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DOMINANCE, NON-DOMINANCE, AND CONTESTABILITY IN A TELECOMMUNICATIONS MARKET: A CRITICAL ASSESSMENT

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Executive Summary

This report analyzes the interstate telecommunications market as to what type of market that exists and the applicability of the contestability concept for regulatory purposes. The analysis is presented by using a format where two experts in public utility economics have separately analyzed the above two issues and have reached somewhat different conclusions. The market analysis of the two authors results in a a divergence as to whether the market is most accurately characterized as a dominant firm oligopoly, or as a non-dominant firm oligopoly. But they do agree that contestability is not a useful approach to the current conditions of the market.

Professor William G. Shepherd notes that deregulation is appropriate only when competition has become truly effective. He urges that that usually requires at least five comparably strong firms, none of which holds over 40 percent of the market, plus the existence of relatively free entry by new competitors. Such effective competition avoids both the tilted playing field of market dominance and the collusive tendencies of tight oligopoly. Accordingly, the interexchange market would need to evolve from what he sees as dominance down through tight oligopoly to a condition of medium to loose oligopoly, in order for deregulation to be proper policy. The reasoning goes as follows.

This market is a single, unified market for long-distance telephone service in the United States, not a series of separate markets for specific service types. There are segments within the entire market, but not a series of distinct individual markets. In 1990, AT&T still holds a high degree of dominance, with a market share over 70 percent and no close rival. The past downtrend in AT&T's market share has been significantly speeded by the continuing regulatory restraints, which have prevented AT&T from matching, undercutting or discriminating extensively in its pricing policies.

Shepherd believes that the shrinkage in AT&T's market share is likely to slow down or reverse as those restraints are removed. The FCC's recent

deregulatory decisions to adopt "price caps" and Tariffs 12 and 15 during the spring and summer of 1989, and the lenience in applying FCC supervision, have given AT&T wide leeway to take aggressive price actions.

Dr. Robert J. Graniere of The National Regulatory Research Institute research staff argues, on the other hand, that it is inappropriate to conclude that large interexchange carriers, by definition, will act anticompetitively or inefficiently. If perfect contestability is assumed, the interLATA market would exhibit the properties of perfect competition even though it is populated by a small number of interexchange carriers. If the interexchange carriers used different technologies and their managerial efficiencies differed, then each firm would not have the same market share although it would be operating at its optimum. In both of these instances, large market shares flow from the attributes of the production processes used by interexchange carriers.

Graniere notes that big is not necessarily bad, but bad often is big. This couplet forces us to go beyond an examination of market shares if we are to discover whether the interLATA market is or is not dominated. He reaches four conclusions. First, market power will be a characteristic of this market for the foreseeable future. Second, excessive market power means that one and only one interexchange carrier can set its price and output level without regard to the production decisions of its rivals. Third, excessive market power is the source of market dominance. Fourth, AT&T does not dominate the interLATA market because sufficiently powerful competitors have established themselves through introducing innovative services and pricing structures, enhancing their quality of service, deploying their own technologies, and utilizing improved access arrangements. In sum, market power does exist in the interLATA market, only now, it is more evenly distributed across interexchange carriers.

The authors reach some consensus on the limited usefulness of the contestability concept for public policy purposes, but do so from somewhat different perspectives.

Professor Shepherd says that "contestability" is just an extreme theoretical variant within the larger topic of potential entry. In general, potential entry is usually a secondary matter, only modifying the degree of competition within the market. Potential entry and barriers are usually

complicated and extremely difficult to estimate, and thus the strength of potential competition is usually obscure.

More critical of the concept than Graniere, he sees "contestability" as having little relevance to this market. It suffers from a logical flaw when applied to dominance, and it is not a robust theory. In this market, there are important barriers against effective competition, especially from customer loyalties to AT&T, AT&T's more extensive technical presence, and AT&T's ability to influence industry standards. That AT&T continues to retain dominance in the market, with a high degree of profitability--even after more than a decade of new competition-indicates that entry is severely impeded.

For Shepherd, because competition is not yet close to being fully effective in this market, the FCC's "price cap," Tariff 12 and Tariff 14 actions, as well as further deregulation of AT&T, are premature. Even if FCC regulation and AT&T's market-share trend had continued as they were before 1989, it would take at least five years for enough of AT&T's small rivals to become fully effective competitors. A tight oligopoly of just AT&T, MCI, and Sprint would not provide effective competition in shepherd's view.

Using a different perspective, Dr. Graniere feels that perfect contestability passes muster as a theoretical construct. The hit-and-run competitor is as powerful an analytical tool as the atomistic, price-taker of perfect competition. Additionally, this theory does advance our understanding of what is necessary to make an imperfect market operate reasonably efficiently. The propositions of perfect contestability reconfirm that all market and nonmarket barriers to entry and exit must be removed if economic efficiency is to occur. Also, this theory provides that sunk costs do have an effect after they are incurred. In particular, they represent an exit barrier. And lastly, we learn that efficiency-deterring aspects of sunk costs can be overcome if incumbent firms cannot make a price response after new market entry.

For Dr. Graniere the preceding results indicate that regulatory policies can make the interLATA market contestable, in the same way that regulatory policies could make a telecommunications monopolist behave as if it was subject to the pressures of perfect competition. First, renewed efforts could be directed toward eliminating any remaining access-related barriers

to entry. Particularly important is providing a cost recovery mechanism for the *currently available new technology* required to provide improved access for 700, 800, 900, pay phone, and operator services. Second, economic researchers interested in regulatory problems might begin devising optimal practices and procedures that negate the influence of sunk costs. Third, regulators could look into some means other than prices to implement social policies. However, because these regulatory tools are not yet available, the theory of contestability cannot be counted on by regulators to shape the behavior of firms in the interLATA market.

The consensus reached by the authors, then is that the interLATA market is not presently contestable. However, there are some differences concerning whether the contestability concept can ever be usefully counted upon by regulators in its current state of development.

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PREFACE

This report is being distributed to state commissions and to other regulatory audiences because of the timeliness of the issues analyzed and because of the contribution the authors make in delineating the debate for regulatory decision makers. The validity of contestability as a concept, and as a regulatory standard, and the determination of the type of telecommunications markets that exist are two of the key issues regulators continue to face. This report analyzes these issues from two competing viewpoints.

Douglas N. Jones
Director

March 1990

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PROLOGUE

INTRODUCTION

The determination of the actual market type for the telecommunications market has been and will continue to be an important public policy issue. Over time and across a wide range of issues the central component of regulatory policy has been the attempt to fashion a regulatory regime that is appropriate for the type of telecommunications market that exists. Historically, for most services provided by the old Bell System, satisfaction of public interest objectives required monopoly regulation. More recently, telecommunications markets have evolved that may have different market structures and would entail different types of regulatory mechanisms. Markets that are workably competitive would presumably have little regulation, while those that are clearly monopolistic in structure would have a traditional type of regulation.[1] One recent theory that might point to competitive results even when monopoly still exists is the theory of "contestable markets."[2]

Viewed this way, two key issues that need to be addressed before a regulatory mechanism can be selected are:

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[1]. A wide range of regulatory mechanisms are possible under each type of market that exists and each of these mechanisms has various advantages and disadvantages. While the resolution of the debate over (and the selection of) the most appropriate regulatory mechanism is important, it is not the central objective of this report and will not be addressed in detail. Some discussion of alternative regulatory mechanisms will necessarily occur in the text, but this is primarily intended to illustrate market features.

[2]. Baumol, Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industrial Structure*, 1982.

* What type(s) of telecommunications markets actually exist ?

* Are telecommunications markets contestable ?

Resolution of the first issue allows the debate to be properly framed, as a large number of different market types are theoretically possible. The determination of the contestability of any market further clarifies for the regulatory policy maker the set of features a suitable regulatory mechanism should have.

Markets are defined by product and by geography, and telecommunications markets are no exception. While future telecommunications markets may or may not be quite different than those that currently exist for a variety of engineering, economic, and regulatory reasons, a widespread consensus exists that five geographical telecommunications markets exist: international, interstate, interLATA, intraLATA, and local. Product markets are more difficult to define consensually, but are generally herein limited to toll voice services .

In this report the telecommunications market examined is the interLATA market. It was selected for two reasons. First, it is the market that many feel exhibits the greatest amount of competition. Second, while other markets may or may not evolve in the same manner, an analysis of the features of the interLATA market is readily applicable to any market under commission regulation.

Organization of the Report

The report presents two contrasting viewpoints about the nature of the interLATA market and about contestability theory. The intent here is to juxtapose two lively and readable analyses so as to allow a fair comparison and criticism of alternative perspectives sufficient for regulatory policy makers and other readers to judge for themselves -- and outside the confines of a formal regulatory proceeding -- which perspective better describes the actual market that exists. Both viewpoints examined have legitimate and meritorious points that must be addressed by critics and supporters of either perspective.

The two authors of the report are Professor William Shepherd and Dr. Robert Graniere. Each has prepared his material in a parallel fashion, addressing market behavior first, followed by an analysis of contestability. Brief introductory and concluding chapters have been prepared by both authors.

Beyond the helpful explication and analysis of the two issue areas, the report makes a clear contribution in establishing two important parameters. The first is that the public policy debate in the interLATA market in many wany turns on a determination of whether the market is a dominant firm oligopoly or a non-dominant firm oligopoly. The second is that the empirical evidence of contestability in the interLATA telecommunications markets is too weak to permit use by regulatory policy makers.

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March 1990

PART I

William G. Shepherd

CHAPTER ONE

INTRODUCTION

A pioneering experiment in deregulation is now under way in the market for long-distance telephone service in the United States. It is the first attempt in this country to shift a classic regulated monopoly over to a condition of full competition, free of regulation.[1]

There has been a much lesser degree of deregulation in a number of other United States industries, where various regulatory restraints have been removed since 1975, particularly in the airline, railroad, and other transport sectors.[2] But none of these cases has involved the full transition from complete monopoly, under regulation, to fully effective competition.

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[1] Two other countries have also attempted to make this experiment. The United Kingdom recently "privatized" its telephone system (British Telecommunications), seeking to encourage enough new entry that full competitive constraints would convert this publicly-owned monopolist into a privately-owned firm under competitive pressure. See J. A. Kay, C. Mayer and David J. Thompson, eds., *Privatization and Regulation: The UK Experience* (Oxford: Clarendon Press, 1986); John Vickers and George Yarrow, *Privatization: An Economic Analysis* (Cambridge, Mass.: MIT Press, 1988); and Cento Veljanovski, *Selling the State* (London: Weidenfeld and Nicolson, 1987). Japan has also attempted a similar conversion of its telephone system (Nippon Telephone) to a competitive basis, by placing it in private hands and seeking to develop competitive conditions.

Both experiments have failed to generate the desired competitive pressures, primarily because the incumbent firms have responded with aggressive pricing and related actions, so that entry has not occurred on a large scale.

[2] On those experiments, see *inter alia* Leonard W. Weiss and Michael W. Klass, eds., *Deregulation: What Really Happened?* (Boston: Little Brown, 1987); Theodore E., Keeler, *Railroads, Freight and Public Policy* (Washington, D.C.: Brookings Institution, 1985); and Elizabeth E. Bailey, David R. Graham, and Daniel P. Kaplan, *Deregulating the Airlines* (Washington, D.C.: Brookings Institution, 1985).

The effort to introduce effective competition in the long-distance telephone service market began more than fifteen years ago, and so the process has been gradual rather than swift.[3] AT&T's dominant position has been receding toward a market share of about 70 percent, with MCI, US Sprint, and a variety of small fringe companies gaining the rest (data on the patterns are given in chapter 2 below).

In a normal market, fully effective competition is reached only when the original monopolist declines through such dominance down into the much different situation of tight oligopoly--in which several more-or-less-equal firms contend interactively among themselves--*and* then further down to medium or loose oligopoly. Effective competition usually requires at least five reasonably comparable competitors, with low barriers to entry by new competitors.

Though AT&T is still clearly dominant, as chapter 2 will discuss in detail, AT&T's officials have been asserting since 1987 that competition is sufficiently strong to permit complete deregulation of AT&T. In contrast, AT&T's small rivals claim that they are efficient but still relatively vulnerable to strategic pricing, and that AT&T's dominance prevents effective competition at this time.

Is competition now fully effective or, instead, merely in the initial stages in this market? More broadly, what criteria should be used in assessing the degree of competition? This section of the study (Part I) addresses those two questions, seeking to provide both the fundamental concepts and a specific appraisal of competition in this market. The issues are important, not only because this market is large, innovative, and critical for efficient communications throughout the country, but because

[3] Among numerous books on the trends, see Peter Temin, *The Fall of the Bell System* (New York: Cambridge University Press); David S. Evans, ed., *Breaking Up Bell* (New York: North-Holland, 1983); and Fred W. Henck and Bernard Strassburg, *A Slippery Slope: The Long Road to the Breakup of AT&T* (New York: Greenwood Press, 1988). See also Paul W. MacAvoy and Kenneth Robinson, "Winning by Losing: The AT&T Settlement and Its Impact on Telecommunications," *Yale Journal on Regulation* 1 (1983): 1-42; and John S. Horning, Raymond W. Lawton, Jane L. Racster, William P. Pollard, Douglas N. Jones and Vivian W. Davis, *Evaluating Competitiveness of Telecommunications Markets: A Guide for Regulators* (Columbus, Ohio: The National Regulatory Research Institute, 1988).

this pioneering attempt at the deliberate, complete deregulation of a monopoly is setting important precedents as a guide for the future deregulation of other sectors. A correct understanding of this sector may have ramifications for policy choices in other important markets.

Moreover, this case is an intellectual arena in which certain "new" economic ideas are being deployed against the mainstream concepts of effective competition.[4] The FCC is adopting some of the "new industrial organization" concepts developed since 1970 by the Chicago-UCLA School, by game theorists, and by what has come to be called the "contestability" school.[5] The concepts deny much of the mainstream knowledge of competition, urging instead that small rivals and new entrants can readily nullify monopoly firms. Guided by these optimistic ideas, the FCC has substantially deregulated AT&T during 1988-89. Therefore the analysis of this case is a significant test of the validity and relevance of these "new" concepts.

The analysis in this Part I analyzes the stages of dominance and tight oligopoly through which this industry needs to pass on its way to effective competition. The first (and current) stage is market dominance, and so chapter 2 and 3 will assess the extent of dominance and the criteria for moving beyond dominance.

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[4] For reviews of the mainstream literature, see William G. Shepherd, *The Economics of Industrial Organization*, 3d ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1990); F.M. Scherer and David Ross, *Industrial Market Structure and Economic Performances*, 3d ed. (Boston: Houghlin Mifflin, 1990); Douglas F. Greer, *Industrial Organization and Public Policy*, 2d ed. (New York: Macmillan, 1984); and Stephen Martin, *Industrial Economics* (New York: Macmillan, 1988).

See also William G. Shepherd, "On the Core Concepts of Industrial Economics." in Henry W. De Jong and William G. Shepherd, eds., *Mainstreams of Industrial Organization*, 2 vols, (Dordrecht: Kluwer Academic Publishers, 1987); and William G. Shepherd, "On the Nature of Monopoly," in Samuel Bowles, Richard Edwards and William G. Shepherd, eds., *Unconventional Wisdom: Essays on Economics in Honor of John Kenneth Galbraith* (Boston: Houghlin Mifflin, 1989).

[5] For reviews of the new issues and schools, see Shepherd, *The Economics of Industrial Organization*, 1990; idem "Three 'Efficiency School' Hypotheses About Market Power," *Antitrust Bulletin*, 33 (Summer 1988): 395-415; and the sophisticated appraisal in Eleanor M. Fox and Lawrence A. Sullivan, "Antitrust--Retrospective and Prospective: Where Are We Coming From? Where Are We Going?" *New York University Law Review*, 62 (November 1987): 936-88.

From this analysis, there are two general lessons for policy in the next several years. One is that extensive or full deregulation would be premature at this point, because dominance is still strong. A second is that any further deregulation should be preceded by a major investigation of this industry, rather than taken on trust.

The study is intended to explore the main dimensions of the emerging competition, not to offer comprehensive details. It is a guide to the full study that is needed before deregulation proceeds further.

The Main Lines

This opening prologue summarizes the specific lessons that emerge from the later chapters of the study. There are three main topics:

The concepts which define the market and assess the degree of competition within it. Attention will be focused both on internal market structure and on potential entry.

The actual degree and trend of competition in the telecommunications market.

The nature of strategic interactions in the oligopoly phase.

Although these issues are under controversy, some answers emerge with reasonable clarity, as follows:

1. Mainstream economic analysis provides valid concepts of effective competition, focusing on market shares and entry conditions. The ideal measure of monopoly would be based on demand elasticities, but they are rarely available. Market shares are the most important single condition to assess, even though they do not give definitive answers. Entry and potential competition from outside the market are, by contrast, usually less important. The concept of "contestability" is of little relevance.

2. Competition is effective when there are at least five comparably strong firms, none of which holds over 40 percent of the market, and when

entry by new competitors is reasonably free. Such a situation avoids both the tilted playing field of market dominance and the collusive tendencies of tight oligopoly. As one implication, the telecommunications market would need to evolve from dominance down through tight oligopoly to a condition of medium to loose oligopoly, in order for deregulation to be effective.

3. The telecommunications industry contains a single, unified market for long-distance telephone service in the United States. That contrasts with the possibility that the industry contains a number of separate markets for specific service types. There are segments within the entire market, but not a series of distinct individual markets.

4. In 1989, AT&T still holds a high degree of dominance, with a market share over 70 percent and no close rival. The downtrend in AT&T's market share has been significantly speeded by the regulatory restraints which have prevented AT&T from matching, undercutting, or discriminating extensively in its pricing policies.

The shrinkage in AT&T's market share is likely to slow down or reverse as those restraints are removed. The FCC's recent deregulatory decisions to adopt "price caps" and Tariff 12 and 15 during the spring and summer of 1989, and the lenience in applying FCC supervision, have given AT&T wide leeway to take aggressive price actions.

5. As for entry, potential entry is usually a secondary matter, which does not supersede the degree of competition within the market. The more specialized concept of "contestability" has limited relevance and logical consistency. AT&T continues to dominate this market, with a high degree of profitability, even after more than a decade of new competition and as much freedom of entry as could be arranged. With such limited degrees and effects of entry, the market cannot be considered to be "contestable" in a meaningful degree.

6. In 1990, competition is not yet close to being fully effective in this market. Therefore the FCC's "price cap," Tariff 12 and Tariff 15 actions, as well as further deregulation of AT&T, are probably quite premature. Even if FCC regulation and AT&T's market-share trend had been continued as they were before 1989, it would probably take at least five years--and more probably ten years or more--for enough of AT&T's small rivals to become fully effective competitors. This timing is indicated by simulations of the likely trends in chapter 2 below. Effective competition

will require that at least two "third-tier" firms join AT&T, MCI, and Sprint as major rivals. A tight oligopoly of just AT&T, MCI, and Sprint would not provide fully effective competition.

There are important barriers against effective competition, especially from customer loyalties to AT&T and AT&T's ability to influence industry standards. Moreover, AT&T's financial resources are disproportionately larger than its small rivals', particularly its cash flows. AT&T's degree of risk is also disproportionately lower.

If AT&T is further released from regulatory restraints, it could remove or control its small rivals by using pinpoint discriminatory pricing, established customer loyalties, and cheaper access to large volumes of capital. Under these condition, AT&T's degree of dominance is likely to be maintained rather than erode, with just MCI and Sprint left as substantial rivals. This dominant firm/three-firm tight oligopoly would tend toward weak competition. The recent downtrend in long-distance telephone prices would probably be slowed or reversed, and the prospects for fully effective competition would be slight.

By moving cautiously for several years, the FCC can assure effective competition, without risking any significant economic loss.

7. "Price caps" have been proposed as a general improvement on standard rate-of-return regulation. But they suffer from internal flaws of logic, and they raise difficult problems in practice. Their use in Britain has raised doubts about their suitability. The FCC's recent experiments with them in the United States are not reassuring.

8. Before further deregulation is contemplated, an extensive new research study is needed exploring this market's basic conditions of scale economies, structural condition, customer loyalties, pricing patterns, and profitability. Meanwhile, the FCC should avoid further deregulation for at least five years so that the conditions of effective competition can be reached. The current FCC actions to remove regulation lack a sound justification by economic analysis.

The Format of the Study

Chapter 2 first defines the market and then presents the concepts of effective competition, focusing on market types (from monopoly to loose oligopoly), internal structure (especially market shares and concentration), and external conditions such as potential competition. Chapter 3 then applies the concepts to this market, assessing the extent and trends of competition, both in the 1980s and as they are likely to evolve in the 1990s.

Chapter 3 provides a more detailed analysis of entry and the idea of "contestable" markets. Chapter 3 also considers pricing behavior as it is evolving and may affect future competition. Both the level of prices (as compared among AT&T and its competitors) and the range of price discrimination (as adopted by AT&T in competitive situations) are considered. Finally, chapter 3 briefly assesses "price caps" both as a general approach and in specific reference to this market. The main question is whether price caps protect the emergence of effective competition while also promoting efficiency, innovation, and fairness.

Historical Note

The issues covered here arise as part of a complicated historical flow, extending back many decades. AT&T's position has been changed by the advent of competition since the 1960s. The divestiture of January 1, 1984 was a major event in the process.

The reader is assumed to be familiar with that background, including the origins of AT&T's control of the sector, the dimensions, structure and motivations of predivestiture AT&T, the main issues that shaped the divestiture, and the main events since then. But a brief reminder may be helpful.

Until it was divided up in the divestiture of the Bell System in 1984, AT&T was the world's largest private enterprise. It was also the century-old firm which had controlled nearly all of the telephone sector in the United States for over seven decades. In that divestiture, forced by an ambitious antitrust action by the United States government, AT&T kept (1)

its virtual monopoly of United States long-distance telephone traffic in the US, plus (2) its research arm (Bell Laboratories), and (3) Western Electric Co., its firm which had monopolized the supply of telecommunications equipment to the Bell operating systems. AT&T spun off its local operating companies into seven regional holding companies.

AT&T's long-distance operations had always been priced to yield very high profits which helped to make possible low local-service rates, as part of a company-wide balancing among its political and economic interests. New competition has eroded those price-cost ratios and profits, but AT&T's long-distance operations are still the main source of its total corporate profits. MCI and Sprint have emerged as AT&T's leading competitors, as chapter 2 will show, by setting prices that were initially much lower than AT&T's, often by 30 or 40 percent. By 1988, the differentials had narrowed, toward 10 percent or even less. Meanwhile, scores of other very small competitors had arisen, most of them operating as regional resellers of capacity leased from the three main firms.

The question of competition therefore exists in a process of change in which the advent of competition since the 1960s has led to two substantial rivals plus a fringe of others. How strongly these small competitors can pressure AT&T--now and in the future--is the leading question.

CHAPTER TWO

DEFINING AND ASSESSING THE DEGREE OF DOMINANCE[1]

The Market

The first step is to define the market. Once the market's boundaries have been drawn, one can appraise the degree of monopoly that may exist inside those boundaries.

The main question is whether there is one unified market for long-distance service, or, instead, a series of separate specific markets for individual types of service.

Concepts for Defining the Market

"The" market is the zone of consumer choice, in which the mass of consumers choose among closely substitutable goods.[2] Consumer choices are critical, because they influence the enterprise decisions which lead to production and pricing. Supply conditions can also influence the degree of competition. They are best considered after the market has been defined. Markets exist in two main dimensions: in product space (among varieties of product characteristics) and in geographic area. Most actual markets have

[1] The concepts and methods covered here draw on Shepherd, *The Economics of Industrial Organization*; see also Scherer and Ross, *Industrial Market Structure and Economic Performance*.

[2] See Scherer and Ross, *Industrial Market Structure*, Shepherd, *The Economics of Industrial Organization*, and Richard A. Posner, "The Problem of Market Definition," in Terry Calvani and John J. Siegfried, ed., *Economic Analysis and Antitrust Law*, (Boston: Little, Brown, 1979).

no bright-line boundaries, but the main dimensions of the market can often be defined reasonably well, as is true in this case.

The basic condition is cross-elasticity of demand, as defined both for product and geographic dimensions. Yet (1) cross-elasticities are usually not reliably measurable, and (2) there is no clear threshold value for drawing the market's edge. Therefore other kinds of evidence are commonly needed, and that is true in this case.

The best types of practical evidence are:

1. Practical judgments from experience and common sense about the nature of the good, its uses, and its alternatives. These are reached by considering the features of the goods, how they are used, what purposes they serve, and so forth.

2. Views of market participants, especially the sellers. They know which firms and goods compete in the market. They are well-informed, by daily experience, because their success in the market depends precisely upon knowing their competition. Often they provide a consensus which reliably indicates the market's edges.

3. Price differences and interactions. If prices for various goods are sharply different, that suggests that the goods are distinct. If the market is at or near equilibrium, then near-equal prices indicate close substitutability. If the goods' prices move independently, that suggests that they are not closely substitutable.

4. Distinct groups of buyers often indicate that goods are not substitutable.

5. Specific devices or barriers may exist which close off goods from each other in consumer choices. Where they exist, such devices may provide direct evidence of market edges, apart from the subtler forms of economic limits.

6. The range of interactions among the competitors. If firms pursue competitive strategies ranging across a variety of market segments, that knits those segments into a single unified market. The consumers' choices in each part are related to those in other parts, and so what seems to be several markets can really be just parts of one wide market.

The Recent Department of Justice Method for Defining Markets

In 1982, Reagan Administration officials at the Antitrust Division announced a new technique for defining markets in antitrust cases.[3] It was offered as being more scientific, depending on "objective" tests of the price-responsiveness of goods to each other. It has been used in many cases, but it presents serious difficulties.

To use it, one begins by selecting the narrowest plausible version of the market in question. Then one hypothesizes a "significant" price rise (usually assumed to be 10 percent) for this good and asks whether within a "reasonable" time period (usually taken to be one year) there occurs a "significant" shift of buyers (usually taken to be 5 percent) to specific substitute goods. If so, then the market is redefined to include these substitutes. The speculation is continued, product by product, until there is no further "significant" substitution, as defined. The market is then defined.

If the data were accurate and complete, this method might rival or supplement the conventional methods. But the new method has several defects. The estimates are speculative, not genuinely scientific. Rarely can meaningful tests be done, using reliable, objective data.[4] Its three benchmarks (for price changes, time periods, and quantity shifts) are arbitrary and debatable. Their specific levels have no special

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[3] The most recent version is U.S. Department of Justice, "Merger Guidelines Issued by Justice Department, June 14, 1984, and Accompanying Policy Statement," No. 1169, *Antitrust and Trade Regulation Report*, (BNA), June 14, 1984, S-1 to S-6. For one appraisal of the approach, see Eleanor M. Fox, "The New Merger Guidelines--A Blueprint for Microeconomic Analysis," *Antitrust Bulletin* 27 (Fall 1982): 519-91.

