held by intervenors or other interested parties.

QUALITY OF SERVICE

One of the more pleasant side effects of rate-base–rate-of-return regulation has been an extremely high quality of service. Unregulated monopolies are often accused of poor product quality.⁶ There was an ethic of service in the telephone industry that was lost when the competitive era began in 1982.⁷ Regular service quality reports will be needed from *all* major carriers, especially all carriers providing those services considered “basic” under the “universal service” provisions of the 1996 Telecommunications Act until such time as the industry becomes truly competitive. It is at least arguable that, as the industry does become competitive, it will start competing in quality (see table 1.1), so that spontaneous improvements in service quality may be an indicator of improved competitiveness. Whether we will ever get back to the era of very high service quality (so long as you did not require anything unusual, or that the Bell companies had not thought of first) is conjectural—and doubtful. As Alvin von Auw said shortly before the divestiture:

Looking ahead, there is no reason to doubt that so long as they [the Bell Operating Companies] remain regulated and as common carriers obligated to serve and so long, too, as their regulators remain obliged to assure a fair return on the investment “used and useful” in providing service, then so long will the priority the Bell System has traditionally attached to service continue to be attached by its soon to be divested local exchange companies.

What, though, of AT&T? Under development now in response to the compulsions of competition are modes of financial analysis by which its management hopes to be able to discriminate among the lines of business (LOBs), regulated and unregulated, in which it anticipates it will be engaged and to allocate resources among them on the basis of a nice calculation of the relative risk and opportunity that each affords. No one—yet—has proposed that this mode of management be guided by a “fair share investment policy.” Nonetheless it may be timely to wonder whether, looking back on these times after some years of experience

⁶“Rivalry tends to keep costs and prices lower and quality higher than monopoly would.” Areeda, *Antitrust Analysis*, p. 40.

⁷See, for example, Alvin von Auw, *Heritage & Destiny: Reflections on the Bell System in transition* (New York: Praeger Publishers, 1983), pp. 41–43. Von Auw was vice-president and secretary of AT&T from 1969 through 1981.

with LOB financial management, it will appear that the unsubtle young manager who asserted that "we're in business to make money" and those among his more sophisticated colleagues who so fervently contended that the Bell System should be an organization "market oriented and financially driven" were not so much wrong as they were premature.⁸

⁸Von Auw, *Heritage & Destiny*, p. 43.