For a defense of the method by staff members who helped develop it, see David T. Scheffman and Pablo T. Spiller, "Geographic Market Definition Under the U.S. Department of Justice Merger Guidelines," *Journal of Law and Economics* 29 (April 1987): 123-48; and Gregory J. Werden, "Market Definition and the Justice Department's Merger Guidelines," *Duke Law Journal* (October 1983): 524-79.

[4] In one case involving banks in adjacent small towns in northwest Michigan, customers were asked if they would shift deposits under certain assumed differences in interest rates, etc. Their answers were usually vague and showed no clear pattern. Being hypothetical, they showed little about actual depositor choices.

justification in theory or practice. Adjusting them to plausible other values can make the "defined" markets much larger or smaller.

In any event, the assumed benchmark values would need to be different for each different industry case, but there is no scientific basis for guiding the selection of "correct" benchmark values. Moreover, the responses may show no sharp break or gap among the products in question, as a basis for drawing the boundary line.

In sum, this method is largely a formalistic version of concepts which have long been applied in other more practical ways. Only in a few cases have genuinely reliable market definitions been made with the Department of Justice approach.

Allowing for Supply Conditions

While markets are defined by the zone of choice that *consumers* have, certain conditions of *supply* can be relevant. Some analysts suggest that cross-elasticities of supply are important. They reflect the ability of producers now outside the market to switch their existing productive capacity from other goods to this good. If these firms are hovering at the edges of the market, then their quick entry when prices rise could affect the degree of monopoly.

Yet supply conditions deal with entry *into the market*. It is incorrect to mix the definition of the market with the possible entry of firms into that market. Instead, it is correct and clear to define the market first, based primarily on the demand conditions of consumer choice. After that is done, then the relevant entry conditions can be clarified.

It is an error to treat potential entrants as if they were in the market already. Transferring capacity is frequently slower and more costly than is claimed. Often the capacity is fully engaged in more profitable other uses, so that no transfer into this product will quickly occur, even for sizable price shifts.

Market Segments in the Telecommunications Market

Segments can often be defined, but they are not necessarily genuine markets. Consider *product* distinctions first. Point-to-point telecommunications may overlap with some other forms of transmitting voice and other forms of information. The "telephone" form (of conversations and interactions) may differ from one-way (or even two- or multi-way) transmissions of data.

One can also distinguish among *types of users*, especially various categories of households, businesses, and nonprofit units, governments, etc. AT&T has long segmented such groups in "the market," seeking to set differential prices as part of their profit-maximizing activity.

Some of these segmenting choices reflect basic characteristics of users, which set *exogenous determinants* of market edges within the total industry. The research task is simply to define and estimate these basic conditions accurately.

But much of the segmentation is instead *endogenous*, being internal to the choices made by the firms in the market. Thus, firms apply distinct pricing and consumer categories (for example, marking off households, small business, and larger-business users of various kinds), simply because it currently suits their opportunities to maximize their profits. Those endogenous conditions and choices often change as the market evolves and as other firms copy or counter each others' actions. The endogenous conditions will also change if public policies are aimed at them. To that extent markets and segments are subject to changes as time passes, rather than being rigid and constant.

These points suggest caution about the segmenting policies adopted by major firms in the market as indicators of market boundaries.

Defining the Telecommunications Market in Practice[5]

Interexchange traffic in the United States can be regarded as a single unified market, embracing virtually all categories of users and types of messages transmitted.[6] The customers include not only residences but also all sizes and types of businesses. The business customers range from millions of small ones to a few hundred very large ones, with a variety of needs and patterns of use. The types of messages include voice conversations as well as business information and large-scale data transmission.

Narrower market definitions are also possible, by types of users, types of messages, and geographic regions. The divisions are reinforced by the pressures applied by larger customers to obtain special discounts and services, under threat of changing suppliers, or creating their own communications systems.

The market is segmented to some degree, because large-scale business traffic does have different properties from small-scale residential use. And 800-line service has still further differences. Yet they appear to be segments, rather than markets.

The critical fact is that all of the significant firms (AT&T, MCI, Sprint, and others) compete across a range of customers, message types, and regions. Therefore all of the parts of the market are linked by the firms' larger strategies as they vie across the full range of customers and traffic categories. Narrow-line firms in just a few segments are strongly affected by the activities of other firms in other segments. It is deceptive and unrealistic to treat these segments as if they were independent.

Moreover, all customers of each company share basically the same capacity, as they use the system. Technically, this pooling of the use of

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[5] This section draws on William G. Shepherd "AT&T Dominance in the Long Distance Telecommunications Market," Working Paper, Department of Economics, University of Massachusetts, October 1989.

[6] See also Harry M. Trebing, "Telecommunications Regulation: The Continuing Dilemma," in Kenneth Nowotny, David B. Smith and Harry M. Trebing, ed., *Public Utility Regulation: The Economic and Social Control of Industry* (Boston: Kluwer Academic Publishers, 1989); and Manley R. Irwin, *Telecommunications America: Markets Without Boundaries* (Westport, Conn.: Quorum Books, 1984).

capacity causes the parts of the market to mingle, as if they were all part of a single market. There are some distinctions between night and day traffic, because most conversations are during the waking hours, while data transmission can be heavy during the night. Altogether, it is safest to proceed as if there is one broad market for long-distance service. That approach captures the main zone of consumer choice and competitive strategies.

AT&T has asserted instead that there are several distinct markets, primarily along lines of (1) city-versus-rural conditions, and (2) large-scale business users versus small business and residential customers. Other segments could also be defined by the specific tariffed service offerings, such as WATS lines and 800-number service.

If one attempts to divide the market this way into a series of separate "submarkets," the issue becomes confused. Superficially, the types of service do differ, and indeed it is in the interest of firms to increase the varieties of services and to segment the market as much as possible. To that degree, the definition of the market would become manipulated by the voluntary actions of firms. Also, the various segments and product types often involve differing degrees of profit.

An analysis of segments can clarify the market realities. The effects of different pricing and profit strategies in market segments can be significant, in judging the whole course of competition in this market. Thus, AT&T's pricing strategy toward WATS services can be (and indeed is) related to its strategies toward other large-business customer services.

But these segments are just components in the larger struggle between AT&T and its small rivals. To imagine that there are separate subcompanies which are competing in separate submarkets is to misunderstand the reality of the market.

The Degree of Monopoly in the Market

With the market defined, one can then seek to assess its degree of competition. That involves primarily the market's internal structure, as embodied mainly in the size distribution of the competing firms.

Market Types, from Dominance to Loose Oligopoly

The three main types of real markets identified in the industrial organization literature are: dominance, tight oligopoly, and loose oligopoly. Dominance occurs when one firm has over 40-50 percent of the market and no close rival. In tight oligopoly, the leading four firms together have over 60 percent of the market, so that collusion among them is relatively easy. Loose oligopoly involves substantially lower concentration, with four-firm concentration below 40 percent. Although these types shade into each other rather than being mutually exclusive, they do present analytically different conditions.

When there is dominance, competition is usually not effective, as Chapter 1 briefly noted.[7] That is because the dominant firm has access to much larger resources and a much wider range of competitive strategies than its small rivals. The disparity is sharpened when, as is usually the case, the dominant firm can engage in selective deep discount pricing, along classic lines of price discrimination. That gives the dominant firm an array of strategic opportunities which its little rivals simply do not have. This advantage usually disappears, of course, when the formerly-dominant firm recedes so that it is only one major player among several, in the tight oligopoly phase. That is why the distinction between dominance and tight oligopoly is so important.

At any rate, dominance means that the playing field is not level, because the dominant firm can apply a variety of pressures and threats to each and all of its small rivals. Meanwhile, the dominant firm is itself largely immune to the weaker pressures that those rivals can generate from their limited resources and opportunities.

The dominant firm is therefore under relatively light pressure, and it is not required to reach high degrees of efficiency and innovation in order to survive or obtain supranormal profits. That is why dominance commonly

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[7] On the conditions of market dominance, see Donald Hay and John Vickers, ed., *The Economics of Market Dominance* (Oxford: Basil Blackwell, 1987); Shepherd, *The Economics of Industrial Organization*, (especially chapter 10 and 17); Scherer and Ross, *Industrial Market Structure and Economic Performance*; and Dennis C. Mueller, *Profits in the Long Run* (New York: Cambridge University Press, 1986).

excludes effective competition and prevents excellent performance. The small rivals, by contrast, exist under extreme degrees of pressure and risk, because the dominant firm is able to eliminate any one of them, or several or all of them, if it chooses to take sufficiently strong actions.

Economic research and extensive business experience show that dominance has substantial effects: the dominant firm strongly influences pricing, product innovation, the setting of industry standards, innovation, and other market conditions, in ways which suit its own advantage. The small rivals commonly lack competitive parity. They are much weaker, have higher costs of obtaining capital, and have higher degrees of risk.[8]

Tight oligopoly also involves competition that is not fully effective.[9] When several firms together control virtually all of a market, they have strong incentives to collude and coexist comfortably, rather than to compete strongly. The tendency toward collusion is well established, and it has been observed in hundreds of cases. The tendency is not absolute, and tight oligopolies often have periods of intense competition. Indeed, collusion tends to generate its own collapse, as the conspirators yield to their incentives to cheat on the price fixing.

But the collapse may take a long time to occur, particularly where concentration is high and the supranormal profit rewards are large. In general, the higher the concentration, the more likely it is that the few

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[8] It is important to avoid an error common to some new theory writers, in assuming that dominance is a transient and weak state because, it is assumed, "dominant firms decline." There is a standard type of theoretical model which assumes that dominant firms do adopt passive roles, letting fringe firms control the rate at which market shares evolve. The original version is Dean A. Worchester, Jr., "Why 'Dominant Firms' Decline," *Journal of Political Economy* 65 (August 1957): 338-47; and see Jean Tirole, *The Theory of Industrial Organization* (Cambridge, Mass.: MIT Press, 1989), for recent discussion.

But such models *assume* the decline, and they involve only single-price situations. In real-life markets, by contrast, the opposite is true. Virtually all significant dominant firms act aggressively to retain their positions, and they use complex differential pricing as thoroughly as possible in order to forestall competition.

[9] See William J. Fellner, *Competition Among the Few* (New York: Knopf, 1949); Scherer and Ross, *Industrial Market Structure and Economic Performance*; Shepherd, *The Economics of Industrial Organization*; George J. Stigler, *The Organization of Industry* (Homewood, Ill.: Irwin, 1968); and Tirole, *The Theory of Industrial Organization*.

market leaders will be setting prices above costs at any given point of time and earning supranormal profits. The collusion is likely to be stronger if one firm is much larger than the others (though still short of genuine dominance), because that leader can set and more strongly enforce the pattern which the few others are to follow.

Therefore neither dominance nor tight oligopoly involves effective competition. Somewhere in the range of medium oligopoly, with the leading firm below a 40-50 percent market share and at least five strong rivals in being, competition is likely to become reasonably effective.

Evidence about Structure

In defining these types, market shares are the critical facts. They directly relate to the degree of market power held by each firm. The *number* of firms in the market might seem important, but it usually tells little about structure, because market shares can vary so sharply. If one firm or several firms dominate the market, it may not matter whether there is also one other tiny firm, or fifty of them, or five hundred. Of course whether there is just one firm or two or three in the market may make a difference. But even then, there might be one virtual monopolist with 99 percent, for whom the one or two tiny "competitors" are inconsequential.

These size distributions embody the *internal structure of actual competition*. In contrast, *external* conditions may also matter, as they determine the ability of *potential competitors* outside the market to enter the market and become actual competitors. We consider first the main internal elements of structure: market shares and oligopoly concentration. Then come entry barriers and potential competition.

Market Share

The firm's own market share is a simple concept. It is the share of the industry's total sales revenue, and it obviously can range from virtually zero up to 100 percent.

It is the most important single indicator of the firm's degree of monopoly power, in an ordinal sense (compared to higher or lower shares in

the same market). Higher market shares almost always provide higher monopoly power, while low shares involve little or none. Within a given market, monopoly power will vary in line with the market shares, rather than by some industry-wide constant which is shared uniformly by all firms. Thus, for example, an Eastman Kodak with about 80 percent of the U.S. photographic film market has much more market power than does Fuji Film with about 15 percent.

A degree of market power usually begins to appear as market shares rise from negligible levels to the range of 15-20 percent. At higher shares such as 25-30 percent, the degree of monopoly may become quite significant, and market shares over 40-50 percent usually give strong market power. The *absolute* degree of market power depends on the firm's conditions of demand elasticity: that is in turn shaped by the market's general conditions, as well as by the firm's own market share. In one market a 50 percent market share may give higher monopoly power than the same share in another market. But within each market, the degree of monopoly power usually varies ordinally with market share.

Actual Dominance in Telecommunications[10]

The data on market shares in Table 2-1 provide a relatively reliable set of evidence about structure in this market. They are drawn from objective reports and are on a reasonably comparable basis for all firms.[11]

[10] This section draws on Shepherd, "AT&T Dominance in the Long Distance Telecommunications Market." The data were prepared primarily by Janet McLaughlin of Putnam, Hayes and Bartlett, using published sources as noted.

[11] As a technical matter, dollar revenues are the correct and universal basis for measuring market shares; see Scherer, *Industrial Market Structure and Economic Performance*, and Shepherd, *The Economics of Industrial Organization*.

A number of alternative measures are sometimes used, when revenue data are not available. One such alternative is physical units of output, such as minutes of use in this industry: to be precise, "interstate switched access minutes." But minutes of use do not reflect the differing prices which are set by the sellers. Because AT&T has higher prices on average than its competitors, the shares of total customer minutes understate AT&T's true share of the market.

In 1988, AT&T's share of interstate switched access minutes was 68.7 percent, as table 4 below indicates. That understates AT&T's true market share (in table 1) by 6 market-share points, or some 8 percent.

TABLE 2-1

THE U.S. LONG DISTANCE MARKET
($ Billions)

	1986		1987		1988		First Half 1989
	Net Revenues	Share	Net Revenues	Share	Net Revenues	Share	Net Revenues
AT&T[1]	$35.9	82.1%	$34.4	78.9%	$34.7	74.6%	$17.4
MCI[2]	$3.6	8.2%	$3.9	9.0%	$5.1	11.0%	$3.1
US Sprint[3]	$2.1	4.9%	$2.7	6.1%	$3.4	7.3%	$2.0
NTN[4]	$0.5	1.1%	$0.8	1.8%	$1.1	2.4%	$0.7
Advanced Telecommunication Corporation (ATC)							
Consolidated Network, Inc. (CNI)							
LiTel Telecommunications Corp. (LiTel)							
RochesterTel Telecommunications Group - RCI Long Distance (RCI)							
Telecom*USA, Inc. (Telecom*USA)							
Williams Telecommunications Group (WTG)							
Others[5]	$1.6	3.7%	$1.8	4.2%	$2.1	4.6%	N/A
Total Net Revenues	$43.7	100.0%	$43.6	100.0%	$46.5	100.0%	N/A

Sources:

[1] 1986, 1987 and 1989 data are from AT&T's MR4 reports filed with the FCC for the respective years. Revenues are net of uncollectibles. 1989 data are from AT&T Communications Preliminary Cost and Revenue Reports for the three month periods ending 3/31/89 and 6/30/89. Revenue figures in the MR4 reports differ from AT&T's 1988 Annual Report used to calculate the capital measures and cash flow spreadsheets.

[2] Data are from MCI's 1988 Annual Report. Revenues are net of uncollectibles. 1989 data are from MCI Communications Corporation Form 10-Q filed for the quarter ended 6/30/89.

[3] 1988 and 1987 data are from United Telecom's 1988 Annual Report. Revenues are net of uncollectibles. 1986 data were derived from the "Reply Comments of Multinational Business Services, Inc." in FCC CC Docket No. 87-313 (filed December 4, 1987). 1989 data are from United Telecommunications, Inc. Form 10-Q filed for the quarter ended 6/30/89.

[4] Data are from the National Telecommunications Network. Data for ATC, for the three-month period ended 3/31/89, were unavailable.

[5] 1988 and 1987 data are from Competitive Telecommunications Association. Revenues are net of uncollectibles. Includes some IXC operations of independent local exchange carriers.

They indicate that AT&T is unambiguously still dominant in this market. Its market share was 75 percent in 1988, as Table 2-1 shows, and it probably was above 70 percent for 1989.

AT&T has no close rival. The next largest firm, MCI, has a market share less than one-fifth as large as AT&T's. MCI had only 10 percent of the market in 1988 and probably below 13 percent in 1989. The next competitor, Sprint, had only 7.0 percent in 1988, and it was probably at about 8 percent in 1989.

After AT&T, MCI and Sprint, there are only a number of tiny third-tier competitors. No other single firm or group has over 3 percent, compared to AT&T's more than 70 percent.[12] There are scores of tiny resellers of capacity, but they are not independent owners of capacity.

The degree of AT&T's dominance is unusually high in the U.S. economy. Outside of utility industries, which are of course regulated, only a handful of cases of such dominance is found in major industries.[13]

The market's degree of oligopoly concentration is also an important aspect of structure. It too is extremely high. The traditional index of concentration is the four-firm concentration ratio, which sums up the shares

TABLE 2-2

THE CONCENTRATION RATIO
PERCENT OF TOTAL INDUSTRY REVENUES - FOUR LARGEST FIRMS

1986	96.3
1987	95.8
1988	95.4

Source: Author's calculations

[12] The National Telecommunications Network (NTN) is only an association among independent firms, rather than a single enterprise. That fact sharpens the lesson that third-tier firms are small.

[13] They include Eastman Kodak in photographic film, Campbell Soup in canned soups, and a number of newspapers in their urban markets. For discussion of such cases, see Shepherd, *The Economics of Industrial Organization*; and Paul Geroski's chapter in Hay and Vickers, *The Economics of Market Dominance*.

of the largest four firms. That index has held at 95 percent during 1987 and 1988, as shown in Table 2-2. That extremely high concentration will not decline until the tiny third-tier firms radically increase their current sizes and market shares.

The degree of AT&T's dominance is also indicated by the "Hirschman-Herfindahl" index, or "HHI." This index is an alternative to the familiar four-firm concentration ratio. It is calculated by adding up the squared values of the individual firms' market shares, as is done in Table 2-3. Though its use is debatable, the HHI has some value in reflecting the degree of concentration. United States antitrust officials use a value of two-thousand as a rough indicator of the range in which firms are likely to adopt collusive behavior. Values well above two-thousand are regarded as involving substantial market power.[14]

TABLE 2-3

HERFINDAHL-HIRSCHMAN INDEX CALCULATIONS

	1986 HHI	1987 HHI	1988 HHI
AT&T	6740	6225	5565
MCI	67	81	121
US SPRINT	24	37	54
NTN	1	3	6
OTHER	14	18	21
TOTAL	6846	6364	5766

Source: Author's calculations

[14] See the U.S. Department of Justice, "Merger Guidelines," issued in 1982, as reprinted in *The Journal of Reprints for Antitrust Law and Economics*, 1984 edition; also John E. Kwoka, Jr., "The Herfindahl Index in Theory and Practice," *Antitrust Bulletin* 30 (Winter 1985): 915-47; and William G. Shepherd, *Public Policies Toward Business*, 7th ed. (Homewood, Ill.: Richard D. Irwin, 1985).

AT&T's own HHI level was in the range of 5,500 to 5,600 in 1988 (that is, the AT&T market share of 74.6 percent, multiplied by itself, equals 5,565). The HHI for the entire market was 5,766 in 1988, and it is probably now in the range of 5,300. That level is more than double the 2,000 threshold HHI value used by the Antitrust Division to indicate substantial market power.

Capacity Is a Misleading Indicator of Competitive Conditions

A recent paper by Haring and Levitz has offered "network capacity" as an alternative index for a company's ability to compete.[15] Haring-Levitz suggest that the physical amount of fiber optic capacity installed supercedes the true market shares based on sales revenues, as noted above in Table 2-1. Citing reports of a rapid spread of fiber capacity, Haring-Levitz suggest that the market is already fully competitive.

The misleading nature of that approach and of Haring-Levitz do not provide valid evidence about actual capacity.

Customers do not purchase capacity such as installed fiber optic cable. They purchase services which may make use of that capacity. But cable is only a bare element within the whole system. There must also be a composite of switching systems and electronics integrated into a network architecture and activated so that calls can flow through the fibers themselves from city to city. Also, customers must be attracted so that the system generates profitable revenues.

In order to produce this functioning system, capital investment must be made in advance, often well before revenue is obtained from the investment. When capacity exists but is not used, it is an economic drain rather than an index of the power to compete. For example, Sprint struggled recently to complete an operating fiber network with severe cash drains during 1986 and 1987 before full operations began.

Moreover it is difficult to determine what fiber "capacity" actually means. AT&T presents capacity evidence in terms of fiber miles, multiplying

[15] John Haring and Kathleen Levitz, "What Makes the Dominant Firm Dominant?" staff paper, Office of Plans and Policy, Federal Communications Commission, 1989.

the number of individual fiber strands in each cable by the cable mileage. But cables vary in numbers of fiber strands. It is possible for a network to have substantial total capacity but little or no capacity between certain city pairs. Also, traffic densities vary among cities, so that a system's individual route capacities can fit those densities poorly, with congestion in some parts and idle capacity in others. Further, lasers operate at different speeds, depending on traffic congestion, and so the true "capacity" of fiber depends partly on the related equipment.

Because of all these complex variables, any simple figures based on fiber mileage are virtually meaningless. In addition, they may show economic burdens rather than advantages. Capacity refers only to what *might be sold*, not to what is being sold. If a weak competitor has created large capacity but cannot sell its services, the capacity is irrelevant in appraising its market power or prospects. Only real sales matter, as embodied in sales revenues.

If the ability to add sales is at issue, the firms' dollar capital amounts are only one element. More important is the responsiveness or loyalty of consumers to various competitors, including those of the established dominant firm. Also, the sales forces, pricing strategies, and service characteristics are among the determinants of future success. The focus on capacity deals with only one element.

In any event, Haring-Levitz do not attempt to give data on physical capacity after all. Instead they offer "capitalization" figures, with a single dollar number each for AT&T, MCI, Sprint and "Other."[16] The accuracy of the figures cannot be verified, because Haring-Levitz give no indication of their derivation, coverage, or accounting basis. Although only "long-distance assets" are said to be included, that cannot be assessed, given only the four bare numbers.

In short, the Haring-Levitz ideas and facts are of little help in assessing competitiveness. Capacity may be studied in detail, in a full Congressional research project. But for now, the Haring-Levitz discussion offers no objective basis for any policy steps.

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[16] Haring and Levitz, "What Makes the Dominant Firm Dominant?" table 1: 8-11.

The Trend of AT&T's Decline Is Not Rapid

AT&T's market share has been declining at about four market-share points per year, as Table 2-1 shows. *If* the decline continues at that rate, it will take five years for AT&T's share to reach 50. Therefore, waiting at least several years is the appropriate approach to effective deregulation. If at least four other comparable rivals develop (MCI, Sprint plus two other third-tier firms), then the market may become genuinely competitive. Even if action is taken before then, it will still take several years to approach fully effective competition.

The trend is a major topic for future research. AT&T's recent four-point yearly rate of market-share decline may instead shrink or reverse. One reason for that is that AT&T's rivals have been drawing away AT&T's *least* loyal customers, by definition. That leaves AT&T now with a relatively more solid customer base, which will be more difficult for small rivals to penetrate from now on.

In addition, much of AT&T's recent market-share decline occurred when the equal-access program offered customers a choice under the antitrust settlement. That was a one-time action, whose impact will not be repeated. The choices provided by the divestiture have now been completed.

Moreover, many customers have the objective of arranging with two or more suppliers, so as to compare and play them off against each other. Many of these customers have now accomplished that shift to double sourcing, and so the push to shift away from AT&T may be less rapid in the future.

It is important to recognize that the recent four-point rate has been enhanced by the FCC's restraints on AT&T's pricing strategies. If AT&T had been able to respond freely with strategic pricing and other actions, it might well have slowed down or prevented the decline altogether. Each step toward deregulation widens AT&T's strategic weapons and helps it to arrest its decline in market share.

Research has shown that in a wide range of "normal" markets, unrestrained dominant firms have usually declined by less than one market-share point per year, rather than four points per year.[17] In many cases the dominant firm's tactics have prevented the decline altogether, for decades. No persuasive reason has been advanced why AT&T would be different from this general slow-decline pattern, if regulatory restraints on AT&T are removed.

If AT&T were fully deregulated now, a continuance of the four-point yearly rate of decline would be highly unlikely. Even if it continued at two points per year, it would take ten years to move AT&T's market share down to 50 percent and permit the competitors' share to rise correspondingly. Instead, AT&T's market share would be more likely to stabilize or rise, as it applied its wider array of pricing strategies and resources, which smaller firms cannot march.

Note that, in any event, AT&T is not shrinking as its market share declines. Table 2-1 shows that AT&T has maintained relatively ready revenues even while its market share has been shrinking at four points per year. That is because this market is growing rapidly, at a sustained rate of 15 percent per year in traffic volume. AT&T's physical volume of traffic has expanded rapidly in recent years, while its prices have been declining sharply (particularly during 1988-89) by some 45 percent. And AT&T has remained highly profitable during this process.

AT&T's volume of traffic can continue to grow strongly, and its dollar revenues can remain steady, even if competition erodes its market share more rapidly than has been happening. AT&T can also remain highly profitable as well. The future advent of fully effective competition does *not* require that AT&T undergo actual shrinkage or a decline in profitability.

Effective Competition Will Require Rapid Growth of Third-tier Competitors

In contrast, AT&T claims that its market position is declining rapidly and that effective competition already exists in this market. Yet for that claim to be correct, (1) AT&T's market share would have to decline to a

[17] See Paul Geroski's extensive chapter in Hay and Vicker, *The Economics of Market Dominance*, 1987, which surveys a wide variety of sources and individual firms; and Shepherd, *The Economics of Industrial Organization*.

nondominant level and remain there, and (2) the second-tier and third-tier competitors must experience very rapid growth, with third-tier firms emerging as important competitors alongside MCI and Sprint. Neither of these has occurred.

AT&T's market share is still overwhelmingly dominant and AT&T has maintained relatively steady revenues over the past three years, as Table 2-1 showed. AT&T has also had an impressive rate of growth in its message traffic, partly because of dramatic declines in prices. For example, Table 2-4 shows that AT&T had a 7.9 percent yearly growth in switched access minutes during 1985-88. With such trends, AT&T is likely to continue to grow and maintain its dominance in the market, despite the growth realized by its competitors.

TABLE 2-4

INTERSTATE SWITCHED ACCESS MINUTES BY CARRIER
(In Billions)

	1985	1986	1987	1988	First Half 1989	Annual Growth Rate
AT&T	133.3	140.6	155.3	167.6	88.6	7.93%
Other Carriers	33.8	42.4	60.5	76.7	45.5	31.24%
Total Industry	67.2	183.0	215.7	244.3	134.0	13.45%
AT&T's Share	79.7%	76.8%	72.0%	68.6%	66.1%	

Source: Data were taken from Table 2 of the FCC staff report entitled "AT&T's Share of the Interstate Switched Market: Second Quarter, 1989" dated September 29, 1989.

Furthermore, AT&T's rivals are few and mostly quite small, as shown in Table 2-1. Most of them are unable to challenge AT&T in more than a few geographic areas or service offerings. These survivors have managed to expand in the market, but they must grow much more rapidly than AT&T if they are to become substantial competitors. This is likely to occur only under continued regulation of AT&T.

It is important to envision the future of this market in some detail.

If the 4-Point Decline Continues

As mentioned, if the current 4-point yearly decrease in AT&T's relative market revenue share does continue, it still would take five years for AT&T's market share to decline to 51 percent. Therefore, waiting at least several years would be the responsible approach to effective deregulation. If at least four other competitive rivals develop (MCI, US Sprint, plus two other third-tier firms) then the market will begin to fit the conditions for effective competition defined earlier.

It is helpful to examine the future structure of this market in more detail. One possible outcome is illustrated in market simulations set forth at Table 2-5. This scenario assumes that AT&T's market share has continued to decline 4 percentage points yearly over the next five years, until AT&T has a share of 51 percent of total market revenues. It also assumes that total market revenues continue to increase at the recent historical growth rate of 5 percent per year.

One result of these assumptions is that AT&T's competitors grow rapidly, increasing their revenues by almost 17 percent each year. MCI and US Sprint have been growing extremely rapidly (by more than 30 percent and 40 percent respectively in last two years). These percentage growth rates are somewhat misleading, however, because they start from extremely low bases. As these companies continue to mature, even a 17 percent annual growth rate over the next five years would be a substantial achievement. This rate is about as fast as most firms can sustain rapid, efficient growth over more than one or two years, let alone for half a decade.

If these circumstances hold, AT&T will retain its dominant market position until approximately 1994. Even if AT&T has a market share of only 51 percent by 1994, five years from now, that share alone will represent an HHI over 2500. If AT&T's rivals have significant market shares, as they would by that time, then the total HHI must be over 3,300, as Table 2-7 shows. That level is well into the range that antitrust policies treat as ineffective competition, because the few firms are likely to adopt collusion and relative soft competition much of the time. The resulting 4-firm concentration figure would still be at 90 percent, which is also well above the range of what is considered to be effective competition.

Table 2-5
MARKET SHARE SIMULATIONS
Scenario 1: AT&T 4-point annual decrease

Annual Growth Rate:		1988		1989		1990		1991		1992		1993		1994	
Revenues	Company	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent
	AT&T	$34.71	74.62%	$34.49	70.62%	$34.17	66.62%	$33.72	62.62%	$33.14	58.62%	$32.43	54.62%	$31.55	50.62%
16.8000	MCI	5.14	11.04	6.00	12.28	7.01	13.67	8.19	15.20	9.56	16.91	11.17	18.81	13.04	20.92
16.8000	US SPRINT	3.41	7.32	3.98	8.14	4.65	9.06	5.43	10.08	6.34	11.21	7.40	12.47	8.65	13.87
16.8000	NTN	1.12	2.41	1.31	2.68	1.53	2.98	1.79	3.32	2.09	3.69	2.44	4.11	2.85	4.57
16.5169	OTHERS	2.14	4.60	3.06	6.27	3.94	7.67	4.73	8.78	5.41	9.57	5.93	10.00	6.25	10.02
TOTAL REVENUES		$46.52	100.0%	$48.84	100.0%	$51.28	100.0%	$53.85	100.0%	$56.54	100.0%	$59.37	100.0%	$62.34	100.0%

Herfindahl-Hershman Index Calculations

	1988	1989	1990	1991	1992	1993	1994
AT&T	5568	4987	4438	3921	3436	2983	2562
TOTAL	5771	5251	4775	4342	3953	3609	3314

Four-Firm Concentration Level

	1988	1989	1990	1991	1992	1993	1994
TOTAL	95.40	93.73	92.33	91.22	90.43	90.00	89.98

Note: Totals may not add due to rounding.

The Table 2-5 market share simulations disprove that effective competition is already in place or imminent. AT&T's market share would still be nearly 60 percent in 1992. MCI's market share would be less than 18 percent, not even one-third of AT&T's. The other competitors would be much smaller. Four firm concentration would still be over 90 percent, AT&T's HHI would be 3,450 and the HHI for the market as a whole would be almost 4,000. Effective competition would not exist.

Why AT&T's Market-Share Decline May Slow Or Reverse

AT&T's future trend in market share is a major topic, needing thorough research. AT&T has announced its intention to regain market share. During 1989 it adopted a range of aggressive pricing strategies to attain that goal, particularly through Tariff 12, rate reductions under price cap regulation, and promotional discounts.

Under Tariff 12, AT&T targeted specific volume discounts to large customers, in configurations and with service requirements that prevent other customers from demanding the same rate. Under price caps, AT&T has lowered certain rates on, for example, digital data services well below the price floors that the FCC established to define what may be predatory pricing. AT&T has also introduced numerous "promotional discounts," offering large dollar rewards to customers who abandon AT&T's rivals. Customers who install AT&T services have been offered free service, waivers of installation charges, valuable telephone equipment and other benefits.

If AT&T's Market-Share Decline Slows Or Reverses

Whether or not AT&T is fully deregulated now, a continuance of a 4-point yearly rate of decline is unlikely. If a decline continues at 2 points per year, it will take until the year 2000 to move AT&T's market share down to 50 percent and permit the competitors' shares to rise correspondingly toward effective competition.

Such a market-share decline is shown in the second set of market simulations set forth at Table 2-6. In the face of a 2 percent annual decline in its market revenue share, AT&T would still maintain substantial control over the market. In 1992, AT&T's HHI would be almost 4500 and AT&T

Table 2-6
MARKET SHARE SIMULATIONS
Scenario 2: AT&T 2-point annual decrease

Annual Growth Rate:		1988		1989		1990		1991		1992		1993		1994	
Revenues	Company	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent	$	Percent
	AT&T	$34.71	74.62%	$35.47	72.62%	$36.22	70.62%	$36.95	68.62%	$37.67	66.62%	$38.36	64.62%	$39.03	62.62%
16.8000	MCI	5.14	11.04	5.74	11.74	6.40	12.49	7.15	13.28	7.98	14.12	8.91	15.01	9.95	15.96
16.8000	US SPRINT	3.41	7.32	3.80	7.78	4.24	8.28	4.74	8.80	5.29	9.36	5.91	9.95	6.60	10.58
16.8000	NTN	1.12	2.41	1.25	2.56	1.40	2.73	1.56	2.90	1.74	3.08	1.95	3.28	2.17	3.49
16.5169	OTHERS	2.14	4.60	2.58	5.29	3.02	5.89	3.45	6.40	3.86	6.82	4.24	7.14	4.58	7.35
TOTAL REVENUES		$46.52	100.0%	$48.84	100.0%	$51.28	100.0%	$53.85	100.0%	$56.54	100.0%	$59.37	100.0%	$62.34	100.0%

Herfindahl-Hershman Index Calculations

	1988	1989	1990	1991	1992	1993	1994
AT&T	5568	5274	4987	4709	4438	4176	3921
TOTAL	5771	5507	5254	5012	4781	4562	4354

Four-Firm Concentration Level

	1988	1989	1990	1991	1992	1993	1994
TOTAL	95.40	94.71	94.11	93.60	93.18	92.86	92.65

Note: Totals may not add due to rounding.

would still capture almost 5 times the revenues of its closest competitor. Further, if total market growth remains constant, AT&T's successful effort at slowing its market share decline would cause the growth rates of its rivals to decline substantially. In this case, AT&T's dominance would be lasting, with little prospect for effective deregulation or effective competition in the near future.

Note that, in this scenario, AT&T's size is not shrinking as its market share declines and, in fact, AT&T would still be able to increase its revenues by 2 percent annually. This result is significant, because it demonstrates that AT&T's financial strength will not dissipate as it loses market share, nor will its network capacity, staff and other resources go unused. Table 2-1 showed that AT&T has maintained relatively steady revenues even while its market share has been shrinking at 4 points per year. That is because this market has been growing rapidly at a sustained rate. AT&T has been highly profitable during this process, as shown by Table 2-8 below, and it can be expected to remain so.

The advent of effective competition would not require AT&T to undergo actual shrinkage or a decline in profitability. AT&T's volume of traffic can continue to grow strongly and its dollar revenues can remain steady, even if AT&T's market share continues to erode. Table 2-7 summarizes the two alternate market structures simulated in Tables 2-5 and 2-6, and sets forth the results that are shown in 1994. In both scenarios, AT&T's dominance has lasted at least until 1994, five years from now. During this period, it is possible that AT&T will not lose revenues, but will instead capture substantial new revenues even as its market share gradually declines.

Of course, AT&T's rivals might actually grow faster than assumed in these market simulations, but there are also good reasons why they might instead grow slower, especially in the face of the recent FCC actions freeing AT&T. In particular, the third-tier firms will not become substantial competitors unless they achieve heroic growth rates. Such growth rates are much higher than has been sustained in most markets, and they would need to overcome stiff AT&T resistance. Moreover, they require extraordinary capital growth, which may be out of reach for these firms.

Table 2-7

ALTERNATIVE 1994 MARKET STRUCTURES

Carrier	Scenario One Market Share (%)	Scenario One HHI	Scenario Two Market Share (%)	Scenario Two HHI
AT&T	50.62%	2562	62.62%	3921
MCI	20.92%	438	15.96%	255
US Sprint	13.87%	192	10.58%	112
NTN	4.57%	21	3.49%	12
Others	10.02%	100	7.35%	54
Total	100.0%	3314	100.0%	4354
Four Firm Concentration Ratio	89.98%		92.65%	

Notes: Totals may not add due to rounding
Source: Author's calculations

Resources, Risks, and Relative Competitive Strength

Competitive strength also depends on the financial resources available for use by each firm. AT&T has additional strength beyond what is shown by its market share.

Cash flow indicates relative earning power and resources available for competitive strategies. Table 2-8 summarizes the cash flows of the main competitors.

AT&T's cash flow in this market (after deducting capital expenditures and interest expenses) has been approximately $2 billion per year, and early figures for 1989 have suggested a $3 billion cash flow in 1989. That reflects a very high degree of profitability, which in turn reflects substantial market power. AT&T is able to charge higher prices than its rivals, while losing market share only at a moderate rate.

In the second tier firms, MCI's and US Sprint cash flows have been proportionally far lower, as also shown in Table 2-8. MCI's cash flow from operations has been rising, to $1 billion in 1988. It is about $900 million after interest expenses; those interest expenses are growing almost as large as AT&T's. But after deducting investment costs, MCI's cash flow continued to be negative in 1988. MCI may recently have become profitable, but it is involved in a type of high-wire act, in which rapid growth directly absorbs its profits.

The cash flows of third-tier firms are minuscule or negative by comparison, as Table 2-8 indicates. These firms are even more vulnerable financially than the second-tier disparity.

Table 2-8

SUMMARY OF PRE-TAX CASH FLOWS FROM OPERATIONS

Before Capital Expenditures and Interest Expense
(in millions)

	1986	1987	1988	First Half 1989
AT&T	4,901	5,167	5,010	3,055
MCI	446	639	1,096	793
US Sprint	(287)	(519)	130	279
NTN	9	92	198	133

After Capital Expenditures and Interest Expense

(in millions)

	1986	1987	1988	First Half 1989
AT&T	2,027	2,239	1,756	---
MCI	(721)	(70)	(8)	170
US Sprint	(1,268)	(1,550)	(634)	---
NTN	(302)	(72)	(44)	(352)

Sources: Companies' annual reports. Form 10-Ks and corporate representatives. See individual company cash flow statements in Appendix 1 for further details.

AT&T's high profits do not appear to reflect superior efficiency, but instead derive from AT&T's retention of former franchised monopoly position. In recent years, AT&T has been forced to cut its resources and revamp its organization under the limited new competitive pressures. The question of relative efficiency and profitability is a prime issue for future detailed study.

Relative Risk

AT&T faces much lower degrees of risk than do its small rivals. That is apparent even without specific facts from the relative market positions, financial resources, and established customer loyalties. Table 2-9 shows two specific indicators of these differing risks.

One indicator of risk is the quality ratings of the firms' debt, as given in the published investors' sources. Those ratings are designed precisely to reflect relative financial risks. Table 2-9 shows that Moody's Investors Service and Standard and Poor's rate AT&T's bonds at higher quality levels than the bonds of its small rivals.

A second indicator is the cost of capital, which both reflects risk and affects the relative costs of the competing firms. It is generally lower for AT&T than for the second-tier and third-tier competitors.

In recent years, AT&T has been borrowing at interest rates which are at or below the prime interest rate. Second-tier firms have paid roughly the prime rate, while third-tier firms have had to pay costs of capital which are above the prime rate. These differentials reflect the difference in perceived risk. They also tend to accentuate that risk by making it more costly for AT&T's competitors to gain competitive resources.

Table 2-9 also shows that the "beta" coefficients of AT&T's small rivals are higher than for AT&T. Beta reflects the relative fluctuations in

the firms' stock prices, compared to the stock-market averages.[18] A related factor is the higher leverage of the smaller firms compared to AT&T, which is also shown in Table 2-9.

All of these measures reflect the same basic fact: AT&T's degree of risk is lower than that of its small competitors. That raises the cost of capital and it reduces the likelihood that the small competitors will continue to force down AT&T's market share in a deregulated setting.

Is the Market Naturally Competitive?

Whether effective competition is viable in this market is open to debate. AT&T enjoys certain cost advantages over its smaller rivals, but these may stem from historical conditions rather than fixed underlying determinants. In fact, the market probably will support at least five parallel efficient systems, but there are also tendencies which favor the largest firm, encouraging a continuance of dominance.[19]

Long-distance service involves several components: (1) city-based systems connecting individual customers, (2) intercity transmission, by wires, satellites, optical fibers, lasers, or other means, and (3) coordinated switching to complete and hold the connections. Traditionally, all of these were believed to be parts of a necessary natural monopoly, providing a single, coordinated national network in the Bell System. Bell System officials fostered that view, in capturing exclusive control of the new microwave transmission technology in the late 1940s and in resisting the rising efforts in the 1960s to inject competition.

By 1968 the Federal Communications Commission recognized that the market could be made to be competitive. Other companies could develop intercity facilities and handle traffic at costs below AT&T's costs, but

[18] For example, a beta ratio of 1.0 means that the company's stock price has fluctuated just as much as has the average of the market as a whole. A ratio of 1.5 means that the firm's stock price has fluctuated 50 percent more than the market average. A ratio of .85 means that the firm has fluctuated even less than the average of all stock prices.

[19] See especially the perceptive review by Trebing, "Telecommunications Regulation: The Continuing Dilemma."

they needed access to local Bell systems so as to connect individual customers. The Bell System prohibited this crucial "interconnection" until the FCC (and ultimately the US Supreme Court) forced it to give access in the 1970s.

It appeared at first that the entrants were merely exploiting the efficiencies created by the unified Bell System. But in the 1980s the small competitors have demonstrated that they can establish their own nationwide networks, in parallel with AT&T's capacity. Indeed, they have invested in extremely efficient fiber-optic capacity more rapidly than has AT&T.

In short, the market appears to be naturally competitive, as long as city-based interconnection is open and fair. That crucial link was assisted by dividing up the Bell System in 1984, which separated the local Bell

Table 2-9

CAPITAL MEASURES 1988
(in millions except where noted)

	AT&T	MCI	United Telecom (US Sprint)	NTN Companies Consolidated
Long Distance Service Revenue	35,289.0	5,137.0	3,405.4	1,121.9
Total Company Revenue	51,974.0	5,137.0	6,493.0	3,007.5
Beta	0.85	1.20	0.85	
Standard & Poor's Debt Rating	AA	BBB-	BBB	
Moody's Debt Rating	A1	Ba1	Baa3	

Sources: Company annual reports and Form 10-Ks.
The Value Line Investment Survey.
"Standard & Poor's CreditWeek" dated 8/3/89.
Moody's Investors Service phone call, 6/29/89.

AT&T revenue figures include uncollectibles. AT&T and U.S. Sprint total company revenue figures reflect total parent company resources.

monopolies from AT&T. Those newly independent local firms (the "baby Bells") no longer serve AT&T's old interest in blocking competition. In contrast, they have now sought to enter the lucrative long-distance market themselves, in direct competition with AT&T. But so far the judge supervising the divestiture has prevented that. The baby Bells would have incentives to control interconnection and block MCI, Sprint, etc. to their own advantage. Therefore the baby Bells might exclude every other supplier, including even AT&T.

The severity of this risk is difficult to assess. The baby Bells would be a powerful source of new competition, able to compete strongly with AT&T's dominance. But they may be unnecessary if existing competitors can expand to competitive parity with AT&T. Only if one regards MCI, Sprint and the other existing rivals as too small and weak to provide effective competition against AT&T would the baby Bells be an important source of effective competition.

There is also an important question whether the technology would permit the baby Bells too much control over the gateways to local interconnection. That matter is still open to debate, and the technology could be adjusted or managed so as to assure fair interconnection by all.

Performance

Because AT&T has been regulated, it is difficult to assess its performance. The Bell System's predivestiture innovation is widely recognized to have been slow, in line with its monopoly incentives. Bell Laboratories may have performed invention and patenting actively, but practical innovations of those ideas were often restricted and delayed. Notable examples of that include rotary dialing (to replace live operators), microwave transmission, and computerized electronic switching of calls.

In the long-distance market, AT&T has followed rather than led the development of fiber-optics capacity. Before 1984, AT&T also set high prices on long-distance service, where competition and regulation were weakest, so as to pool them with its other finances in the politically most advantageous pattern.

That high profitability on long-distance service is what attracted new competition so strongly to the long-distance market, and that competition has indeed forced down prices and costs in line with the classical predictions. The quality of service has not suffered substantially from the competition and divestiture. Service quality is still high, but customers also have a wider choice among types and price/quality varieties of service. The big question is whether competition will continue to develop, so as to sustain the gains of the last two decades.

That competition itself has been a substantial gain, as customers who want freedom of choice among alternatives can have it. Some residential and small-business customers may miss the cozy maternalism of the old "Ma Bell" monopoly. But large-business users and many others find great value in the freedom of choice to select among, and play off, competitors.

Summary

New competition has had the classic effects: reducing costs and prices, increasing innovation, and widening freedom of choice. A seeming natural monopoly has turned out to be naturally competitive. But dominance has remained, receding only gradually. In 1990 the market is in a delicate phase, partly competitive but still subject to anticompetitive actions by AT&T if it is freed to apply them.

CHAPTER THREE

ENTRY AND "CONTESTABILITY," PRICE DISCRIMINATION, AND "PRICE CAPS"

The emergence of effective competition will require a reduction of entry barriers and an avoidance of anticompetitive pricing strategies. We now consider the possibility that entry is already free, or even ultra-free (or "contestable") enough to nullify any market power held by AT&T. Then we turn to the problem of selective pricing, by which dominant firms often neatly avert the growth of strong competitors. We also consider how well "price caps," adopted by the FCC during 1989, can assure good economic results as well as the emergence of effective competition.

Entry and "Contestability"

Even when there are at least five comparable rivals, the market needs to have reasonably free entry if competition is to be effective.[1] New firms can then enter the market to reduce market power, and existing firms can compete freely for each others' customers.

Entry barriers have become an important topic in industrial organization, and they are relevant to competition in telecommunications. First, we consider the basic nature of entry, next the specific conditions of this market, and then the validity of "contestability" theory in assessing competition.

[1] See Joe S. Bain, *Barriers Against New Competition* (Cambridge, Mass.: Harvard University Press, 1956); Scherer, *Industrial Market Structure and Economic Performance*; Martin, *Industrial Organization*; and Hay and Vickers, *The Economics of Market Dominance*.

Concepts of Potential Competition and "Contestability"

As long ago as the 1880s, Clark advanced potential competition as a crucial condition restraining monopolies.[2] Much later in 1956, Bain developed the topic of potential entry and entry barriers in detail, followed by numerous others. By the 1970s, barriers had become a leading element among some researchers, particularly as they might be caused by advertising.

The Baumol group followed in 1982 with an extreme theoretical case of free entry, which they called "perfect contestability."[3] Free entry had already been extensively discussed by others as a constraint on monopoly power. Adding free exit to free entry, and giving it the name of "perfect contestability", the Baumol group stretched free entry to its extreme. In this theoretical state, entry is all-powerful, totally superseding the market's internal conditions and guaranteeing an efficient outcome.

Contestability's Three Assumptions Are Heroic:

1. Entry is free and without limit. The entrant can immediately duplicate and entirely replace any existing firm, even a complete monopoly. There are no costs or significant lags in entry, and the entrant can match all dimensions of size, technology, cost, product array, brand loyalties, and other advantages.

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[2] See especially John Bates Clark, "The Limits of Competition," 1887, 45-61, and Idem, *The Control of Trusts*, 1901. See also the illuminating review by Philip Williams, "John Bates Clark and Antitrust: A Leader of Progressive Economists," Working Paper, Department of Economics, University of Melbourne, 1985.

[3] See especially Baumol et al., *Contestable Markets and the Theory of Industrial Structure*. For further praise of the theory, see Baumol and Willig, "Contestability: Developments Since the Book," *Oxford Economic Papers* (November 1986, Special Supplement).

For criticism of this theoretical approach, see William G. Shepherd, "'Contestability' versus Competition," *American Economic Review* 74 (September 1984): 572-87; and Marius Schwartz, "The Nature of Contestability Theory," *Oxford Economic Papers*, Special Supplement (November 1986).

2. Entry is absolute. The market is inert; the entrant can establish itself before and existing firm makes any price response. Even with only a tiny price advantage, the entrant will prevail totally, with no interaction or sequence of competitive moves.
3. Entry is perfectly reversible. Exit is perfectly free, at no sacrifice of any cost. Sunk cost is zero for the entrant, so it can freely depart.

The analysis is based on short-run two-period "Cournot-Nash" assumptions about the motives and mentality of the incumbent and entrant. Such a framework is remote from the conditions of real markets, and the theory's authors often claim that they merely derive "insights" from it.

The centerpiece case of the Baumol group's analysis is pure monopolist which is so controlled by the threat of entry that it limits itself strictly to pure competitive pricing. This "insight" about entry-nullified pure monopoly has, however, been claimed by the Baumol group as an important new result, not only in abstract discussions but also in testimony by Baumol and Robert D. Willig in major regulatory cases.

If entry is reasonably free or even perfectly "contestable" in telecommunications, then AT&T would have little or no market power and deregulation could proceed immediately.

Entry Barriers in This Market

In fact, several main types of barriers appear to be important in this market. The slow decline of AT&T's market share in the face of legally permissible entry is clear evidence that significant entry barriers exist.

(1) Customer Relationships and Historical Presence. Perhaps the strongest barrier is AT&T's historical relationships with its old customers. AT&T has held a government franchise for its monopoly of long-distance service for much of the last century. Through many decades of advertising, direct contact, and general reputation, AT&T has created customer relationships that it continues to enhance by advertising and direct marketing. AT&T targets its marketing efforts at customers' fears of leaving AT&T's security for new and untried competitors.

AT&T's rivals need to build market presence, often over the course of many initial years of negative cash flows, before they can begin to obtain the kind of recognition and acceptance AT&T enjoys. New firms must convince customers that their supply will remain secure in the future, rather than lapse under competitive pressures. This difference in perceived security of supply must be compensated by lower prices. AT&T therefore is able to charge a price premium based on its established customer loyalty. The size of that premium is an important topic for future study.

(2) Network Advantages. A second barrier element is the network that AT&T established during its franchised monopoly period, financed from customer revenues. The network gives it prior advantages, including:[4]

Network ubiquity. AT&T's network of transmission facilities includes substantially more points of presence (that is, for connection) than its competitors, many of them located closer to actual and potential customers. AT&T avoids new connection and construction costs that its rivals must cover. Recent estimates suggest that AT&T has over 650 such points of presence compared to only about 475 for MCI and US Sprint combined.

The significance of AT&T's network breadth is two-fold. First, it means that AT&T is less dependent than are its competitors on expensive local telephone facilities because its network reaches closer to customers. That provides a pricing advantage for AT&T in competing for many customers. Second, AT&T's advantage will not dissipate soon. As AT&T's rivals extend their networks, AT&T is doing the same in order to maintain its advantage.

Technical experience. AT&T's body of communications engineers and technicians was developed over many decades of monopoly position. The skills and familiarity with customers are costly to duplicate, and new

[4] The ease of electronic switching may appear to make entry barriers low, because rivals can take AT&T's customers "at the touch of a button." Customers can, in a superficial sense, change between AT&T and its rivals by merely switching electronic connections.

But that differs from economic substitutability. To equate the two involves a common error, confusing the physical ease of switching with genuine economic substitution. If the little rivals are to compete squarely against AT&T, there must be not only the physical ease of switching but also all of the other abilities (in technical capacity, similarity of products, equal customer acceptance, etc.) to attract AT&T's customers freely. If AT&T's customers have strong loyalties, then competition is weakened even if electronic switching to other suppliers is technically easy.

rivals require time and expenditure to catch up. AT&T's Bell Laboratories also provides it with technical advantages, which no other can match.

Network interconnections. A series of specific conditions favor AT&T. Significant geographic areas remain in which AT&T still has exclusive right to be the "1+" carrier. AT&T retains advantages in important parts of the 800 market segment because customers would have to give up their heavily advertised existing telephone in order to shift to another carrier. AT&T also retains advantages in the credit card and operator services market. It has special relationships with foreign telecommunications administrations that inhibit the ability of competitors do develop equivalent international services.

AT&T's Lower Capital Costs. As noted in Chapter 1, AT&T's capital costs are significantly lower than those of its rivals. Its stock carries a lower risk premium, and its bonds are rated higher quality levels. That reflects real disparities in risk; the firms' degree of long-run security is directly related to their market shares. Moreover, AT&T has been attaining high rates of return in this market, sufficient easily to cover its investment costs. The small rivals have been enduring financial losses in most years, and none of them can finance its investments from internal cash flow.

Strategic Pricing. It is generally true that strategic pricing actions can inhibit entry by blocking new firms' ability to attract profitable customers. AT&T has an unusually great ability to adopt strategic pricing--by rapid, deep, and complex price cutting--so as to prevent new and small rivals from entering and expanding. The nature of the basic product assists this blockage: transmission is, in technical terms, largely a commodity without complex features. Competing firms cannot really develop much that is new in designing or "packaging" their offerings.

But AT&T can respond with pricing actions virtually instantly to any market initiatives. AT&T has the resources to give bargain prices to virtually get any individual contract it wants, while remaining profitable from higher prices charged to its other customers. Such "pinpoint" pricing can block competitors from "key" customers, while limiting AT&T's revenue sacrifice. Price discrimination of this sort has been common for dominant firms in landmark antitrust cases such as Standard Oil, IBM, and United Shoe

Machinery. Even when it is not specifically found to violate antitrust laws, it can make entry difficult.

During 1989 AT&T has adopted a wide range of such selective prices, under Tariff 12. Even if none of them has specific "predatory" aspects, they do restrain entry and small-firm competition.

The Possible Role of "Contestability"

In summary, there are large elements that restrain new entry and the ability of small established firms to expand their competition. Yet AT&T experts have argued that the market is "contestable," a theoretical condition of ultra-free entry which can make even a complete monopoly behave as if it were under the extreme pressures of pure competition.

This is not a valid conclusion because it is factually wrong, argued here. The slowness of AT&T's market-share decline during the last decade is particularly relevant. Fully free entry at prices well below AT&T's would have cut AT&T's market share quickly and sharply, probably establishing at least five comparable major rivals that would provide severe competition to AT&T. Instead, AT&T's moderate decline has taken many years to occur already, and it may be reversed rather than continue. "Contestability" would also have prevented AT&T from achieving supra-normal profits, in contrast to the high rates of return that AT&T has actually been attaining.

In any event, the theory of "contestability" used by AT&T's experts is not a reliable conceptual basis for assessing the market.[5] The balance of this chapter addresses "contestability" theory as part of the larger issue of entry barriers.

In the 1970s, the Bailey-Baumol-Panzar-Willig group at AT&T (as staff members or consultants) developed concepts which supported (1) AT&T's efforts to protect its monopoly by restricting entry, and (2) reducing the limits on AT&T's own freedom of action. The main new concepts they developed were "sustainability" and "contestability."

[5] Leading critical reviews include, Shepherd, "'Contestability' versus Competition; and Schwartz, "The Nature of Contestability Theory.

Sustainability referred to the ability of a multiproduct utility firm to "sustain" an efficient set of prices (a price vector). Each such price set would be--in light of the array of demand and competitive conditions for specific outputs--as efficient as possible given the monopoly's need to do some price discrimination so as to avoid financial deficits. To put it in more technical terms, if the utility enterprise is marked by decreasing costs then "Ramsey pricing" will be required, in line with the inverse-elasticity rule.[6] "Ramsey prices" are discriminatory prices, which enable the firm to earn profits large enough to break even financially. (Baumol et al. did not provide a mechanism to assure that the firm will not be able to obtain *excess* profits via price discrimination).

Although a "violation" of sustainability would merely alter the price vector to a new set of Ramsey prices, the Baumol groups's term "sustainability" and their usage of it suggested instead that the utility firms's own existence would be threatened by the entry of a single output firm. Therefore their analysis suggested that utility firms such as AT&T should usually be protected from new competition.

"Contestability" also seemed to identify a vulnerability of AT&T to new competition. The theory is said to hold where a new entrant can replace the incumbent firm entirely, at a stroke, even by offering only a small price advantage. Long-distance service seems to offer such a case: AT&T provides the network, and so a newcomer could (in theory) simply offer lower prices, attract customers, and suddenly evict AT&T from its own system. In strict contestability theory, such an eviction would be total, instantaneous, and quite possible. MCI and Sprint did in fact offer lower prices, and so the contestability concept seemed to provide strong reasons to let AT&T do whatever pricing changes were appropriate in order to keep from being deeply harmed or even totally eliminated.

Baumol et al. have presented "contestability" theory as replacing the mainstream's core concepts, and they have testified in important antitrust

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[6] In plain English, "Ramsey prices" are price discrimination in line with differences in demand elasticities. Such discriminatory pricing is normatively defensible only where the firm has declining costs, so that marginal-cost pricing would require a financial deficit for the entire firm. Whether that is true for long-distance service is debatable. In any event, the issues involve familiar concepts, now given an esoteric new label.

and regulatory cases that the theory is widely accepted and can settle practical issues decisively. Is "contestability" merely a "new" theory, or might it revolutionize the mainstream field or at least modify it? The main issues it raises may be familiar by now, but three points (a logical flaw, a lack of robustness, and a narrowness of analysis) need discussion.

Problems of Barriers and Potential Competition[7]

Ultra-free entry is merely a special case, within the larger subfield which focuses on entry barriers. Unfortunately that subfield suffers from problems of definition and measurement which are more severe than is generally admitted. In order to consider "contestability" adequately, I will first review these wider problems.

Potential competition is a value-laden topic, because it inherently diverts attention from actual competition (and monopoly) inside the market. It provides a way to minimize the importance of monopoly power.

There are four serious, possibly fatal, research questions about barriers.

(1) What Are the Causes of Entry Barriers? The very nature of barriers is confusing. More than a dozen possible causes of barriers have been advanced, all of them plausible and possibly important.

They are in two main categories, as grouped in Table 3-10, which summarizes the literature on entry barriers:

(I) exogenous conditions, which are intrinsic to the underlying conditions of the market; they are therefore outside the leading firms' control, and

(II) endogenous conditions and strategic actions, which are governed by the dominant firm's own voluntary choices.

As Bain stressed, exogenous conditions are embedded in the nature of each industry, and they are governed by technology and demand. By contrast, endogenous "barriers" are entirely different, because their existence arises

[7] This section draws on William G. Shepherd, "Potential Competition versus Actual Competition," *Administrative Law Review* (Winter 1990): 42.

TABLE 3-10

COMMON CAUSES OF ENTRY BARRIERS

I. EXOGENOUS: ECONOMIC (INTRINSIC) CAUSES OF BARRIERS

1. Capital Requirements (these are related to the optimal sizes of firms and plants, as well as to the degree of capital intensity.

2. Economies of Scale (arising from both technical and pecuniary causes)

3. Product differentiation (occurring naturally among products, most strongly in final consumer goods)

4. Absolute Cost Advantages (these may arise from many possible causes, including differences among wage rates)

5. Diversification (giving the possibility of massing and redeploying resources among branches)

6. Research and Development Intensity (which makes it necessary to assemble large R&D groups and generate new products before entry is attempted)

7. High Durability of Firm-Specific Capital (this gives rise to significant sunk costs, which make entry more costly and risky)

8. Vertical Integration (this may require entry to occur on two or more levels at once, raising costs and risks)

II. ENDOGENOUS: VOLUNTARY AND STRATEGIC CAUSES OF BARRIERS

1. Retaliation and Pre-emptive Actions (by the use of price or other devices. This category is large and varied.)

2. Excess Capacity (the scope for expand production quickly raises the ability to mount effective retaliation, or to issue effective threats of retaliation)

3. Selling Expenses, Including Advertising (these can increase the degree of product differentiation)

4. Patents (which provide exclusive control over technology)

5. Control over Other Strategic Resources (such as superior ores, locations, specific talents, etc.)

6. "Packing the Product Space" (in industries with high product differentiation, this policy can deter entry)

Source: Author's composition

strictly from the voluntary choices made by the established firm. The incumbent firm can create barriers simply by electing (or merely threatening) to take a variety of retaliatory actions against an entrant. Far from being concrete and lasting (as Bain insisted barriers conditions are), those "barriers" are evanescant.

In fact, such voluntary "barriers" are not really barriers at all. They merely reflect and express the degree of imperfections inherent in the market, which were summarized above in Table 3-10. The dominant firm can exploit these imperfections *against existing rivals* as well as against any possible entrants. Caves and Porter's concept of "mobility barriers" recognizes this point.[8] If those imperfections are large, then these supposed components of entry barriers will be high. But that reduces the phenomenon to mere semantics; imperfections will continue to exist as they are, whether we call them barriers or imperfections.

So the question remains: how large are the imperfections, and can they be exploited by a leading firm? If they are significant at all, then barriers will be substantial strictly because of the possibility of strategic actions that might be taken voluntarily by the established firm, even apart from any intrinsic, concrete, underlying causes of barriers. But such barriers also inhibit existing small rivals, and so it may not be meaningful to conceptualize them separately as barriers. They are simply ways to suppress competition; that puts them squarely within the mainstream conditions of monopoly power within the market.

(2) Can Barriers Be Measured? The answer is essentially "no." Barriers cannot yet be measured with any reliability or precision, even thirty-four years after Bain's *Barriers*. The strategic "barriers" are as insubstantial as fog, while the exogenous elements of barriers are also extremely difficult to specify and measure. The seven such elements noted in Table 3-10 cannot be measured on well-defined scales.

Moreover, even if the elements could be measured precisely (or merely approximately), there is no reliable method for merging those measures into a single indicator of barriers "height." Combining the measures of

[8] Richard E. Caves and Michael E. Porter, "From Entry Barriers to Mobility Barriers," *Quarterly Journal of Economics* (May 1977): 241-61.

individual elements into total estimates of barriers "height" is still a black art, not a scientific method. Should the "heights" of the separate elements be added to each other, or is each one independently sufficient to create a high barrier? Should the elements be multiplied by each other in some fashion, because they are strongly reinforcing? What if there are two low, four medium and six high elements of barriers?

After three decades, this critical question of research methods is largely untouched in the literature. Few systematic studies of actual barriers have been done, and they have not addressed or begun to solve those problems.[9] Barriers are still "estimated" as being merely "high," "medium," or "low," based largely on guesswork.

(3) Can Potential Entrants Be Identified? The answer is: "not very well." The pool of potential entrants is an important determinant of entry's force. If there are few candidates in the wings, or only weak ones, then entry may exert little pressure even if barriers are low.

Yet virtually no research has been done to develop methods for identifying and assessing potential entrants.

(4) Entry Takes Effect by Cutting Market Shares. Entry has been accorded a kind of special glamor and magic power. Fear of entry is said to supersede the normal fear of existing rivals.

Instead, entry should be subsumed under actual competition, because new entry only affects existing firms by taking away their market share. Indeed, that is the correct technical definition of the scope of entry: *the loss of market share by existing firms*. But that also defines the impacts of competition among existing firms. Entry is therefore merely a secondary, indirect subcategory of the common form of actual competition within the market. Rather than replace market share as the focus, entry is subsumed under it.

Taken altogether, the entry literature has involved a detour away from mainstream market conditions built on technical illusions of newness and importance. Attention has been diverted from clear, concrete and important

[9] Bain, Mann and others have tried to include several elements; see Shepherd, *The Economics of Industrial Organization*.

patterns of actual competition, toward obscure notions of potential competition.

The Special Case of "Contestability"

The special category of "contestability" shares the general problems of entry barriers, and it also contains several of its own, including a critical logical flaw. So far, these difficulties have prevented it from illuminating important markets.

I will note here only four points and then assess the relevance of the idea to real markets.

(1) Logical Flaw. First, the theory is logically defective at its core: its key assumptions are mutually exclusive for the crucial case of a monopoly or dominant firm. Recall that the theory assumes that an entrant is so small that the existing firm will not bother to react to it at all. That permits the pivotal Cournot-Nash assumption that no timely response by the incumbent occurs, so that entry is not limited in any way. But for such absolute entry to occur, the entrant must enter on a large scale if it is replacing a monopolist or dominant firm.

The assumptions are contradictory when a monopoly or dominant firm is being analyzed: entry cannot simultaneously be both trivial and total, when the threatened incumbent firm has a large market share. Only when the market is already highly competitive (and the incumbent firms are therefore small and numerous) can the two assumptions be concurrently valid. Each incumbent firm then regards its statistical chance of being the one that is knocked out of the market as being trivially small.

But in those markets, competition is effective already, and ultra-free entry adds little or no intellectual content to conventional theory about free entry. In the opposite polar case, when an incumbent complete monopoly is involved, the two assumptions are flatly contradictory. The Baumol group has rightly noted that the nullified-monopoly result is its most important implication of its theory. But as a matter of logic, that result is precisely the one that must be recognized to be vacuous.

This author noted the fatal flaw in 1984 and has repeated the criticism in other writings.[10] The flaw continues as a fracture at the core of the theory. Yet Baumol and Willig continue to make expansive claims for the theory, both in writings and in testimony in major cases. They characterize it as a powerful rationale for ignoring conditions of monopoly in real markets.

(2) Robustness. Second, the theory is not robust. Using competitive theory, one can examine intermediate degrees of monopoly, by weighing market shares, concentration, pricing and other behavior, and profits. The impacts of competition occur over a wide range of market shares: the theory is robust.

In contrast, ultra-free entry appears to apply only in the pure case, where the strict assumptions hold perfectly. At first proponents said that the theory might be robust in "almost contestable" markets, even with significant deviations from the assumptions. But extensive research by Marius Schwartz and others has largely established that robustness does not exist.

(3) Narrow, Static Assumptions. Third, the theory is strictly static, analyzing only how ultra-free entry will affect the maximization of consumer surplus. Proponents admit that questions of innovation, of dynamic processes and interactions, of equity, and of other social criteria are all omitted. These values are likely to exceed the static-efficiency values of consumer surplus.

Joseph A. Schumpeter stressed these dynamic factors in analyzing a sequential monopoly process as the source of innovation. As he urged, the yields from innovation can quickly dominate the static effects of monopoly.[11] The contrast between Schumpeter and the Baumol group is

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[10] Shepherd, " 'Contestability' versus Competition; idem, "Illogic and Unreality: The Odd Case of Ultra-Free Entry and Inert Markets," a chapter in Ronald E. Grieson, ed., *Antitrust and Regulation* (Lexington, Mass.: Lexington Books, 1985); idem, "On the Core Concepts of Industrial Economics," 1986; idem, " 'Potential Competition' versus Actual Competition."

[11] See Joseph A. Schumpeter's analysis of the process of "creative destruction" in his *Capitalism, Socialism, and Democracy* (New York: Harper and Brothers, 1942): 81-106; on the Scumpeterian process, see the discussion and sources in Scherer and Ross, *Industrial Market Structure and Economic Performance*.

particularly striking, because the Baumol-group theory of monopolist-displacement would be precisely Schumpeterian. But they miss Schumpeter's main point, that static issues are minor compared to innovation. Instead, they assert that their static theory displaces all other theories of competition, even though it says nothing about innovation and competitive processes.

After eight years, the lasting research results arising from the theory are still modest. (4) Real Cases? A general theory may be valid even if it appears to fit few actual markets. But it has been a worry for "contestability" theory that scarcely any cases of it can be found. It does not fit airlines, railroads, and--as we have seen--long-distance telephone service, which are three industries that inspired much of the development of the theory. Small local markets and imports now appear to offer the most promising applications.

Petty Monopolists in Local Markets.

"Contestability" offers some insight when a small market faces the probable instant entry of a powerful pre-existing firm; examples include a small-town hotel or lumber yard that fears abrupt entry by a large national chain. Such petty monopolists may maintain prices that are close to competitive levels, so as to avert possible entry.

Local monopolists in hotels, restaurants, clothing stores, and other retail markets are therefore the natural focus for further research on ultra-free entry. But they are not the core industries of the national economy, with major dominant firms. And they have little to do with interexchange telecommunications. Moreover, the familiar analysis of free entry developed in the 1950s by Bain has given the same insights as "contestability" theory for over three decades.

Imports.

Imports may also fit "contestability." If the country is small and the volumes of foreign goods are large, then domestic monopolists may be displaced rapidly, even totally, by imports.

Yet the relevance to ultra-free entry is limited. The outside producer may not fully *enter* the market by creating new production capacity. Only its products enter the market, often by gradual degrees. Moreover, "exit" may mean merely a decline in the amounts shipped in, not a genuine closure of capacity.

Price Structure and Trends

Pricing behavior has involved two main directions: (1) the general trend of *average prices* separating AT&T and its smaller rivals, and (2) the *structure* of individual prices, including discrimination.

Both of these lines are elements of the larger pattern (1) that permits AT&T to reduce competition by its pricing strategies, and (2) that enables a tight oligopoly to reduce price competition.

Average Price Comparisons between AT&T and Others

The average price comparisons have followed a clear trend. The new entrants have set prices below AT&T's rates, in order to attract customers and establish a viable market position. The price discounts were initially in the range of 30 to 50 percent. Until 1989, AT&T continued to be regulated by the FCC, which kept AT&T from fully matching the rivals' discounts. The price gap permitted MCI, Sprint, and others to build toward their current market shares, and their rising quality of service enabled them to narrow the discounts while still growing.

AT&T has priced largely on a standardized basis and relied on its reputation, customer loyalty, and advertising to retain its dominance. The lingering requirements of geographic averaging and other FCC restraints have prevented deep discounting to specific customers or groups. But MCI and Sprint have gradually abandoned the low-price strategy, in favor of small price discounts and an emphasis on comparable service quality.

The result during 1986-89 has closely fitted the predictions for an unequal tight oligopoly. AT&T sets what amounts to a price umbrella, while its two main rivals avoid provocative price-cutting tactics. Rather than

severe competition based on pricing, there is a more moderate coexistence of the three firms. It is, however, not equally secure for the firms.

Selective, Discriminatory Pricing Patterns[12]

As noted already, the smaller firms' risks partly reflect the danger that AT&T will use price discrimination, predatory pricing, and other devices such as the control over the setting of industry standards. AT&T's dominance makes it possible to set discriminatory price discounts which the small rivals simply cannot match on a sustained basis. AT&T has the resources to give bargain prices to get any contract it particularly wants, while remaining profitable on its other lines of business.

For AT&T, marginal costs of traffic are very low, because its system is comprised both of older, depreciated capacity and newer fiber-optic installations. Such low marginal costs open a wide range for price policies, including extremely low prices for specific customers. AT&T has the further opportunity to carry this strategic price discounting to predatory extremes, setting some of its prices below even the low levels of marginal costs, if it regards that as necessary.

This price discrimination, or "pinpoint" strategic pricing, or "sharp-shooting," is common in dominant firms throughout industry, and it can be assumed that AT&T has been straining at the leash to do it.[13] This pricing approach was constrained until 1989 by regulatory limits, but it is widely permitted under the Federal Communications Commission's recent "price-cap" plan. That alone permits AT&T to slow the decline in its market share. If all restraints are removed, AT&T will presumably expand its selective

[12] On the competitive impacts of discriminatory pricing, see Scherer and Ross, *Industrial Market Structure*; and Shepherd, *The Economics of Industrial Organization*.

[13] See such basic sources as Alfred E. Kahn, *The Economics of Regulation*, volumes 1 and 2 (New York: Wiley, 1971); Scherer and Ross, *Industrial Market Structure and Economic Performance*; and Shepherd, *Public Policies Toward Business*.

pricing further, including even the use of below-cost "predatory pricing" where it suits AT&T's long-run interests.[14]

Discriminatory pricing is likely to be a principal method for AT&T to stop or reverse its decline in market share. In order to permit effective competition to evolve, AT&T needs to be restrained from using this pricing approach for at least several more years, until its market share is comparable with its newly-expanded rivals. Then the discriminatory pricing would be harmless because all competitors could use it equally.

The Effectiveness of Price Caps

Recognizing that competition is not yet fully effective, the FCC has retained some regulation of AT&T, in order to prevent both too-high and too-low pricing tactics. But it has replaced the conventional regulatory methods with a new approach-price caps.

He previously mentioned, the method was first developed, given its name, and applied in Britain in the early 1980s. It was an effort to limit the monopoly behavior of utility firms then being shifted from public to private ownership. The firms--such as the telephone system, intercity buses, and the gas system--remained monopolies, with a danger of strong monopoly behavior. "Price caps" were meant to avert that danger, while avoiding the supposed harms of conventional rate-base regulation.

That experiment has now been adopted by the FCC, even though there has been little clear sign in Britain that it works. The 1989 trial of "price capping" AT&T has turned out to be far more complicated than its proponents originally promised. The approach will be noted briefly here, to mention both the weaknesses and the strengths of the FCC's specific methods. But first it is important to assess "price caps" as a more general phenomenon. That is done in the following section.[15]

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[14] The competitive effects occur even if the specific prices cannot be shown to violate criteria of "stand-alone" pricing or other static criteria for defining "predatory" actions. See also Trebing, "Telecommunications Regulation."

[15] See also the careful evaluation in Trebing, "Telecommunications Regulation."

General Properties and Problems of Price Caps

Any effective policy toward a dominant firm needs to deal with both halves of the pricing problem, as noted in the previous chapter: (1) the danger of too-high average prices, which harm consumers, and (2) the danger of too-low prices, especially selective price discounting, which will remove or intimidate smaller rivals.

If price caps are to be acceptable, they must provide both directions of protection, and do it more effectively than conventional regulation. If conventional regulation is imperfect but moderately effective, then price caps must meet fairly stiff requirements of clarity, effectiveness, and simplicity.

A price cap simply limits the firm's *average* price increases to the rise of the consumer price index, minus a factor to reflect productivity gains. The formula is:

Permitted rate of price rise	=	Rate of rise of general price index	- X

where X is the expected rate of progress. It squeezes the firm a little so that it maintains efficiency. For example, if consumer prices rise 5 percent, and productivity is expected to rise 2 percent, then long-distance rates could rise 3 percent (5 percent minus 2 percent).

Ironically, this method has not worked well at its original source, in Britain. The main fault is that price caps usually permit severe selective actions, even those which may eliminate little rivals. The caps have not effectively prevented anticompetitive actions, as shown by the fact that in no British case has strong competition arisen to challenge the monopoly firm. This lack of restraint on anticompetitive actions continues as the principal weakness of the FCC's "price caps."

In its specific elements, too, the method has important defects. The formula's basis accepts the current prices that exist, constraining only the (forecasted) additional rises in them. Yet some or all of the utility's prices may already be at inefficient levels. The firm may have elements of fat and slack, or the utility's overall profits may be too high or low.

Rather than examine and seek to correct these possible deviations, the cap ignores them and may build them in as permanent conditions.

Also, each specific element of the formula is defective. Consider each of these elements in turn.

The permitted average price rise ignores the array of individual selective price changes which the firm can do, to hurt its rivals unfairly. Therefore caps are appropriate only when there is just one output price or competition is already effective. In the telephone service markets, instead, there are complex, multiple outputs and competition is not effective or evenly spread across the market segments.

Second, the consumer price index (the CPI) is the wrong index to use. It is merely the broadest indicator of general price trends. Instead, a specific index reflecting price trends in the utility's input *costs* is appropriate. But that index is complex to construct and adapt, as the weights among inputs change over time.[16] If (as in these cases) the price cap may apply only to some of the firm's outputs, then the task is virtually impossible. Overhead costs cannot usually be assigned by clear economic criteria, and the utility firm can usually move its accounting costs around enough to negate the constraints. These complex utility problems cannot be removed simply by applying naive price caps.

The third element, the "X factor" is mere guesswork, requiring debatable judgments about the rate of future technical progress in the industry. How much would autonomous (that is, naturally occurring) progress reduce future costs? Who can tell? By what criteria? If X is guessed wrong, in either direction, there can be harmful effects. Yet price-cap experiments have gone ahead with sheer rough guesses about the X factor.

In short, price caps require the same detailed attention to costs that established regulation has provided. In addition, it requires judgments about technological trends which current regulation is largely able to avoid.

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[16] The literature of public utility economics and regulation from 1900 to 1960 contains extensive discussion of these cost-indexing problems, as standard testbooks note: see especially Kahn, *The Economics of Regulation*. The current price-cap theorists have simply ignored that whole literature, while choosing the wrong index.

If price caps are attempted nonetheless, an index of each utility's own input costs should replace the CPI. This index must be carefully constructed and will naturally be strongly debated by all sides.

Moreover, constraints are still needed on individual prices. Otherwise, dominant firms will use selective actions to harm their little rivals unfairly. These constraints are virtually identical to the same old traditional restraints on price structure, which established regulation is supposed to apply.

In short, price caps do not alter regulatory reality; they may well be weaker and more deceptive than conventional regulation, with all its faults. Price caps are appropriate only when (1) the outputs are few, (2) competition is already effective, (3) reliable input cost indexes can easily be constructed (with little overhead costs shared among capped and uncapped outputs), and (4) the rate of future progress is known and agreed.

It is possible that price caps are a fundamentally flawed idea, whose time has gone before it has come. That seems particularly likely for cases with complex varieties of pricing behavior, such as AT&T has displayed since 1988.

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

It is here concluded that effective deregulation of the long distance market will probably not be possible for at least about 5 to 7 years. If the 1989 price cap experiment develops in the ways that are most likely, AT&T may retain its dominance indefinitely, among a relatively passive set of a few small rivals. The lack of free entry, much less "contestability," makes it particularly wise to avoid deregulation based on over optimistic hopes for actual or potential competition.

Any further moves toward deregulating AT&T require caution, sophistication and a clear use of competitive criteria. It will aim to keep the playing field level, so that AT&T cannot easily use its dominant-firm advantages unfairly against its small rivals. It will require the evolution of at least four other major players, able to compete fully with AT&T across the board, with comparable pricing and access to capital. The exact future market structure need not be specified in advance, but the general criteria are clear.

Effective deregulation requires a prudent discounting of AT&T's claims about the current degree of competition and the alleged economic harms from restraining AT&T. No such substantial harms have been persuasively shown, even for the short run. And in the long run, this prudent course seems essential for obtaining good economic performance from this industry.

Before further deregulatory actions are taken, there is a need for a thorough, objective research on the market's conditions and trends. That can provide a firm basis for prudent, effective policies which fit the evolving conditions. Above all, the FCC should avoid a hasty and complete removal of all controls. It is also probable that a shift back from price caps to more thorough regulation would be appropriate until AT&T's dominance has largely disappeared.

PART II

Robert J. Graniere

CHAPTER ONE

INTRODUCTION

Perhaps, the most exhausting issue that regulators have to face daily is the control of oligopolists' providing essential public utility services.[1] Grasping this issue firmly poses great difficulties. Well accepted definitions of competition do not exist for oligopolists.[2] The concept of competitive parity is subject to conflicting interpretations. Sometimes, it is viewed as a standard for strong competitive pressures. Other times, its attributes are defined to deny any possibility of having a large firm in the market.[3] Only one thing is clear. Oligopolists do not provide goods and services in a perfectly competitive industry structure.

Because oligopolists are not by definition perfect competitors, they are forced to lower their prices, if they want to make more sales.[4] But

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[1] While open to debate, hit-and-run competition is possible in some of the commonly listed telecommunications markets. These markets include customer premises equipment, Centrex/private branch exchange, and enhanced services. Because these markets have at a minimum approached contestability, they have been deregulated. Other markets such as switch manufacturing, local exchange services, and interLATA services do not have this characteristic. Yet, the regulation of these markets has moved toward more flexible forms of regulation. Thus, it appears that the presence of the potential for hit-and-run competition is a prerequisite for deregulation while its absence suggests movement toward different forms of regulation.

[2] The term oligopolist exudes ambiguity. One form of competitive behavior arises when this firm produces in a market without entry and exit barriers. Another form emerges when the market is not noncontestable. As shown in the first part of this report, interexchange carriers (IXCs) operate in a market that is not contested. In this sense, IXCs are uncontested oligopolists.

[3] William G. Shepherd, "Potential Competition Versus Actual Competition," *Administrative Law Review* 42 (Winter 90): 5-34.

[4] An oligopolist generally is in a position to earn profits above competitive levels when left unregulated. The source of this market power is the downward-sloping demand curve that is faced by each firm.

precisely because of this necessary aspect of doing business, oligopolists fall into the category of what we may call price makers. What being a price maker means is that competition among oligopolists is comprised of a wide range of strategic and tactical actions. Thus, these firm win and lose in a business environment where relative performance among oligopolists appears more important that absolute performance of a particular oligopolist.

Numerous alternative regulatory formats complement the varied business practices available to oligopolists. Unimpeded market entry, open access, and multilateral contracts could be regulatory mechanisms that are capable of disciplining the price and output behavior of oligopolists. Or, focusing on firm-specific characteristics such as pricing behavior, interfirm marketing advantages, and the current and expected technological conditions of market entry may be required for regulating oligopolists effectively.[5] One thing however is consistent with either approach. Wherever there is a need to regulate an oligopolist, antitrust laws cannot be relied upon to

[5] Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Therefor, CC Docket No. 79-252, *Notice of Inquiry and Proposed Rulemaking* 77 FCC 2d 308 (1979); *First Report and Order* 85 FCC 2d 1 (1980); *Further Notice of Proposed Rulemaking* 84 FCC 2d 445 (1981); *Second Report and Order* 91 FCC 2d 59 (1982), *recon. denied* 93 FCC 2d 54 (1983); *Second Further Notice of Proposed Rulemaking* 47 Fed. Reg. 17308 (1982); *Third Report and Order* 48 Fed. Reg. 46791 (1983); *Third Further Notice of Proposed Rulemaking* 47 Fed. Reg. 28292 (1983); *Fourth Report and Order* 95 FCC 2d 554 (1983); *Fourth Further Notice of Proposed Rulemaking* 49 Fed. Reg. 11866 (1984); *Fifth Report and Order* 98 FCC 2d 1191 (1984); *Sixth Report and Order* 99 FCC 2d 1020 (1985), *rev'd and remanded sub nom. MCI Telecommunications Corporation v. FCC* 765 F.2d 1186 (D.C. Cir. 1985). This set of federal regulatory decisions described many of the marketing issues associated with a dominant firm and competitive fringe oligopoly. *United States v. American Telephone and Telegraph Company* 552 F. Supp. 131 (D.D.C. 1982). *aff'd sub nom. Maryland v. United States* 460 U.S. 1001 (1983). This federal court decision established a subset of the technological and service-availability prerequisites underlying the regulation of an oligopolistic market. Guidelines for Dominant Carriers's MTS Rates and Rate Structure Plans, CC Docket No. 84-1235, *Memorandum Report and Order* FCC 85-540 (Nov. 22, 1985). This decisions granted the dominant firm a degree of pricing flexibility as the competitive fringe strengthened. CC Docket No. 87-313, Report and Order (March 16, 1989). This federal regulatory decision changed the practices, procedures, and policies employed to regulate an oligopoly.

control its behavior.[6] Antitrust laws rectify competitive abuses, whereas regulation can prevent them from occurring.

Oligopolists usually are engaged in head-to-head competition meant to win market share and to increase firm-specific profits.[7] Yet, other forms of "competition" can be present. For example, it has been suggested that collusion is a likely business practice when there are less than ten to fifteen firms and one or more firms holds a large market share.[8] Although the correctness of this suggestion is debatable, assuming its validity, the appropriate form of regulation might then be the monitoring and review of price lists, price structures, contracts, market segment concentration and the geographic dispersion of competing firms. Also important in this context is the structure of the price discrimination that is placed upon customers.

Service-Specific versus Firm-Specific Market Power

In the past, the Federal Communications Commission (FCC) has investigated the state of the competitive process in its segment of the interLATA market to determine if conditions were suitable for the deregulation of AT&T.[9] The most critical issue of these investigations

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[6] The dominant-firm/competitive-fringe model demands more stringent regulation than ex post recourse to antitrust remedies because this market structure by construction already contains a firm with *excessive* market power.

[7] Richard J. Gilbert and Marvin Lieberman, "Investment and Coordination in Oligopolistic Industries," *Rand Journal of Economics* 18 (1987): 17-33.

[8] William G. Shepherd, "Potential Competitive Versus Actual Competition," *Administrative Law Review* 42 (1990): 7.

[9] Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Therefor, CC Docket No. 79-252, *Notice of Inquiry and Proposed Rulemaking* 77 FCC 2d 308 (1979); Guidelines for Dominant Carriers' MTS Rates and Rate Structure Plans, CC Docket No. 84-1235, *Notice of Proposed Rulemaking* mimeo (released January 9, 1985); Amendment of Sections 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), CC Docket No. 85-229, *Notice of Proposed Rulemaking* mimeo (released August 16, 1985): Decreased Regulation of Certain Basic Telecommunications Services, CC Docket No. 86-421, *Notice of Proposed Rulemaking* mimeo (released January 9, 1987). In this

(Footnote continues on next page)

appears to be whether market power is a service-specific or firm-specific characteristic.[10] Does a firm find it impossible to leverage market power from one portion of its product mix to another portion? Or does this firm enjoy the freedom to export market power across its entire product mix.[11]

One way to answer these questions is to examine how market forces might determine the price and output decisions of an oligopolist. Service-specific market power implies that some of the services of the firm are supplied subject to the discipline of competition and other are not. For those firms not subject to this discipline, the oligopolist can select from various pricing strategies including but not limited to setting low prices in anticipation of new firms entering the market or racheting down prices as new firms enter the market. While for services subject to competition, it

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(Footnote continued from previous page)
report, deregulation is defined as complete freedom in the area of pricing and promotions. Deregulation, however, does not mean the abdication of costing methods. Service-by-service deregulation requires the allocation and assignment of costs into the regulated and unregulated cost pools. This requirement is eliminated only when the firm is deregulated.

[10] Market power is not synonymous with the ability of a firm to dominate the price, output, new service, and investment decisions of its rivals. Market power represents the ability of a firm to raise the prices of its services above marginal cost. Market dominance is the appropriate term for describing the situation where one firm can discipline its rivals. Market dominance however must be distinguished from competitive necessity or the requirement that a firm respond to the actions of its rivals. Hence, a two-part test must be passed before a firm can be considered as market-dominant. First, firm A can affect the economic decisions of all other firms in the market. Second, no other firm in the market can affect the economic decisions of firm A.

[11] The interLATA telecommunications market is defined to include interstate and intrastate traffic. This choice is not made lightly. While it is recognized that state and federal regulatory authorities have jurisdiction over the rate, charges, terms, and conditions for services, it also has been concluded that these differences do not displace the market-unifying characteristics of the technologies used to provide intrastate and interstate services. These characteristics are nullified only when one of the regulatory jurisdictions prohibits a common carrier from offering a service to the public and enforces this decision. Thus, although it would appear that regulatory jurisdiction is a factor in determining the geographic dimension of the market, this factor is limited by the telecommunications technology in place. The removal by the FCC of tariff arbitrage opportunities has altered the opportunities for rapid entry and costless exit. Instead, potential entrants must be willing and able to incur sunk costs, thereby eradicating any assertions of contestability.

is often argued that the oligopolist would be set its price equal to marginal cost whenever it is financially viable to do so. In those instances where price equal to marginal cost is not sufficiently high to keep the firm in business, the oligopolist will set it price equal to average cost. Thus, service-specific market power presents the oligopolist with multiple business options.

If we accept the concept of service-specific market power as valid, one regulatory approach is to deregulate those services that are not the source of the firm's market power because by definition the deregulated services cannot be the source of funds for anticompetitive activities. However, deregulation might not be a proper regulatory alternative because services subject to competition might benefit from the market power that exists elsewhere in the oligopolist's product mix. Specifically, fears that deregulated services may be subsidized arise when adequate enforcement and monitoring mechanisms are not in place to police the boundaries between the regulated and unregulated services of the firm.[12] Thus, a necessary cost of service-by-service deregulation seems to be the design and implementation of mechanisms meant to prevent revenue-shifting between regulated and unregulated services.

The primary regulatory problem associated with firm-specific market power is not the transfer of costs from one set of customers to another set of customers in order to improve the competitive posture of the oligopolist. Instead, the problem is that the oligopolist may voluntarily forego profits in the short term in order to establish a persistent disadvantage for its competitors in the long term. For example, the firm may choose to introduce new services and let its overall profits fall where they may. Or, it might elect to bolster its market share by setting the price for a service below its marginal cost. Either option can be implemented whenever the firm's overall profit level is sufficient to satisfy the short-term expectations of its stockholders. While a cost is associated with the proposed business practice, such behavior is still defensible. Remember, this firm is not

[12] Cross subsidization is not a problem if adequate enforcement and monitoring mechanism are in place. They deny the firm the opportunity to set these prices below the relevant marginal costs. To do otherwise means that the firm violates its profit-maximizing objective.

driven by its stockholders to maximize its current profit levels. It has its eye on maximizing future profits.[13]

What the preceding example shows is that a higher price for a regulated service is not the way that firm-specific market power is transported across products and services. Whenever an oligopolist is earning profits at a rate higher than a comparable competitive firm, the example shows that such a firm has the option of lowering its current earned rate of return as a way to maximize profits over a longer time horizon.[14] Thus, the prices and output of regulated and unregulated services are affected when a firm with firm-wide market power makes the decision to change the acceptable level of corporate profits. Specifically, a lower profit objective could increase the output and lower the prices of unregulated services, whereas a higher profit target could decrease the output and raise the prices of regulated services.

The debate over the attributes of market power continues on in the telecommunications industry. Advocates of the service-by-service deregulation seem to be winning, but this approach is being used cautiously by most regulatory commissions. For example, the FCC has deregulated enhanced services,[15] but it adopted the approach of price cap regulation and

[13] Paul Klemperer, "The Competitiveness of Markets with Switching Costs," *Rand Journal of Economics* 18 (1987): 138-150.

[14] A similar pricing approach can be applied to services that remain with the regulated operations of the firm. Lower earned rates of return could be the *quid pro quo* for affecting the behavior of rivals operating in those market segments that continue to be regulated.

[15] Second Computer Inquiry, *Final Decision* 77 FCC 2d 284, *modified on reconsideration* 84 FCC 2d 50 (1980), *further modified on reconsideration* 88 FCC 2d 512 (1981), *aff'd sub nom.* Computer and Communications Industry Association v. FCC 693 F. 2d 198 (D.C. Cir. 1982), *cert. denied* 461 U.S. 938 (1983), *aff'd on second further reconsideration* FCC 84-190 (1984). This decision may have been driven by the structure of the telecommunications market. At the close of the Computer II Inquiry, unregulated firms were providing enhanced and information services using the basic services of the local exchange companies. If enhanced services were regulated, the possibility arose that previously unregulated firms would become regulated. Another alternative would be to impose the nondominant/dominant dichotomy on the market for enhanced services. Neither alternative was particularly appealing to a regulatory agency seeking to encourage deregulation.

improving the availability of multiple access services.[16] As far as the total deregulation of the interLATA market is concerned, a new mind set among regulators, jurists, legislators and consumers may be a prerequisite. It seems necessary that each group will have to become convinced that it is acceptable to ignore the economic behavior of a previously regulated firm. This does not mean that oversight will completely disappear. It is likely that interLATA common carriers will always have their rural and inner-city services monitored for declines in quality-of-service.

Lessened Regulation of the InterLATA Market

While total deregulation of the interLATA market has not been feasible, lessening the regulation of the interLATA market began with the FCC's decision that allowed AT&T to offer optional calling plans (OCPs) as substitutes for existing interLATA message toll services.[17] OCPs rapidly became a permanent and widespread feature of this market segment.[18] The FCC then allowed OCP-equivalents to cross over the boundaries defined by existing message toll services. By cloning its PRO-America OCP series, AT&T was able to introduce PRO-WATS I, PRO-WATS II, and PRO-WATS III.[19][20]

After gaining some experience with the net-revenue test used to justify the introduction of an OCP,[21] the FCC accelerated the segmentation of the

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[16] It may well be that a previously regulated industry cannot be freed from explicit or implicit regulation. At a minimum, legislative oversight will continue after judicial and regulatory oversight have ceased.

[17] Guidelines for Dominant Carriers's MTS Rates and Rate Structure Plans, CC Docket No. 84-1235, *Memorandum Report and Order* FCC 85-540 (Nov. 22, 1985).

[18] The existence of OCPs signaled that the FCC would permit AT&T to *recapture* customers that it had lost to rivals.

[19] The PRO-WATS series represents adroit repacking permissible under the OCP guidelines. The difference between these services and traditional WATS is the size of the discount that is embedded in each declining block of the competing rate structures. PRO-America and PRO-WATS are registered trademarks of AT&T.

[20]

[21] In its simplest form, the net-revenue test measures the changes in revenues and expenses expected to occur in a market segment as the result of the introduction of a new or repackaged telecommunications service. These

(Footnote continues on next page)

interLATA market by approving Megacom.[22] Representing the first price concession to very large users,[23] AT&T had rolled out a service that foretold of a pricing strategy that was to have far reaching implications. With the approval of the Megacom tariff, the FCC had sanctioned the de facto breakup of the interLATA market into small-, medium-, and large-user segments. New and repackaged services could now be limited to any one of these customer groups.

The FCC continued its lessened regulation of the interLATA market by allowing AT&T to introduce new services as long as their sale did not adversely affect any other customer group.[24] To implement this policy, the FCC modified the net-revenue test. Retreating from its broader market-segment perspective, the FCC narrowed its focus to estimating the additional costs and revenues assignable to new services, thereby eliminating the impact of most of the joint and common costs captured by the "fully distributed" costing systems used by AT&T. The first service subjected to this standard was AT&T's Software Defined Network (SDN) service.[25]

The FCC raised its price flexibility activities to a new plateau with its decision to permit AT&T to offer special rates, terms, and conditions to

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changes include the effects of all relevant own-price and cross-price elasticities. They also contain the effects of the migration of customers to and away from AT&T's services. Passage of the test occurs when the revenue change exceeds or is equal to the expense change. When these conditions are obtained, users of existing services are seemingly protected from general rate increases caused by the introduction of new or repackaged services.

[22] Megacom is a registered trademark of AT&T.

[23] AT&T Communications Revisions to Tariff F.C.C. Nos. 2, 9 and 10; AT&T Communications Revisions to Tariff F.C.C. Nos. 1, 9, and 10, CC Docket 85-___, Transmittal Nos. 434 and 435, *Memorandum Opinion and Order* (released Nov. 7, 1985).

[24] This hold-harmless standard for new services has become an important part of AT&T's marketing strategy. It has been used to justify essentially custom services as long as they meet a procompetitive need and do not cause increases in the prices of other services.

[25] This network capability had been developed partly in response to US Sprint's "Virtual Private Network" service.

individual high-usage customers as a Tariff 12 service.[26] That is, AT&T has been allowed to offer a tariffed version of its rivals off-tariff marketing strategies.[27] Notwithstanding the current regulatory decisions on this issue, these services might not be consistent with existing regulatory dictums. Although available to similarly situated users, no user (other than the one for which the service has been designed) is on record as having been able to resell a Tariff 12 service or use it to meet its existing telecommunications needs.[28]

The last step that has taken toward the lessened regulation of AT&T is to rescind the rate base/rate of return regulation for common carriers. As a result, AT&T's profits are no longer subject to direct reduction by the FCC. Complementing this profit flexibility, AT&T has been granted the

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[26] Most of AT&T's Tariff 12 services fall under the rubric of a virtual network. This means that a common carrier's switched network is configured in such a way that the customer has the conveniences and reliability of a dedicated service while sharing in the cost efficiencies of a switched network. US Sprint was the first common carrier to offer this service under the name "Virtual Private Network" service. Thereafter, MCI introduced its version of a virtual network with the name "Vnet". AT&T entered this market segment with "Virtual Telecommunications Network Service" (VTNS). AT&T submits prices, terms, and conditions for VTNS options as Tariff 12 transmittals. A partial list of customers having used VTNS includes American Express Company, American Airlines Company, First Chicago Corporation, Combustion Engineering, General Electric Corporation, Prudential Insurance Company, Unisys Corporation, Mastercard, PaineWebber Incorporated, and Kemper Financial Company.

[27] AT&T has submitted a complaint against MCI Communications Inc. concerning the practices used to market services to very large users with or without unique telecommunications needs. AT&T has objected to off-tariff rates as part of the contracts bid to provide services to customers such as United Airlines, the Department of Defense, Uniguard Security Insurance Company, Westin Hotel Co., the University of Colorado at Boulder, and Merrill, Lynch, Pierce, Fenner and Smith. See: *Telecommunications Reports* 55 no. 32 (1989): 6-7. Because off-tariff rates often are a part of the contract for high-usage customers, any common carrier using this pricing approach can bargain bilaterally in a particular market segment without exposing itself to revenue losses that are apt to occur if these contract rates were made part of their general subscriber tariffs.

[28] Clearly, there is some question as to whether a Tariff 12 service is generally available to more than one customer. But in their defense, these services do appear to be competitive response to the off-tariff practices of AT&T's rivals. Perhaps, the solution to this regulatory/marketplace dilemma is for the FCC to hold AT&T's competitors to the same regulatory standards that it applies to AT&T.

authority to change its prices with shorter notice to its customers and competitors. This price flexibility is permissible whenever the new prices fall within specified limits for increases and decreases.

Conclusion

The debate over the form of market power indicates that universal agreement does not exist concerning all of the characteristics of this market phenomenon. One way to begin the process of forming a consensus on this issue is analyze the observed behavior of oligopolists. As may be inferred from the preceding discussion in this chapter, this behavior is perhaps the best tool for this task.

In the following chapters, we will show how a description and explanation of the roles played by entry and exit barriers will assist us in understanding the form of market power in the interLATA market. In the course of this analysis, we necessarily will be concerned with the degree of market power that any firm may exercise in the interLATA market. As a result, we will examine the explanatory power of the relationship between the average and marginal prices of the firms competing in this market. What more, the results of these three analyses will help us to assess the strength of the interLATA market's competitive process. Specifically, we will be able to determine whether this market is moving toward or away from what we will define as effective competition. These tasks are performed in chapters 2 and 3. Because both chapter are self-contained, chapter 2 may be omitted without any loss of continuity with respect to chapter 3. Also, chapter 3 may be omitted without any loss of continuity with respect to chapter 2. Chapter 2 addresses the theoretical constructs underlying the competitive behavior of oligopolists in general and interexchange carriers (IXCs) in particular. Chapter 3 describes and analyzes concrete examples of behavior in the interLATA market. Chapter 4 presents my conclusions which are summarized by the statement that the degree of market power exercised by any firm in the interLATA market is not sufficient to cause any firm to dominate this market.

CHAPTER TWO

COMPETITIVE BEHAVIOR OF INTEREXCHANGE CARRIERS

InterLATA competition is a fluid process because no one form of behavior is forced upon any firm. Unknowingly, IXCs have responded to this environment by employing competitor-reaction functions. These behavioral rules long part of economic theory capture the strategic and tactical responses available to firms as they respond to the initiatives of each other. Hence, the underlying competitive process is described by activities that are taken largely to gain or maintain market share and/or profits.

This is not to say that potential entry contributes nothing to the explanation of the competitive process among oligopolists or what is occurring in the interLATA market. An incumbent IXC could find it profitable to increase the costs of market entry perhaps through further vertical or horizontal integration.[1] Because these expenditures affect the production process and the costs of production, they help to determine the pricing tactics and competitive strategies of these firms.

The National Regulatory Research Institute's (NRRI) began exploring the behavior of IXCs and other common carriers in *Evaluating Competitiveness of Telecommunications Markets: A Guide for Regulators.*[2] This study concluded that a dominant-firm/competitive-fringe model most clearly matched the

[1] In most instances, the costs of vertical or horizontal integration would fall equally upon incumbents and new entrants. Therefore, such costs would constitute an *entry barrier* only if they caused an increase in the financial and business risks of the potential entrant relative to that of the incumbents.

[2] John S. Horning, Raymond W. Lawton, Jane L. Racster, William P. Pollard, Douglas N. Jones, and Vivian W. Davis, *Evaluating Competitiveness of Telecommunications Markets: A Guide for Regulators* NRRI 88-1 (Columbus, Ohio: National Regulatory Research Institute, 1988). This report concentrated on describing the assumptions underlying various market structures and deriving the consequences of these assumptions.

interLATA competitive process in 1988. An extension of this work is to determine if this form of oligopoly is still an appropriate descriptor of the competitive process in the interLATA market.

Market behavior and equilibria in the interLATA market are difficult to categorize because they are affected by the number and size of the incumbent IXCs.[3] What's more, the value of these market variables are related to the ebb and flow of the degree of interdependence between firms.[4] For example, IXCs have incurred the sunk costs associated with rights of way and the preparation of transmission road beds. In addition to causing the interLATA market to be noncontestable, the magnitude of these costs affect the IXCs' investment, price and new product strategies.[5] But despite these sometimes massive sunk costs, MCI and US Sprint as well as AT&T are at present operating at a profit. It appears therefore that the existing investment and production procedures do not demand that only firm supply telecommunications services to the public.

Because more than one firm are supplying services in the interLATA market, there is quite naturally the issue of the how the prices of one firm stack up against the prices of other firms. Specifically, there may be a question whether one and only one firm is a price maker and all other firms are price takers. In the next chapter, I will provide evidence that no IXC is a powerless price taker. That is, data will be reviewed that indicates that the price investment and output decisions of each IXC have at some time had a perceptible influence on its rivals, thereby establishing the interLATA market as an oligopoly.[6] For now however, we will take the universality of price making among IXCs as a given of the ensuing analysis.

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[3] Reinhard Selten, "A Simple Model of Imperfect Competition, Where 4 are Few and 6 are Many," *International Journal of Game Theory* 2 no. 1 (1973): 141-201.

[4] William Fellner, "Stackelberg's Indifference Maps: Extension of the Analysis to Related Market Structures," in William Briet and Harold M.Hochman, eds., *Readings in Microeconomics* (Illinois: Dryden Press, 1971), 282-92.

[5] B. Curtis Eaton and Roger Ware, "A Theory of Market Structure with Sequential Entry," *Rand Journal of Economics* 18 (1987): 1-16.

[6] James M. Henderson and Richard E. Quandt, *Microeconomic Theory: A Mathematical Approach* (New York: McGraw-Hill, 1971), 235.

Excess Capacity and Overinvestment by Interexchange Carriers

Before taking a further look at the behavior of IXCs, it will be useful to outline the analytical and public policy differences between excess capacity and overinvestment. Analytically, overinvestment is a firm-specific phenomenon. It is created by the interaction between the firm's marketing objectives and demand forecasts assuming that the firm has decided upon a production technology. Empirically, it occurs when the firm deploys facilities above what is needs to meet the present and future needs of its existing customers. In this sense, the firm has production capabilities beyond what is necessary for its optimal economic production given the cost rates for the factors of production and the firm's expected short term demand.[7] Therefore, it is associated unswervingly with the price changes necessary to combat an imbalance between the available capacity and the firm's marketing targets.

Excess capacity is a market phenomenon that occurs when facilities are idle because there is a shortfall in the optimal level of economic consumption relative to the optimal level of economic production. Hence, under normal circumstances, this capacity will never be used by a profit maximizing firm. However, this firm cannot avoid deploying this investment

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[7] John M. Cassels, "Excess Capacity and Monopolistic Competition," in Briet and Hochman, eds., *Readings in Microeconomics*, 232. Cassels does not consider the influence of expected short term demand on overinvestment. It is correct to assign the label of overinvestment to an IXC's unused capacity. When operative, the Averch-Johnson effect causes AT&T to overinvest in interLATA facilities. See: Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review* 52 (December 1962): 1052-69. In this past, this overinvestment has been called "gold-plating". US Sprint overinvested when it choose to build a nationwide fiber optic transmission network. Clearly, this firm did not have the short term market demand to justify investment expenditures required to meet its objective. Essentially, US Sprint was "betting on the come". That is, it hoped to obtain the minimum market share for profitability shortly after it built the network and deployed its support systems. MCI's unused capabilities have the same characteristic although the reason they exist is different. MCI had to upgrade its network at an accelerated pace because of the quality-based competition initiated by US Sprint. Unused capacity is a natural byproduct of such a forced investment program. While hard data are not available, it would appear that US Sprint's overinvestment is greater than that of MCI's, and MCI's overinvestment is larger than AT&T's.

because it is part of its optimal production technology. As a result, excess capacity can exist even if the firm does not intend to act anticompetitively. But, these unused facilities raise the possibility of anticompetitive behavior.

It is not unusual for a new firm to enter the market even when an incumbent has excess capacity. The new entrant may believe for example that it has a more cost efficient production technology. However, the additional output provided by the new firm causes the incumbents to lower their sales volumes or prices. Either result detracts from the optimality of their existing production process resulting in a reduction in profits. If the incumbents expand output and lower their prices below the entry price of the new entrant, then it can be reasonably concluded that the incumbents have acted anticompetitively.

The public policy dilemma is that overinvestment may coexist with excess capacity. Any firm may find it necessary to deploy more resources than it can use at present. In fact, new and recent market entrants often find themselves in this position. To establish excess capacity however, consumers, at existing market prices, must consume less than the suppliers are willing to produce at these market prices. Essentially, the service is oversupplied on a market-wide basis. Thus, for some firms, its current output is less than its optimal output. Of course, these firms would prefer to do something about this situation. But, they are unable to increase their output because it would cause a reduction in their profits.

Because of these economic interrelationships, excess capacity is largely beyond the control of the firm. While it can set its prices, the firm has much less influence over the consumers' responses to these prices. Would it then be correct to say that any unused capacity after adjustment for overinvestment represents excess capacity? The answer is no. After eliminating the effects of overinvestment on the measurement of production capacity, it could well be that the competitive process operating in the interLATA market has driven production capacity to uncertainty-adjusted efficiency levels. Under these conditions, unused capacity would represent an economically efficient decision to build facilities in excess of the optimal economic consumption rate. The policy problem, of course, is to determine what level of excess separates efficient resource allocation from inefficient resource allocation.

Clearly, AT&T was presented with incentives to overinvest in the interLATA market when it was subject to rate base/rate of return regulation. Because it was given the opportunity to earn an allowed rate of return on its approved rate base, AT&T's absolute profits would in principle be higher as its rate base expanded. These profit-driven incentives for overinvestment did not exist among AT&T's competitors. Firms not subject to profit regulation obtain no benefit from overinvestment at the firm level. Hence, any overinvestment that does occur must be a result of errors in judgement, competitive strategy, or competitive necessity.

Overinvestment incentives, at least for AT&T, have weakened under under price cap regulation. However, they have not disappeared. The FCC's version of price cap regulation contains a provision that it will continue to monitor AT&T's earned rate of return. Presumably, the FCC would make some price cap formula adjustment if AT&T's earned rate of return was though to be out of line with other competitive rates of return. Hence, the Averch-Johnson effect still influences AT&T's investment decisions.[8]

Overinvestment decisions trickle down as a result of the characteristics of the market. Because the interLATA market does not have contestable properties, there are no market forces that drive it to a sustainable configuration of firms. Therefore, market forces do not guarantee that each IXC will operate efficiently, earn zero-economic profits, and avoid cross-subsidization activities.[9] As a result, the existing interLATA market configuration may not contain the optimal number of IXCs at the optimal size to minimize the total cost of producing the market's output.[10] This potential for market-wide inefficiency cause individual investment decisions by IXCs that almost guarantees firm-specific overinvestment.

Consider the investment decisions of IXCs with fiber optic capacity. The capacity of a glass strand in a fiber optic cable is limited by the electronics that may be attached to the cable. Thus, overinvestment is a function of the amount of resources devoted to the purchase of the

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[8] Because local exchange companies (LECs) face even more stringent profit regulation, their incentives to invest are stronger than those affecting AT&T.
[9] William Baumol, John C. Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industry Structure*, rev. ed. (New York: Harcourt, Brace and Jovanovich, 1988), 314.
[10] Ibid., 26.

electronics that supply available bandwidth. Whenever an IXC lacks sufficient traffic volumes to justify deployment of its existing electronics and hence its available bandwidth, its investment in these facilities and the associated investment in fiber optic transmission facilities is "firm-specific" overinvestment. (Fiber optic cable is included because the IXC presumably has selected its existing electronics in anticipation of larger traffic volumes and perhaps a higher market share than it currently has obtained through its marketing efforts.)

One logical effect of firm-specific overinvestment is price competition. Imagine for a moment the cost characteristics of facilities-based IXCs. In an effort to spread the total costs of their network over more units of sale, most of these firms have introduced new or repackaged services and entered into special contracts with large-volume users. Price declines based on these marketing strategies are not necessarily the result of a more efficient fiber optic production process or more stringent expense control. As a result, lower prices from AT&T and its rivals are likely to have been caused by overinvestment in transmission facilities. However, these lower prices are not anticompetitive. Although they may be the reason why some firms have exited the market, they have occurred because each firm already in the market is attempting to increase its market share as the best means of improving its profitability.

What could have caused this state of affairs in the interLATA market? More than anything else, it is the "lumpiness" of telecommunications investment. While the associated technology does not come in chunks as large as those purchased by electric utilities, the newer telecommunications technologies are more capital intensive than the older technologies. Since the older technologies are less efficient, it is not likely that new market entrants would elect to use them in their entry plans. Hence, their market entry and marketing strategies are associated with investment in new transmission, switching, and signaling technologies at levels significantly larger than what can be justified by the current market shares of these firms. In AT&T's case, the "lumpiness" of investment is felt through the fact that regulation can no longer be relied upon to provide the revenues to support its overinvestment. Clearly, both causes of overinvestment are cured when IXCs obtain more traffic and more revenues. Therefore, these causes of overinvestment reinforce the natural tendency of every competitive

market which is to seek one's own market growth and to deter the growth of your rivals' market shares.

General Description of the Behavior of Interexchange Carriers

Interdependence between the pricing and output decisions of IXCs is a necessary condition for the emergence of an oligopoly with noncontestable properties.[11] Price and output interdependence, however, also applies to some forms of monopolistic competition.[12] The traditional solution for distinguishing between these two market forms is to assert that the former is a member of an industry structure with only a few firms producing either a standardized or differentiated product.[13] Because this approach introduces two types of firms into the typology for an oligopoly, a better

[11] Henderson and Quandt, *Microeconomic Theory: A Mathematical Approach*, 222.
[12] John M. Cassels, "Excess Capacity and Monopolistic Competition," in Briet and Hochman, eds. *Readings in Microeconomics*, 229; Edward H. Chamberlin, *The Theory of Monopolistic Competition* 7th ed. (Cambridge: Harvard University Press, 1956), 100-02. Cassels identified two different cases of such interdependence (220). Each case assumes free market entry and many sellers. Case 1 describes a competitive environment where the output levels of monopolistically competitive firms are determined by a decision not to cut prices when their rivals increase or decrease output (229). Price behavior of this type not only suggests changes in the distribution of profits across firms as firms employ price-maintaining responses to changes in the production of other firms, it also can affect the absolute profits of those firms adopting this pricing strategy. Assume as an example that an increase in output of one firm does not cause any other firm in the market to decrease or increase its output (Chamberlin, 83). If new quantities demanded by the existing customers of that firm that changed its output do not exhaust the incremental output of that firm, then the remaining lower-priced services are likely to be purchased by customers of the firms that did not change their prices. This migration implies a reduction in revenues and profits of these firms because they have not changed their output levels. Case II considers a market populated by firms that believe they are close rivals and firms that do not hold this belief. Assume that close rivals reduce their prices and increase their outputs when faced with a price decline and output increase by another firm (Idem. 102-05). Assume all other firms act as described in case I. Under these conditions, the share of profits of the close rivals relative to the other firms in the market will increase as a result of customer migration occurs between firms.
[13] Henderson and Qaundt, *Microeconomic Theory: A Mathematical Approach*, 231-235.

approach is to analyze the nature of the competitive struggle taking place between IXCs, and to use this analysis to highlight aspects of the actual competitive process that deviate from the ideal of an oligopolist operating in a perfectly contestable market.[14] For example, we could identify and explain how entry and exit barriers affect the competitive behavior of an IXC. These barriers do not exist in a contestable market. Or, we could analyze the effects of different pricing strategies on market-wide output and the number of firms comprising the market. In a contestable market, pricing strategies do not have an impact on either of these economic variable. Prices are set equal to marginal cost, and the number of firms is determined by the relationship between market demand and the optimal production functions available to the firms.[15] Further, the competitive struggle among IXCs can take several different forms. Preferences can be misrepresented. IXCs may find it profitable to collude. Some firms may elect to use their excess capacity anticompetitively. Other firms will attempt to reconcile overinvestment positions. Each of these possibilities are examined in the following subsections.

Preference Signaling by Interexchange Carriers

Most business decisions are directed toward improving the efficiency of production and the marketability of services.[16] But because an IXC must deal with strategic interdependence between itself and the other firms in the interLATA market, it may find it advantageous to misrepresent its preferences. Such preference signaling provides disinformation to its rivals and suppliers, thereby serving to improve an IXC's strategic position

[14] Every competitive struggle produces two pieces of data. First, rivals reveal preferences and expectations. Product development activities and investment decisions are the sources of this information. Second, any firm reporting on its research and development efforts effectively signals the structure of its future business plans.

[15] William Baumol, John Panzar, and Robert Willig, *Contestable Markets and the Theory of Industrial Structure*, (New York: Harcourt, Brace and Jovanovich, 1982).

[16] Morton I. Kamien and Nancy L. Schwartz, "Market Structure and Innovation: A Survey," *Journal of Economic Literature* 8 (March 1975): 1-37.

in the marketplace. The only economic agent to whom an IXC cannot misrepresent its preferences is its customers.

Since its consumer-related preference must be revealed correctly, an IXC misrepresents only its buying or voting preferences.[17] Both Gibbard and Satterthwaithe have shown that this strategy is capable of manipulating people with opposing views.[18] What this means for an IXC is that it could gain concessions from its suppliers. An IXC, for example, could threaten to use lower-cost products from other suppliers. Or it could threaten to engage in research and development to find a way around a particular supplier. If successfully executed, either threat would improve its competitive position in the interLATA market because, presumably, each IXC is using the best factors of production to produce its services. Essentially, this IXC is attempting to minimize any costs that prevent it from capitalizing on the strengths of its supply channels.[19] Once supply channels are under control, new services and production technologies can follow more rapidly.[20]

The misrepresentation of buying preferences is not equivalent to the exercise of conventional buyer power or oligopsonistic behavior. In the first instance, the firm is attempting to misdirect its suppliers by sending disinformation or misrepresented information. Dollars are not the medium of exchange, instead the medium is perceptions. In the second instance, the firm is making a frontal attack on its suppliers. It is threatening to go

[17] Monopolistically competitive firms are expected to misrepresent their selling (campaigning) preferences. In this way, they are able to differentiate themselves from rivals with similar views.

[18] Allan Gibbard, "Manipulation of Voting Schemes: A General Result," *Econometrica* 41 no. 4 (July 1973): 581-601; and Mark Allen Satterthwaithe, "Strategy-Proofness and Arrow's Conditions: Existence and Correspondence Theorems for Voting Procedures and Social Welfare Functions," *Journal of Economic Theory* 10 no. 2 (April 1975): 187-217.

[19] The monopolistically competitive firm's logical concern is with the magnitude of the selling costs that it must incur to successfully market its services. See: Norman S. Buchanan, "Advertising Expenditures: A Suggested Treatment," in Briet and Hochman, eds., *Readings in Microeconomics*, 235-47; and Douglas Needham, "Potential Entry into Oligopoly," in Briet and Hochman, eds., *Readings in Microeconomics*, 293-303.

[20] Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy* 3rd ed. (New York: Harper & Brothers, 1950).

elsewhere if it cannot get price concessions. Dollars are obviously the medium of exchange in this competitive strategy.

Although the misrepresentation of buying preferences is a competitive tactic that can be used by the product-differentiated oligopolist, it seems to represent a suboptimal market strategy. While this firm could choose to misrepresent its product development preferences to confuse its rivals, this strategy would divert advertising resources away from other technologically based, product differentiation efforts. This unwanted effect could prove highly damaging to an IXC that produces nonstandardized services.[21]

Pricing Decisions of Interexchange Carriers

An IXC may produce standardized and nonstandardized services. Given this range of production, its pricing decisions often are problematic. However, some general limits can be placed on these business activities.

Similar to prices for monopolistically competitive services, prices for products and services provided by an IXC could be driven to marginal cost. What is required is an appreciable number of buyers who make no differentiation between the services of multiple sellers at going prices.[22] Price competition then would have the potential to lower prices to perfectly competitive levels. When this occurs, each IXC would sell a variable amount of its services at the existing price. This demand curve may be represented as one with a plateau at some price.[23] The problem, of course, is whether demand curves with plateaus exist. Empirically, it is evident that not every oligopolist operating in a noncontestable market is faced with this type of market demand curve. Moreover, even if such demand curves do exist, there is still the problem of locating the plateau.

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[21] It seems that false product development signals could be used more effectively by monopolistically competitive firms seeking to confuse their rivals. In this way, they obtain a tool that may be used against firms that engage in market research activities.

[22] A. J. Nichol, "The Influence of Marginal Buyers on Monopolistic Competition," *Quarterly Journal of Economics* XLIX (1934-35): 121-35.

[23] G. Warren Nutter, "The Plateau Demand Curve and Utility Theory," in Briet and Hochman, eds., *Readings in Microeconomics*, 248-252.

But just as easily, prices for products and services provided in the interLATA market could approach those charged by an uncontested and unregulated natural monopolist. Each profit-maximizing IXC has the option of restricting its output to a level where marginal revenue equals marginal cost and then setting a price that is consistent with its customers' willingness to pay. Normally, this price is greater than marginal and average costs, absent regulation affecting either prices or profits. If these IXCs use dissimilar production processes, then there is no guarantee that each firm would produce approximately the same amount of services. As a result, the market demand curve would contain a "kink" in the neighborhood of the market equilibrium output level. That is, several marginal-revenue/marginal-cost equalities would be consistent with meeting this market demand efficiently.[24]

Ample opportunities also exist for some middle-of-the-road prices to be charged by an IXC. But it is problematic as to which prices will emerge because different competitive processes suggest different sets of prices. Take, for example, competitive efforts between approximately equal firms attempting to best each other in a winner-take-all contest for interLATA traffic. In an unregulated market, the winner would be free to charge prices above the perfectly competitive levels. Now consider the hypothetical and unlikely competitive process where profits and other benefits are shared among the IXCs. There are only relative winners in this regard, and therefore, there are incentives for cooperation and coordination taken in hopes of maximizing collective profits. What is important about this competitive process is that it does not require the IXCs to collude with each other. What is required however is that each firm believes that it can earn superior individual profits by coordinating its actions with the other firms, and by cooperating with each other through mutually

[24] Henderson and Quandt, *Microeconomic Theory: A Mathematical Approach,* 233-35. The kinked-demand-curve solution applies to product-differentiated oligopolistic markets that exhibit infrequent price changes. It differs from the market-shares solution in the following respect: All price declines are followed in an attempt to maintain market share. However, a firm operating in oligopolistic markets with infrequent price changes does not follow another firm's price increases. This asymmetrical behavior is motivated by the belief that by declining to follow a price increase this firm will experience an increase in its market share.

advantageous partnerships. The emergence of this belief is what make this hypothetical competitive process unlikely.

Collusive Behavior by Interexchange Carriers

Whenever cooperation, coordination, and maximization of collective profits are characteristics of firms operating in noncontestable markets, the potential exists for tacit, overt, or covert collusive behavior.[25] However, the structure of these agreements will be influenced by the degree of product standardization.[26] Tacit collusion is more attractive when services are similar in their physical attributes. Price leadership then can fall to the firm with the potential to set the market price that will maximize joint profits. Overt or covert price agreements seem more efficient when important differences exist in the physical attributes of services. Price differentials then would represent easily identifiable quality differences between substitutes.[27]

Collusive agreements by their nature cause parties to them to incur monitoring and policing costs. These costs must be within predetermined bounds if a cartel is to be sustainable in the long run. Such costs, however, tend to be positively correlated with opportunities to violate the agreement successfully. Thus, tacit collusive price agreements are favored when price changes are immediately known to all rivals and retaliation can be immediate and effective.[28] Conversely, overt or covert agreements are preferred when price changes could be kept secret through special contracts offered selectively to particular buyers and sellers. But such agreements presumably would require the parties to divulge the prices, terms, and conditions of such contracts. Because this requirement is more difficult to monitor and verify by the cartel, there is an incentive among cartel members

[25] Horning, Lawton, Racster, Pollard, Jones, and Davis, *Evaluating Competitiveness of Telecommunications Markets: A Guide for Regulators*, 30.
[26] Ibid., 31.
[27] Ibid.
[28] Ibid.

to go "off-tariff" in an effort to closet the prices, terms, and conditions offered to special classes of consumers.

The preceding analysis implies that the competitive process will be stronger--that is, less collusive--in an interLATA market populated by IXCs that offer multiple nonstandardized services or products. This result suggests aggressive price competition by IXCs in the enhanced services market and the private line and private network segments of the interLATA market.[29] It also points to aggressive pricing policies in the special-contract-switched-services market segments populated by very large users of voice and data services. Furthermore, special contract rates (either Tariff 12 or off-tariff) might be associated with the realization that aggressive competition across all of the interLATA market segments could be damaging financially to IXCs including AT&T.

Effects of Excess Capacity on Interexchange Carriers

Investment decisions are an important source of growth for the interLATA market and the economy as a whole.[30] These decisions may increase productive capacity, change production processes, and provide the foundation for the introduction of new services. However, these decision may also contain an element of anticompetitiveness.

Recognizing the mitigating influence of uncertainty,[31] the potential for excess capacity rises as the proportion of fixed costs of production increases relative to the proportion of the variable costs of production.[32] An IXC, therefore, can avoid excess capacity by installing only enough capacity consistent with those levels of sales clustering around the declining cost portion of the lower region of its short-run, U-shaped marginal-cost curve. As shown in figure 2-1, production in this area

[29] Ibid., 33.
[30] John Maynard Keynes, *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace & World, 1964).
[31] Frank H. Knight, *Risk, Uncertainty and Profit* (Chicago: University of Chicago Press, 1971).
[32] John M. Cassels, "Excess Capacity and Monopolistic Competition," in Briet and Hochman, eds., *Readings in Microeconomics*, 225.

suggests that average fixed costs are still declining, thereby providing some leeway for unexpected growth in the demand for its services.

The level of investment and the selection of the production technology suggested in figure 2-1 should should be encouraged because excess capacity has no valid procompetitive purpose. Take, for example, Dixit's pronouncement of this subject. In combination with sunk investment, excess capacity represents a barrier to entry into an oligopolistic industry structure.[33] Its purpose is to act as a credible threat against potential entrants seeking to capture a portion of the incumbent IXCs' profits.

The deterrence mechanism is simple. The incumbents' cost of producing additional output is not encumbered by the unavailability of necessary production capacity. In a restricted sense, the necessary capacity is being offered free of charge. Therefore, the marginal production costs for these IXCs are low. On the other hand, a new entrant is encumbered by a capacity constraint. That is, it has to build facilities if it is to enter the interLATA market and produce the services that compete with the incumbents' services. As a result, its marginal production costs are high. Consequently, the incumbent IXCs are in the position to expand output and lower price whenever new firms enter the market. By releasing the pent-up demand in the interLATA market, the existing IXCs shrink market-wide profits, thereby reducing the new firms' profitability and maintaining their market shares.

Pricing Models for Interexchange Carriers

There are as many models describing the pricing behavior of an oligopolist as there are opinions about how this market functions. Most of these models emphasize the interdependence between the profits of these firms that is caused in part by firm-specific downward-sloping demand schedules, entry barriers, and exit barriers.

[33] Avinash Dixit, "The Role of Investment in Entry Deterrence," *Economic Journal* 90 (March 1980): 95-106.

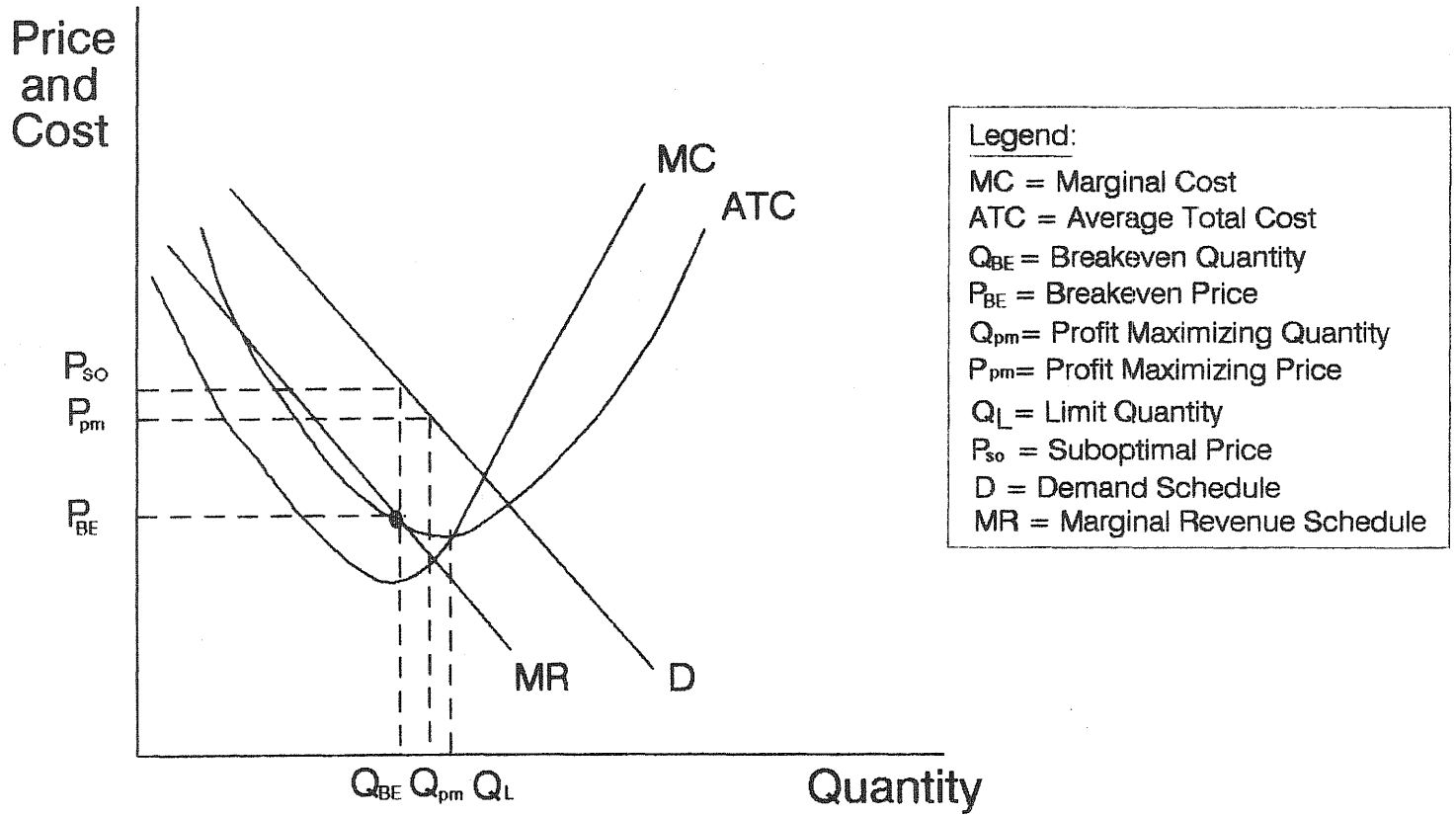

Fig. 2-1. Pricing flexibility associated with avoiding excess capacity.

In general, profit-oriented models of an oligopolist's pricing behavior can be placed into three categories. First, there are the characteristics of static-limit pricing behavior. Second, there are the attributes of dynamic-limit pricing behavior. Third, there are the implications of efficiency differences that may exist between firms. This last set of models gives less weight to the shape of the firm-specific demand curves and the ease of entry and exit.

Static-Limit Pricing

The opportunities for an IXC to engage in static-limit pricing are a function of the economic structure of its production process.[34] Large absolute cost advantages and an extensive region of declining production costs, or significant product differentiation have been identified by Bain as the most persuasive conditions for this type of pricing activity.[35] Take, for example, the combination of economies of scale and absolute cost advantages for a single-product IXC, if these economic attributes were assumed to exist.

Figure 2-2 describes the opportunities of a new market entrant. It is assumed that (1) the same demand curve is faced by the incumbent IXC and the new entrant, (2) the production technologies are the same, and (3) the incumbent firm has an absolute cost advantage over a new entrant due to favorable contracts with the suppliers of the factors of production. Given the relative positions of these curves, it follows that at the quantity Q^* and price P^* the new entrant does not have any profitable entry opportunities. However, the incumbent is able to earn supranormal profits (that is, price above average cost and marginal cost) because of the location of the market demand curve.

[34] Assuming the incumbents act to maintain their market share in the face of actual or credible potential entry, limit pricing is defined as the highest price that deters all forms of entry.

[35] Joseph Bain, *Barriers to New Competition* (Cambridge: Harvard University Press, 1956).

But, what if the incumbent IXC is not fortunate enough to enjoy these market circumstances? Could it still continue to earn supranormal profits in the face of potential entry? The answers to these questions depend on the psychological and economic relationships between firms. Spence[36] and Stiglitz[37] have concluded that an incumbent's reputation for forceful price cutting, after actual entry has occurred, could prevent potential entrants from seeking their share of supranormal profits.

The restraining economic condition on Spencian market-closing behavior is that the incumbent IXC's lost profits due to price cutting are no greater than the reduction in its profits that would occur due to the profitable entry of a new firm.[38] Figure 2-3 describes this situation. Once again, it is assumed that the incumbent firm has an absolute cost advantage over the new entrant. In this instance, however, this cost advantage does not rule out profitable entry if the incumbent continues to charge price P^* for output Q^*. Instead, to foreclose market entry by the new firm, the incumbent IXC would have to set a price slightly below to P_{SL} to sustain its production of output Q^*. Hence, the established IXC experiences a profit reduction. Its magnitude is equal to the profit impact of the actual entry by a new firm. Consequently, an incumbent IXC can forestall the entry of any firm that does not believe it can overcome the incumbent's absolute cost advantage. The incumbent IXC in this instance could prevent entry by setting a price equal to P_{EP} and producing the output quantity Q_{EP}. An existing IXC, however, cannot stop a potential entrant that is not burdened with a preordained cost disadvantage. An entrant of this type has every incentive to compete vigorously in the market, especially when the incumbent's cost advantage is eliminated only after the new entrant obtains a predominant share of the market.

Figure 2-4 explains why a new firm cannot be prevented from entering the interLATA market even when it experiences a severe cost disadvantage at low levels of output. Although at low levels of output the new entrant

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[36] Michael A. Spence, "Entry, Capacity, Investment and Oligopolistic Pricing," *Bell Journal of Economics* 8 (Autumn 1977): 534-44.
[37] Joseph E. Stiglitz, "Technological Change, Sunk Costs and Competition," *Brookings Papers on Economic Activity* 3 (1987): 883-937.
[38] Richard J. Gilbert, "The Role of Potential Competition in Industrial Organization," *Journal of Economic Perspectives* 3 no. 3 (Summer 1989): 110.

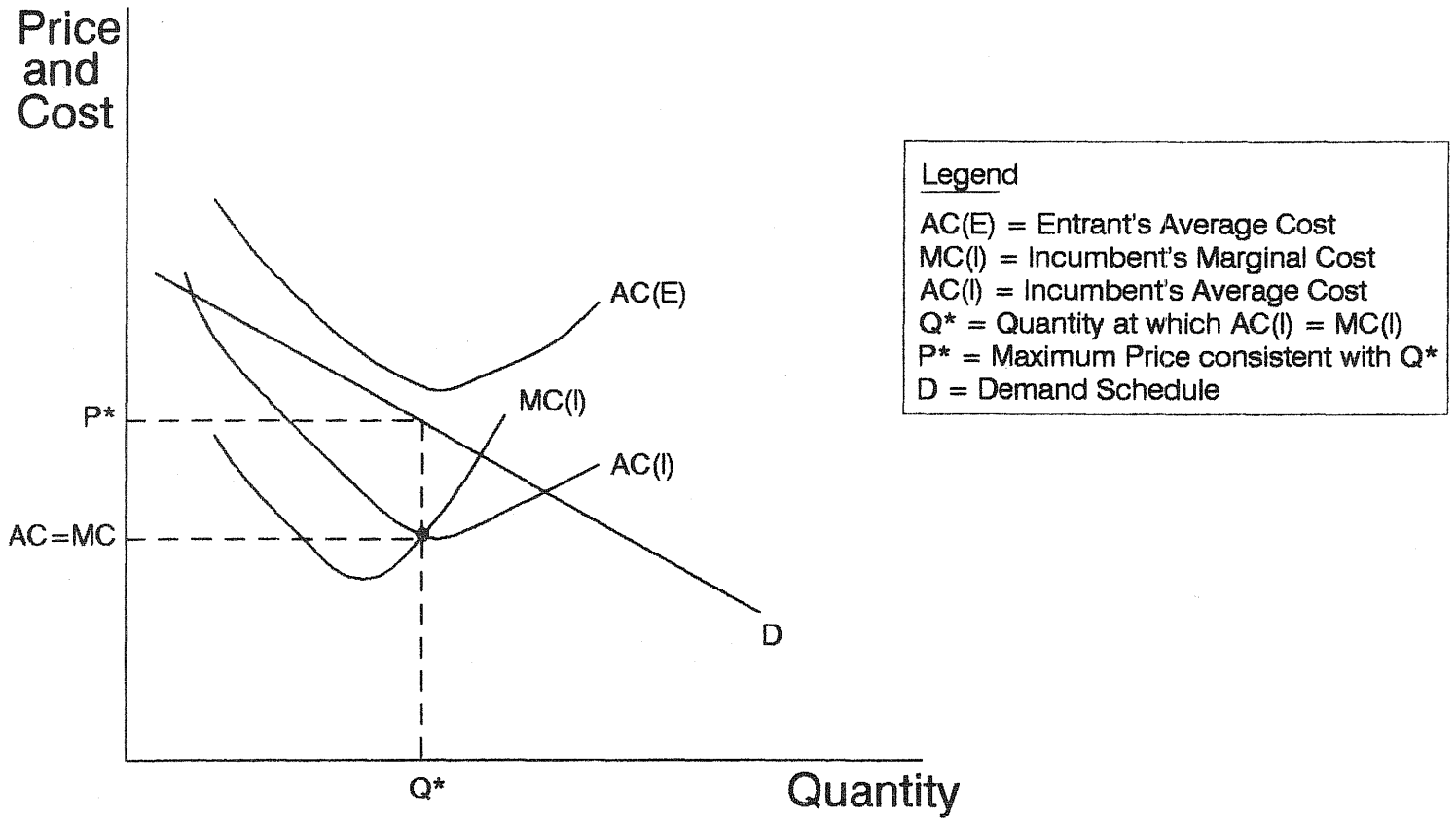

Fig. 2-2. Static limit pricing as a function of cost structures and demand schedule.

Note: Adapted from R.J. Gilbert, supra n. 38, 109.

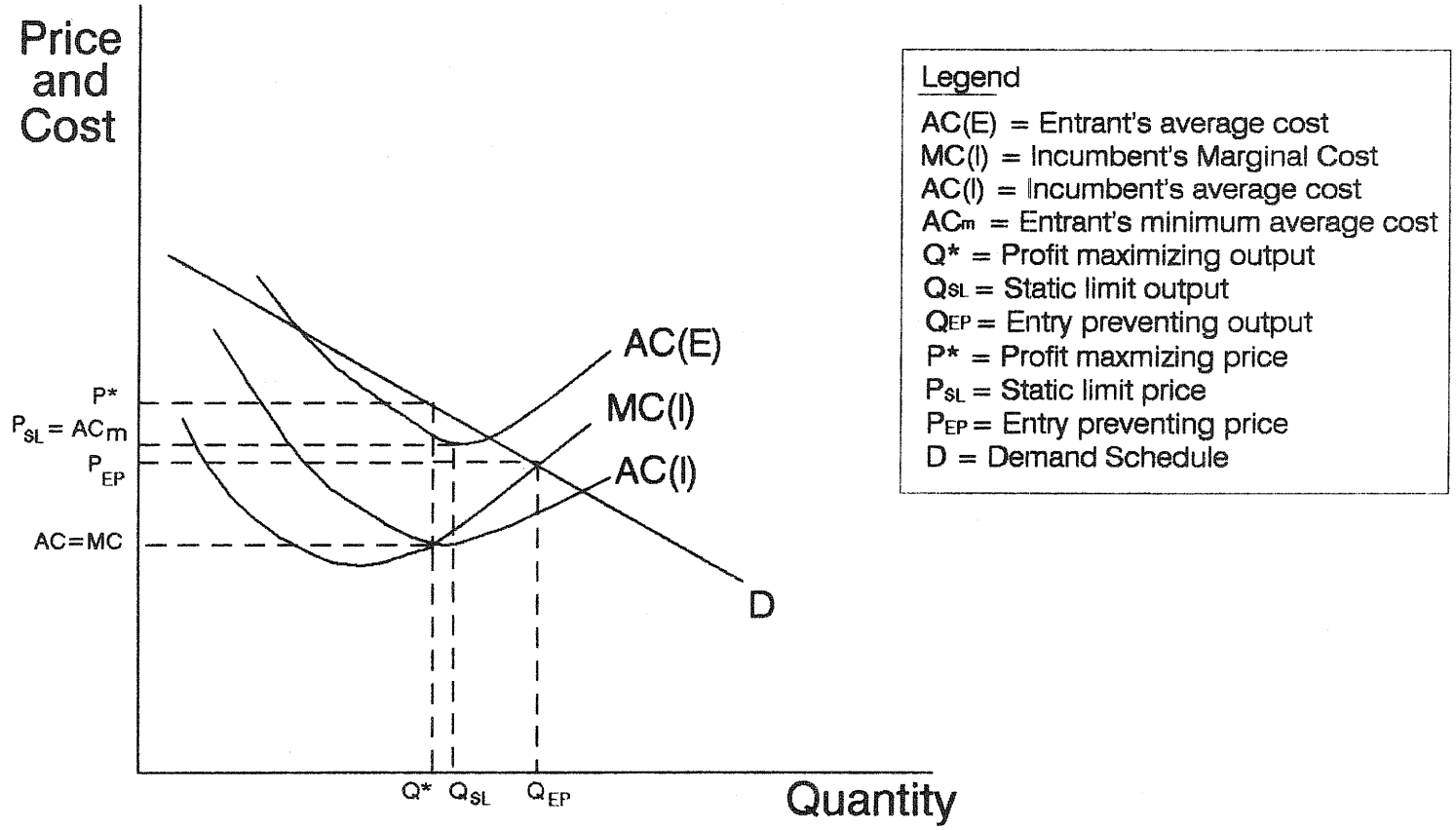

Fig. 2-3. Static limit pricing: profit loss incurred to foreclose entry.

experiences negative economic profits (that is, at production levels below Q_T^* with the market price set at P_I^* by the incumbent), it begins to experience less-negative economic profits as its output increases beyond this level. As drawn in figure 2-4, the new entrant maximizes its profits at Q_E^* and P_E^* which results in more consumption and lower prices for consumers.

Given this particular configuration of cost schedules, the incumbent IXC loses its absolute cost advantage when the new entrant's production exceeds Q_I^*. At this point, the established IXC is presumed not to be able to match the cost structure of the new entrant through various cost-cutting activities. Hence, in principle, an incumbent IXC could be displaced entirely by a new entrant as long as the new entrant is able to continue to drop prices and increase output in pursuit of profit maximization.[39] But this result may never occur because an unregulated IXC would have earned supranormal profits and the investment decisions of the regulated IXC would have been directly and indirectly constrained by regulation. When faced with potential elimination of the regulated IXC, most regulators are apt to permit this firm to deploy the technology that has put it at a disadvantage. Consequently, this particular IXC has at least the potential to establish parity between its cost structure and that of the new entrant. Moreover, the regulated IXC will be permitted to set prices that give it an opportunity to recover this investment. As far as the unregulated IXC is concerned, its past supranormal profits provide it with the wherewithal to deploy the new technology and to take the necessary writeoffs.

Still, the potential to create parity and the actual creation of parity by a threatened IXC are two different things. Figure 2-5 describes a cost configuration where it is not possible for a regulated or unregulated IXC and the new entrant to share that market at any price. As suggested in the

[39] As shown in figure 2-4, the new entrant drops its price below P_I^{BE} causing the incumbent to incur "negative" profits for the first time. This profit loss continues until the new entrant reaches a the price P_E. If the incumbent remains in the market, then consumers gain a windfall as prices are depressed below what they would be willing to pay with competition. However, society is suffering a loss since investment is returning less than its cost. Such a situation is apt to occur if the incumbent's investments are irreversible and nonfungible. That is, it cannot be salvaged, and it cannot be put to alternative uses.

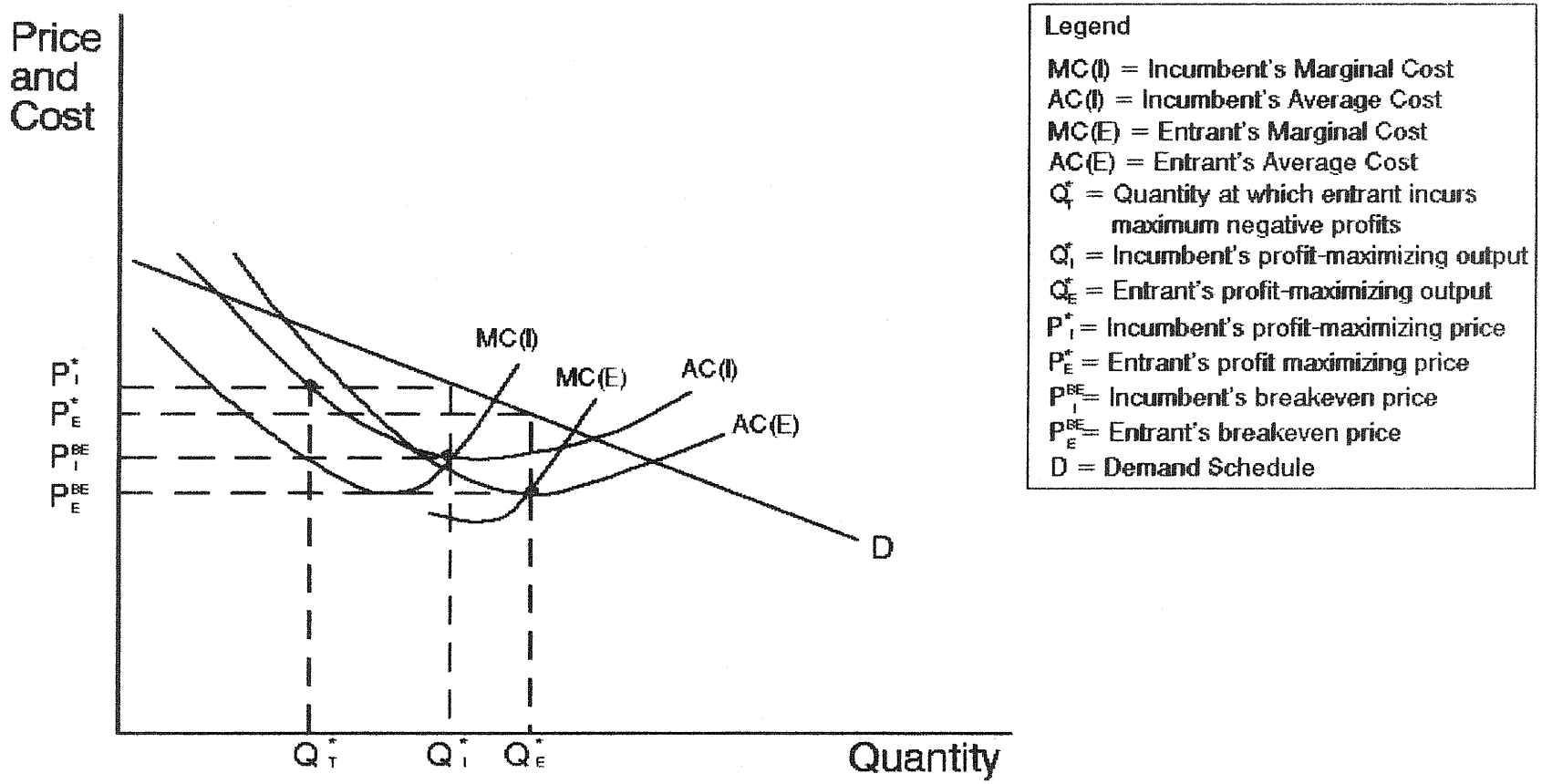

Fig. 2-4. Inability of static limit pricing to foreclose entry or eventual displacement of incumbent when incumbent does not replace technology.

preceding paragraph, this IXC has replaced its technology. It also is assumed that the IXC is willing to write off its obsolete investment if necessary for the creation of price parity. Hence, the established IXC has the same cost schedules as the new entrant. Thus, both firms would prefer to produce at Q^* and set price equal to P^*. But this strategy implies that one of the firms would have to be eliminated from the market given the market demand schedule, **D**.

Since elimination from the market is a drastic and costly event, assume that each firm tries to survive by producing one-half of Q^* and charging a price equal to P^*, which is assumed to be the price that forced the incumbent regulated or unregulated IXC to change its technology. But as shown in figure 2-5, this price and output combination is not sustainable. Both firms are incurring economic losses because price P^* is less than the average cost of the existing IXC and the new entrant.

The procompetitive solution to this dilemma is for both firms to attempt to increase output and lower their costs. But this strategy leaves the incumbent IXC, the new entrant, or both with excessive inventories since the market demand will not support production by two firms in excess of one-half Q^* at price P^*. Hence, one firm eventually must leave the market if no firm is to incur economic losses and one firm is to maximize profits.

Figure 2-6, on the other hand, reflects a cost configuration that allows both firms to share the market equally at price P^*. Fortuitously, the new technology utilized by both firms implies average cost equal to P^* at firm-specific output levels of one-half Q^*. But unfortunately, this price and output combination is not stable under a procompetitive assumption. Either firm could increase its profits by increasing its output and lowering its price accordingly, if the other firm does not respond. But these profits evaporate and excess inventories emerge if the other firm does respond.

This discussion of static-limit pricing suggests that its successful application in the interLATA market rests on differences in the cost structures of IXCs and the responses of the incumbent IXCs to actual entry. Can a static-limit pricing model deter potential entrants? The answer to this question depends on how potential entrants view the fates of those that preceded them.

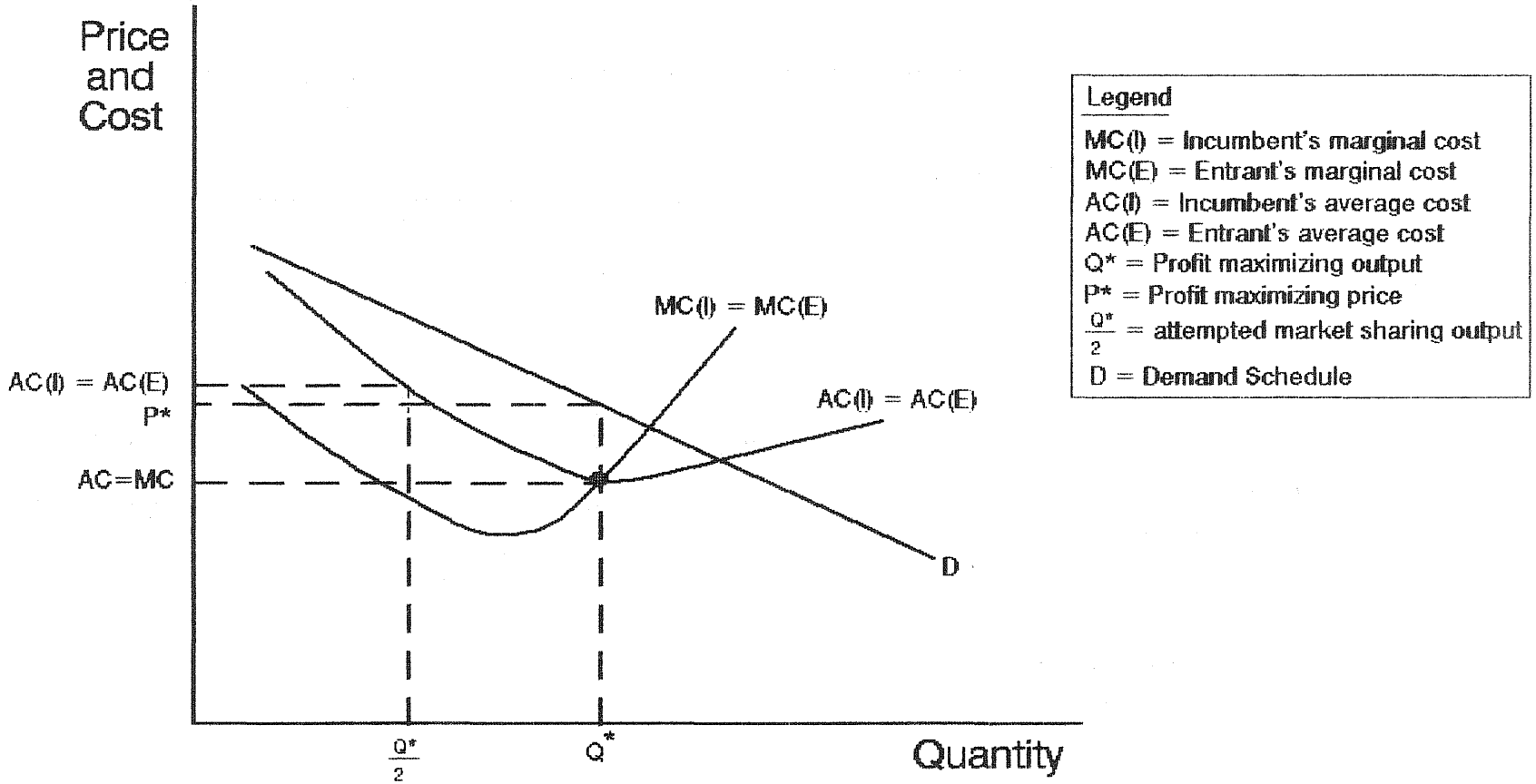

Fig. 2-5. Market sharing not possible after incumbent replaces technology: either incumbent or entrant eliminated from market assuming no collusion.

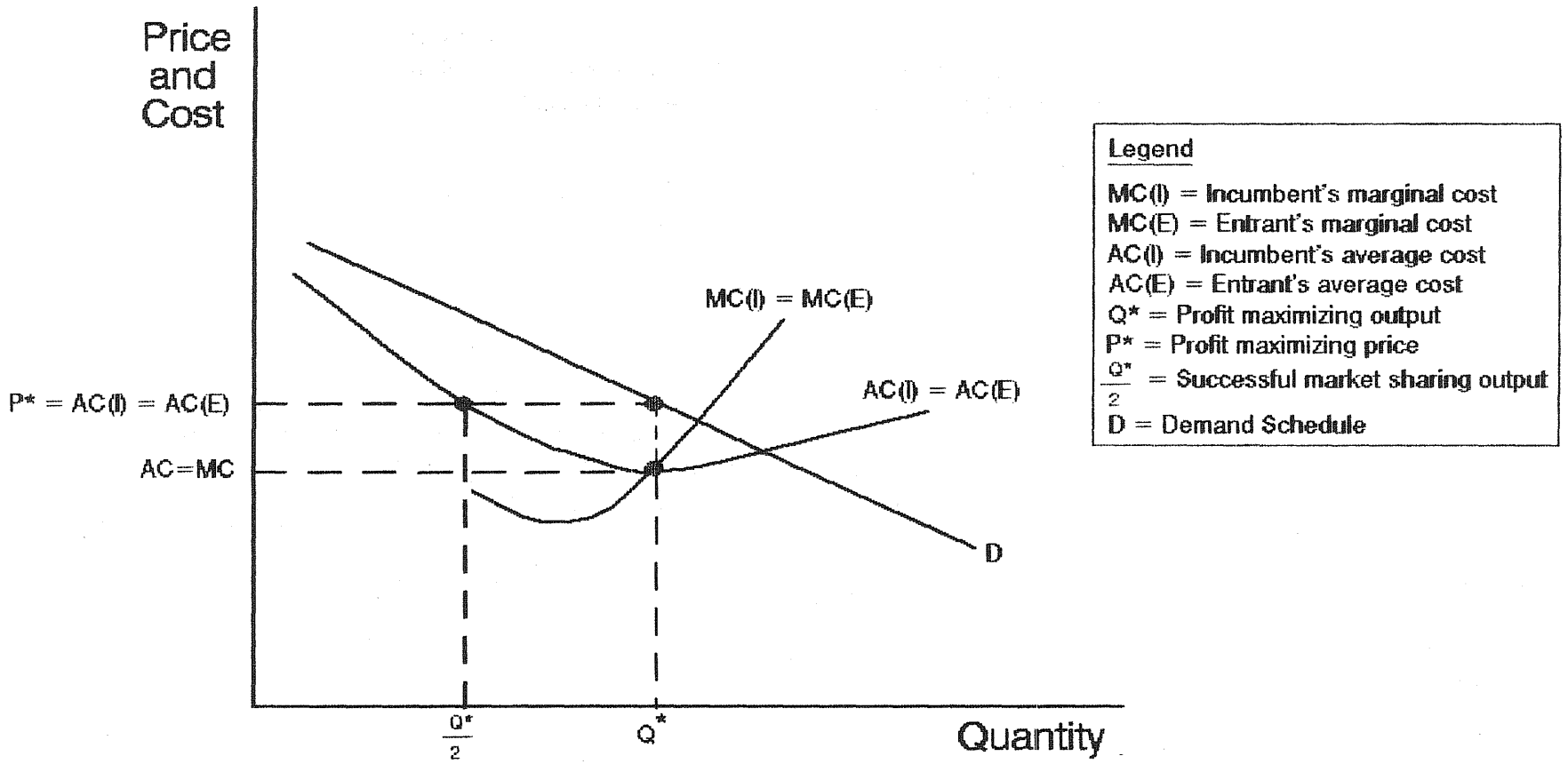

Fig. 2-6. Market sharing possible after incumbent replaces technology.

If the potential entrant is myopic, then the ill fortunes of other firms will not affect its entry decision. Consequently, static-limit pricing will not deter entry if the incumbent unregulated IXCs persist in trying to earn the supranormal profits associated with P^* and Q^* of figure 2-3. Firms will continue to enter and they will continue to be driven out shortly thereafter. Therefore, potential entry can be deterred only by setting price slightly below P_{SL}--say at P_{EP} of figure 2-3 where price equals marginal cost and output equals Q_{EP}.[40] However, the incumbent IXC is producing inefficiently at Q_{EP} because marginal cost is greater than average cost.

Although myopia by the potential entrants implies that static-limit pricing will not deter entry if an unregulated IXC wants to earn maximum supranormal profits, these profits can be maintained by the incumbent if potential entrants act perceptively. That is, they realize that actual entry will be unprofitable even though such entry appears profitable at current prices.

But what about the regulated IXC? In terms of figure 2-3, any price set by regulators will be an effective static-limit price. As long as output exceeds Q^* and price is less than P_{SL} every new entrant with the assumed cost structure more costly than the incumbent's cannot be profitable.

Dynamic-Limit Pricing

Static-limit pricing, if effective, implies that potential entrants in the interLATA market either will plunge in wholeheartedly or refuse entry altogether. This all-or-nothing characteristic is caused by the cost structures of the incumbent IXCs.[41] Assume, contrarily, that the existing IXCs neither produce in the declining region of their average cost curves,

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[40] Steven Salop, "Strategic Entry Deterrence," *American Economic Review* 69 (May 1979): 335-38; and Paul Milgrom and John Roberts, "Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis," *Econometrica* 50 (March 1982): 443-59.

[41] Richard J Gilbert, "The Role of Potential Competition in Industrial Organization," *Journal of Economic Perspectives* 3 no. 3 (Summer 1989): 110.

nor have an absolute cost advantage over their potential rivals. As Figure 2-7 shows, a potential entrant has a range of expected profits dependent only on its cost structure. In this figure, the range extends from P to P_2. Yet this is only an expected profit range because it rests on the assumption that the potential entrant does not anticipate any cost cutting by the incumbent IXCs.

If, however, the incumbent anticipates the new entrant's business assumption, it can reduce the pool of potential entrants by reducing the size of the expected profit range, say to between P^* and P_2. In this way, potential new entrants with more profitable alternative uses of capital will be discouraged. However, this pricing strategy cannot eliminate all entrants. Some firms will be encouraged to attempt entry even at price P_1, which represents the minimum, dynamic-limit price available to the incumbent. Assuming one such entrant, it could produce goods and services equal to Q^* and earn supranormal profits by setting its price between P_1 and P_2. This firm may compete in this manner because of different supplier contracts, low administrative and overhead costs, focus on a geographic segment of the market, or use of different technology. Moreover, a firm of this type could, in principle, displace the incumbent entirely. It should be recognized, however, that a price between P_1 and P_2 implies excess demand, which would entice additional new entrants with similar cost structures into the interLATA market.

The application of a dynamic-limit pricing strategy guarantees that an unregulated IXC's supranormal profits ultimately will decline to zero when this firm faces a new entrant that has an absolute cost advantage at some prespecified output level. This price spiral identified by Geroski is caused by the incumbent's inability to prevent entry merely through alternative pricing strategies.[42] Instead, the entry has to be prevented through various product differentiation mechanisms such as customer loyalty or significant switching costs incurred by consumers of the incumbent's services.

[42] Paul Geroski, "Do Dominant Firms Decline?," in Donald Hay and John Vickers, eds., *The Economics of Market Dominance* (Oxford: Basil Blackwell, 1987).

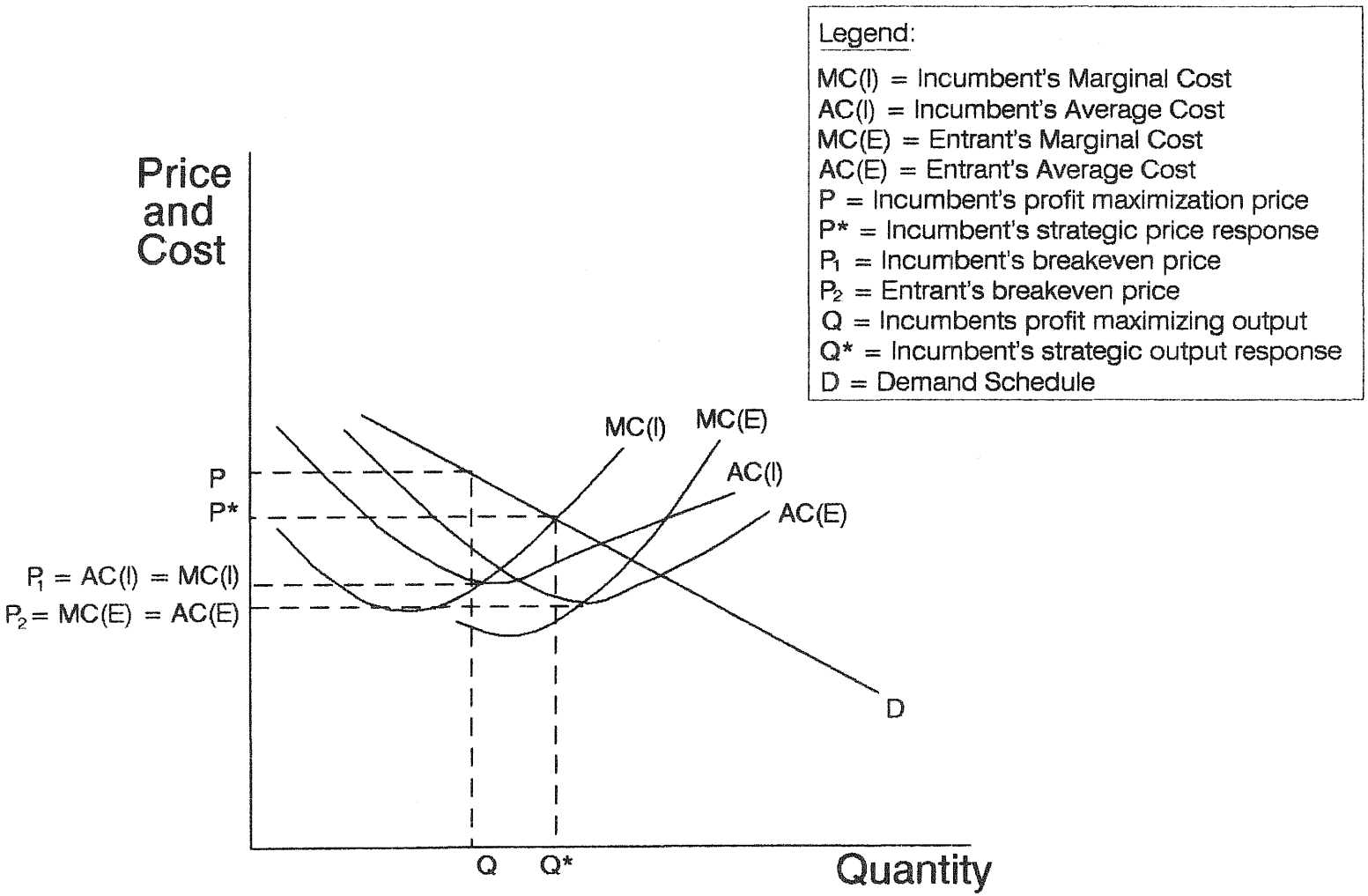

Fig. 2-7. Eventual demise of incumbent under dynamic limit pricing: (no change in incumbent's technology).

The situation is not much different when the IXC is regulated. Assuming this firm produces an output level approaching Q from below, this firm will set its price at least as high as P_1 and no higher than average cost. As depicted in figure 2-7, a new entrant cannot enter profitably unless it can sell an output greater than Q. Given the location of the market demand curve, there is excess demand at each regulated price greater than P_1. Hence, the new entrant may find entry profitable at some price less than P_1 and greater than P_2. Consequently, dynamic-limit pricing in the regulated context may result in market sharing at price P_2 where the regulated firm earns zero economic profit and the unregulated firm earns supranormal profit.

Market Efficiency Differences

Opposing these market imperfection approaches, the market efficiency analysis indicates that successful firms emerge in an oligopolistic interLATA market because they are more productive and better organized than their actual or potential rivals. For example, these firms, if unregulated, may earn supranormal profits because they use a superior technology to produce their services.[43]

The market-efficiency description of an oligopolistic market attributes less emphasis to the roles that entry and exit barriers have played in the evolution of the interLATA market.[44] Consider, for example, the definition of an entry barrier that is consistent with a market efficiency explanation of the evolution of an industry. An entry barrier exists only when a potential entrant must incur costs of producing the relevant services that are not incurred by the incumbent.[45] Accordingly, costly technologies may not represent a barrier to entry as long as they are readily available to

[43] George J. Stigler, *The Organization of Industry* (Homewood, Illinois: Richard D. Irwin, 1968).
[44] Harold Demsetz, "Barriers to Entry," *American Economic Review* 72 (March 1982): 47-57.
[45] Stigler, *The Organization of Industry*.

new entrants on the same terms and conditions offered to incumbent firms.[46] Moreover, costs incurred to develop customer loyalty, or to impose switching costs on consumers, do not qualify as entry barriers because they must be incurred by incumbent IXCs and new entrants alike. But risk-related differences in the deployment of readily available technologies would represent an entry barrier under the market efficiency approach to optimal pricing.

Market efficiency explanations of an oligopolistic interLATA market have some things in common with static-limit pricing explanations of these same markets. Superior performance on the part of the incumbent IXC, regulated or unregulated, suggests that this firm has an absolute cost advantage over its potential rivals. Whenever this cost advantage disappears, a potential entrant becomes an actual rival. This transformation from potential to actual rival occurs because even a declining-cost IXC cannot foreclose entry as it attempts to maintain its market share. Consequently, an incumbent's existing per-unit average cost is not a deterrent.

Gilbert has suggested that the essential difference between a market efficiency barrier and a static-limit pricing barrier is whether the incumbent firm can communicate a credible threat to the potential entrant.[47] However, such a threat is irrelevant to an evolving interLATA market subject only to dictates of superior performance. Potential entrants would expect at the time of entry that they have the capability to outperform a regulated or unregulated incumbent. This "knowledge" could prove to be correct or incorrect. Therefore, the interLATA market would see either successful or unsuccessful entrants with only *ex post* explanations of why any particular firm experienced a particular fate.

[46] Richard J. Gilbert, "The Role of Potential Competition in Industrial Organization," *Journal of Economic Perspectives* 3 no. 3 (Summer 1989): 113.
[47] Ibid.

Competitive Behavior by Interexchange Carriers

Several different tactical and strategic behaviors are consistent with the features of the three models of oligopolistic pricing just discussed for the interLATA market. Hence, the character of an uncontested oligopolist in this market is hidden beneath a mass of fluid business decisions and changing corporate objectives. However, the ambiguity associated with this type of firm is not random. As a result, this apparent analytical drawback provides some direction for developing the outer boundaries of the behavior of IXCs.

The Dominant Interexchange Carrier

A dominant IXC controls the behavior of all of the other firms in the market.[48] This control may take the form of restraints on investment in, and output of, or prices for, interLATA services. Usually this control is viewed as reducing economic welfare because it causes the misallocation of resources between the interLATA market and other markets. Consider the case when a dominant and unregulated IXC provides a price umbrella for its rivals.[49] Inefficient firms may populate the market because their entry and profitability have been made possible by the supracompetitive profit being earned by the dominant firm. Similarly, a dominant and regulated IXC may provide a price umbrella for inefficient competitors when it is forced to price its services according to the judgmental decisions of regulators rather than the judgmental decisions of its management. In either case,

[48] What a dominant IXC does not necessarily do is outperform the other IXCs operating in the interLATA market. Such activity is more rightly described as superior performance under a market-efficiency pricing model. Consequently, the so-called dominant sport figure is not an appropriate analogy for describing the behavior of a dominant firm. The former should be delineated as superior because this individual is simply better than the others in the field.

[49] In this context, a price umbrella is defined a set of prices that is greater than marginal cost plus the entry costs facing a new entrant. Therefore, a price umbrella implies prices that are greater than average incremental cost for the multiple-product firm and average cost for the single-product firm.

market-wide investment and prices are above optimal levels while market output is problematic in terms of economic optimality. Now consider the case where the dominant firm, regulated or unregulated, sets prices for its services below average incremental costs when it is a multiple-product firm or below marginal cost when it is a single-product firm. In this instance, efficient firms can be driven from the interLATA market, implying a market-wide underallocation of investment and overallocation of labor and other variable expenses. Moreover, there will be overconsumption of the underpriced interLATA services.

Although the effects of market dominance are not difficult to imagine, they are difficult to discern because they are not readily observable. The foremost technical problem is that it is extraordinarily difficult to identify and separate efficient rivals from inefficient rivals. The foremost policy problem is that an unambiguous definition of a dominant firm does not yet exist.

In any event, two equally problematic approaches may be taken in an attempt to determine whether an IXC is dominant or nondominant in a noncontestable market.[50] The first approach requires proof that a particular IXC can influence the price and output decisions of its rivals across a broad spectrum of market segments without being disadvantaged by the responses of its rivals.[51] In technical terms, a dominant IXC can act consistently with the requirements that it is not concerned about how it would, should, or could react to the initiatives of its rivals. Such a proof is obtainable via a direct investigation of the IXC's potentials and capabilities.

[50] The lack of contestability merely means that each firm in the market is not obligated to price its services at least equal to marginal costs and to earn a premium no greater than the difference between average cost and marginal cost when the firm operating in a contestable market is a natural monopolist. It does not mean that one firm must dominate all other firms in a noncontestable market. Thus, this method for determining market dominance rests on direct investigation of the capabilities of the dominant firm's rivals.

[51] For a single-product firm operating in a market without any segments, this condition can be reduced to the ability of a particular firm to influence the price and output decisions of its rivals without fear of recourse from its less-advantaged rivals.

A defensible way to begin this task is to assert that the allegedly dominant IXC reaches its decisions by believing that it can meet its business objectives by anticipating and estimating its rivals' reactions to its unilateral business decisions. That is, this IXC is unconcerned about the behavior of its rivals because it knows what the reactions of its rivals to its decisions will be. Moreover, this IXC believes that its rivals will never take independent action against it on the price or output fronts because this particular IXC can counter all such actions by responding to the initiating event and then estimating its rivals reactions to its response. Therefore, this IXC maximizes its profits or meets any other corporate objective (such as increasing market share) by determining analytically how its rivals adjust their output in reaction to its price and quantity decisions. While every firm would like to be able to do this, few are in the position to convert this desire into a reality.

The second approach requires a determination that the rivals of an allegedly dominant IXC are too weak to affect that firm's price and output decisions. Because such firms are price-takers at the market level, their market output is determined wholly by the price and output decisions of the dominant firm. Therefore, these firms have no option but to exit the market after a period of sustained losses whenever they cannot cover their total costs at prices set by the dominant firm. If these firms elect not to exit the market after sustained losses, they must have at the least the expectation of breaking free from the bonds of price leadership currently being placed upon them by a rival firm. Hence, the price-leading firm is not necessarily dominant. In this instance, the existence of dominance is dependent upon how the price-following firm expects to break free. For example, dominance is indicated if the price-following firm expects to see its pricing flexibility improve because of a regulatory, legislative, or judicial decision that eliminates the dominant IXC's control over a factor of production. Similarly, dominance is indicated if an expected technological change will accomplish the same result. However, nondominance is denoted when the price-lagging firm sees an improvement in its competitiveness as it increases its market share because of its expected efforts in the areas of price and service competition.

A variant on this second approach is to assert that the rivals of an allegedly dominant IXC would prefer to behave *as if* they were operating in a

perfectly contestable interLATA market and were as a result competing against other contested IXCs. These rival firms then would be expected to produce those levels of output that equate their marginal costs to the market price. This behavior would result in zero economic profit when the interLATA market evolves to a sustainable industry configuration and each rival IXC expects to recover its total cost and no more.[52] Therefore, a particular IXC may dominate the interLATA market when a set of implementable behavioral rules cannot be devised by a market overseer that causes every firm in the market to attain financial viability at prices equal to marginal cost. However, an actual finding of market dominance would require that one and only one firm in the market exhibits this characteristic. If more than one firm blocks the attainment of a set of behavioral rules, implying profitability for all firms at a price equal to marginal cost, then no firm in the market is dominant because there exist multiple firms capable of affecting the investment, price, and output decisions of other firms in the market. Whereas the first variant of this approach to discovering market dominance relied on the direct investigation of the capabilities of the dominant firm's rivals, this variant requires a direct analysis of the capabilities of all firms in the market.

Notwithstanding the approach taken for determining the existence of a dominant firm, the critical issue is how the market price is set over time.[53] If an IXC is dominant, it does not have to resort to profit-reducing and output-increasing pricing strategies to maintain its interLATA market position. Because it controls the growth and profitability of its rivals, this firm is not motivated to follow either the static or dynamic forms of limit pricing.

Consider first the expected effects after an IXC, regulated or unregulated, has adopted a strategy of static-limit pricing. Its motivation is fear about its rivals' growth over time. Because this IXC expects its rivals to grow and believes that the actual rate of growth is a function of its profit or price level, the incentive is for this firm to reduce its prices to the lowest levels consistent with its corporate objectives. What

[52] Baumol, Panzar and Willig, 317.
[53] Horning, Lawton, Racster, Pollard, Jones, and Davis, *Evaluating Competitiveness of Telecommunications Markets: A Guide for Regulators*, 34.

causes the IXC to follow this costly pricing strategy is the perception, strongly held, that actual and potential rivals can displace it from the marketplace by deploying a new production technology, or changing suppliers, or changing important institutional relationships such as the existing form of regulation.

Now consider the effects of a dynamic-limit pricing strategy. Gaskins has shown that this criterion can produce the largest present value of an expected stream of profits.[54] But because the objective function contains expected profits, the IXC necessarily believes that it is subject to some degree of risk. Therefore, this IXC recognizes that the equilibrium set of dynamic-limit prices is affected by the choice of the interest rate used to deflate future expected profits.[55] Since the rivals of this IXC are assumed to be challenging its market and profitability positions, the selection of low discount rates implies that this firm is willing to accept aggressive entry strategies by potential rivals and aggressive expansion plans by actual rivals. Such market behavior is defensible only when the IXC is currently earning supranormal profits as a result of relatively high entry barriers confronting new firms. That is, the IXC is unregulated. But this pricing strategy is not defensible when the IXC is regulated. Instead, it is apt to select high discount rates and respond adversely to aggressive entry and pricing strategies by new and existing firms. Hence, high entry barriers into the interLATA market in and of themselves are not sufficient to indicate market dominance. A firm operating in this market is apt to find itself having to choose between rapidly declining and slowly declining prices for interLATA services.

Collusive Interexchange Carriers

There is a dark side to dynamic-limit prices when practiced by an IXC in the noncontestable interLATA market. Besides permitting the IXC to set

[54] Darius W. Gaskins Jr., "Dynamic Limit Pricing: Optimal Pricing Under Threat of Entry," *Journal of Economic Theory* 2 (September 1971): 306-22.
[55] Higher interest rates imply higher limit prices in any of the model's periods. Lower interest rates imply lower prices.

prices for its services at levels that attempt to manage the rate of entry into the marketplace, the expected evolution of the interLATA market sets the stage for a shake-out of firms. High-operating-cost, easy-exit rivals may not be able to survive after the high margins associated with any early dynamic-limit prices in the interLATA market are exhausted. On the other hand, low-operating-cost, difficult-exit rivals may not enter this market in sufficient numbers because they cannot obtain financing for the significant sunk and fixed costs associated with the interLATA market.[56] Therefore, at the very least, the new market structure is apt to be populated by low-operating-cost, high-fixed-cost, difficult-to-exit IXCs, thereby establishing preconditions for collusive behavior.

While the industry configuration arising after several rounds of dynamic-limit pricing strategies is expected to exhibit weak price competition between IXCs because most of the market inefficiencies have been eliminated, this new configuration could face strong incentives to coexist comfortably at relatively high profit levels. What can cause uncontested IXCs to begin acting as friends rather than as enemies? The realization at the close of a round of dynamic-limit pricing that by acting in concert they can control virtually all pricing, output, and new services decisions.

Reaching this realization is the primary roadblock to any effort to form a cartel. Because the preceding round of dynamic-limit pricing must have precluded new entrants and must have been perceived as damaging by all of the firms remaining in the market, no IXC can believe that its pricing strategy was successful. That is, an IXC cannot perceive that it has benefited at the expense of its existing rivals. If such a result did occur, then no form of collusion can be expected to emerge. Instead, there would be continued episodes of price competition among existing firms.

To illustrate this point, consider a monopolist having to deal with a new firm that has selected a similar production technology. The entrant could engage in direct combat with the incumbent or both firms could agree to maximize profits jointly. From the incumbent's perspective, the joint maximization of profits is a preferred alternative after it has experienced

[56] Kenneth L. Judd and B. Peterson, "Dynamic Limit Pricing and Optimal Finance," *Journal of Economic Theory* 39 (1986): 368-99.

a severe financial setback as a result of market entry. But, from the new entrant's perspective, this option is not likely to be selected at this point in time because the new entrant has just been wildly successful.

Noncollusive Interexchange Carriers

The dominant IXC, by definition, does not collude. This firm controls the market; therefore, it only can lose profits or market share by colluding. However, collusion can be a viable alternative for an IXC that is not dominant. To show this, assume that some IXCs can improve their profitability and minimize their costs by coordinating their activities. Then the existing configuration of firms in the interLATA market could not have been optimal because costs are too high and profits are too low; hence, collusion in place of optimality is a viable option.

Scherer has suggested that a dominant firm exists when its rivals are not able to influence market price through their output decisions.[57] By extension, a noncollusive, nondominant, IXC exists when its rivals can affect market price through their output decisions. What is important in this regard is each IXC's perception of when the number of firms in the interLATA market is large enough that its output decisions do not have an effect on market price. Scherer has suggested that this phenomenon occurs for any market for standardized services when there are at least ten to twelve firms.[58] Accepting this as representing the *minimum* number of firms in a monopolistically competitive industry, nine firms would represent the maximum for a nondominant, noncollusive set of oligopolists in the interLATA market. However, this benchmark does not place a lower bound on the number of firms in this nondominated oligopoly. Conceivably, as few as two IXCs

[57] Fredrick M. Scherer, *Industrial Market Structure and Economic Performance*, 2nd Ed. (Boston: Houghton Mifflin, 1980) 323. Scherer also proposes that the dominant firm must control at least 40 percent of the market. However, the appendage of market share to the definition of market dominance is superfluous economically. It does not make a difference in terms of market structure whether a dominant firm has 90 percent or 35 percent of the market. In either instance, the other firms in the market are controlled by the investment, price, and output decisions of this firm.

[58] Ibid., 199.

could decide not to collude because the costs of policing the arrangement were perceived as excessive in relation to the expected benefits.

The distribution of market shares has a role to play in determining the costs and benefits of collusion.[59] For example, assume that the distribution of market shares is used to allocate jointly maximized profits. Although this distribution of profits is not difficult to implement, it may not be accepted by all IXCs. Large or small IXCs earning above-average profits will be harmed by such a sharing rule. Moreover, small firms earning below-average profits still may want a larger share of the pie because they have in a sense given up the right and incentive to better themselves in relation to their rivals. Only those firms earning average profits would not be harmed by this rule, but they do not need joint-profit maximization to get what they already have. Another possibility is to let each IXC keep what it earns under administered prices. This rule would be acceptable to IXCs that earn above-average profits as a result of the price fixing. However, the rule would not be acceptable to those earning average and below-average profits.

While other more complicated sharing rules can be devised that might satisfy the competing claims of every IXC, they would cause the colluding IXCs to incur additional administrative costs. Moreover, these rules would have to be drawn carefully and enforced stringently because they are apt to provide an incentive for those IXCs with above-average profits to bury profits in additional expenses and investment that are thought to adversely affect rivals. Either activity increases the cost of collusive arrangement, thereby reducing the profits available to each firm.

[59] Market shares are not the controlling agents of market power because the degree of market power is not necessarily a function of the firm's market share. Consider two different industries where each industry has upstream and downstream markets. Firm **A** controls the price and output of a factor of production in the upstream market of the first industry. Assume this firm **A** also has a 40 percent share of the associated downstream market. As for the second industry, firm **B** has 60 percent of the downstream market. But in this instance, neither firm **B** nor any other firm controls the upstream market that produces an essential factor of production for the downstream market. Clearly, firm **A** has a more powerful market position in its downstream market than firm **B** in its downstream market, showing thereby that market share is not necessarily a determinant of market power.

The difficulties of convincing IXCs with above-average and below-average profits to agree may never be overcome. However, the complications caused by large IXCs wanting to retain their market shares and small IXCs wanting to increase their market shares quite naturally must disappear as market shares become more evenly distributed. That is, the smaller IXCs would not request a larger share of the profits in return for their pledge not to attempt to expand their market share at the expense of other firms. Thus, it appears that IXCs with evenly distributed market shares have more incentives to collude than oligopolists with uneven market shares.[60] But even assuming that every IXC earns average profits, there still would be incentive to avoid reporting profits whenever possible because the size of the pie is then the only important variable. Consequently, the policing and administrative costs associated with joint-profit maximization are not reduced as greatly as might have been expected initially.

Further support for the preceding conjecture emerges from the expected relationship between standardization of a service and the redistribution of market shares. As services become more standardized, consumers are expected to distribute their purchases more evenly across all firms in the market. Because standardized services also imply lower prices and fewer profits, IXCs may find it more profitable to collude since this activity may be successful in raising the total size of the profit pie. It needs to be noted however that existing antitrust laws make collusion illegal. Yet, as noted previously, the need to regulate an oligopolist indicates that antitrust laws cannot be relied upon to prevent anticompetitive behavior.

Conclusion

Price competition among nondominant IXCs cannot generate the results of perfect competition or perfect contestability. Although a successful

[60] From a different perspective, joint-profit maximization becomes more attractive as the absolute value of profits distributed to all firms in the agreement increases. This apparent relationship implies that collusion is a more likely event as the number of firms decreases, prices decline, and the market shares of each of these firms approaches that of the other.

application of static-limit pricing keeps out inefficient competitors, increases output, and lowers price, it may permit unregulated IXCs to earn supranormal profits. By extension, successful static-limit pricing in an unregulated market is consistent with overinvestment, excess capacity and X-inefficiency for the IXC. While dynamic-limit pricing allows the growth of rivals, it can permit inefficient firms to enter the market. Additionally, some of the unregulated IXCs can earn supranormal profits as they ratchet down their prices. The regulated IXC has a greater incentive to invest unnecessarily in its network whenever the unregulated IXCs slowly ratchet their prices down. Conversely, the regulated firm has fewer incentives to invest in the network when it or its unregulated rivals ratchet prices down more quickly to abort further attempts at market entry.

Unfortunately, it is not easy to identify the attributes of price declines occurring in the interLATA market. Overinvestment and not excess capacity may be the cause of price declines in tariffed and contract services. Driven by the need to maintain financial viability and stockholder values in the face of too much investment undertaken to meet specific corporate objectives, the regulated and unregulated IXCs may be lowering prices to stimulate additional traffic volumes. Further complicating this identification problem is the increasing uncertainty as to what constitutes a normal rate of return for firms in the interLATA market. As a result, regulated and unregulated IXCs are not severely constrained whenever they elect to forego current profits to further an future oriented corporate objective. Lastly, price-reduction incentives are embedded in the employment policies of the past. Regulation may have caused every IXC to overemploy labor. If the amount of these expenses is appreciable, some IXCs may be able to lower their costs and increase profits without changing prices. Such a result is certainly possible under price cap regulation, which is designed to cause the regulated IXC to lower its controllable costs and increase profits.

The analysis of the behavior of IXCs indicates that the interLATA market does not fit the dominant firm and competitive fringe model of oligopoly. No firm exerts unilateral control over the investment, price, output, and new product decisions of its rivals. For example, AT&T and its facilities-based rivals, US Sprint and MCI, affect each others investment, pricing, output, and new product decisions routinely. The smaller,

regionally based IXCs also enter into the fray, but more cautiously by emphasizing the uniqueness of their customer solutions and support. Perhaps these smaller IXCs may be viewed as interLATA boutiques catering to the regional interests of sophisticated telecommunications users. Of course, boutiques may offer some mundane services, but these never constitute their main line of business. Furthermore, the boutique or market-niche entry strategy tends to minimize the expected costs of exiting the noncontestable interLATA market.

CHAPTER THREE

ASSESSING THE COMPETITIVENESS OF THE INTERLATA MARKET

Introduction

In order for the noneconomist to to understand the competitiveness of the interLATA market, it is necessary that we dwell for a moment on the concept of excessive market power.[1] Often used to describe the notion of market dominance over consumers, excessive market power paints a portrait of a firm that charges prices well in excess of the marginal cost of producing a service. Therefore, the degree of a firm's market power over consumers, regardless of whether it is excessive or not, increases with its ability to obtain to price for its services that are greater than the marginal costs of producing them.[2]

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[1] Two studies provide comprehensive reviews of the main patterns of this market phenomenon. Donald Hay and John Vickers in the *The Economics of Market Dominance* (Oxford: Basil Blackwell, 1987), as well as Dennis C. Mueller in *Profits in the Long Run* (New York: Cambridge University Press, 1986), show that excessive market power can cause economic consequences similar to those of the Averch-Johnson and Liebenstein effects. See: Harvey Averch and Leland L. Johnson, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review* 52 (December 1962): 1052-69; and Harvey Liebenstein, "Allocative Efficiency vs. X-Efficiency," *American Economic Review* 56 (June 1966): 392-415.

[2] Abba Lerner, "The Concept of Monopoly and the Measurement of Monopoly Power," in Briet and Hochman, eds., *Readings in Microeconomics*, 218. Lerner's measures of economic welfare losses can be compared most easily by using an ordinal ranking. One market may be viewed as more inefficient than another. However, the absolute and relative degrees of inefficiency between markets remain unresolved issues.

The usual measure of market power as deviations of price from marginal cost suffers from our inability to estimate marginal costs easily.[3] Furthermore, as noted by Professor Shepherd in the area of entry barriers, we cannot determine what differentiates acceptable from unacceptable market power.[4] Our inability to answer this important market structure question is disturbing. After all, public policy decisions concerning the market power of a monopolist rests on our ability to measure and assess the importance of these deviations.

The market structure problem is even more perplexing when we look at the market power of an oligopolist. In addition to market power over consumers, this firm also may exercise market power over other firms. The ability of one firm to control the behavior of another firm might be captured by comparing the deviations of market price from each firms' marginal cost.[5] The Herfindahl-Hirschman Index (HHI) could be useful in this regard if we can demonstrate that increases in the relative size of a firm causes a larger deviation of price from marginal cost. The problem of course remains that we cannot observe the deviations between marginal cost and prices because we cannot observe marginal costs. What's more, it should be noted

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[3] The usual textbook approach to this problem is to assume that all costs vary with output in the long run, and only some costs vary with output in the short run. However, Baumol, Panzar and Willig have asserted contrarily that some costs may be fixed in the long run. They use the operation of a railroad to illustrate this point. Assuming the existing production technology *as applicable to the long run*, they note that at least one locomotive, one railroad car, track, and roadbed are required to produce a positive level of output in the short run, long run or intermediate run. Therefore, these costs are fixed in the long run and the short run. See: Baumol, Panzar, and Willig, *Contestable Markets and the Theory of Industry Structure*, 281-82.

[4] This measurement problem cannot be eliminated even if deviations from marginal cost prices could be directly estimated and converted into a ranking of alternative of the form where it may be said that a particular firm has twice as much market power as another firm. Still unanswered is the question of how much greater the market power of one firm has to be over that of another firm before it is unacceptable.

[5] For example, assuming financial viability at price equal to marginal cost, larger deviations of price from marginal cost could indicate a greater ability on the part of the firm to contribute to the inefficiency of the market. If it is then assumed that market inefficiency is equivalent to market power over consumers, and further assumed that each unit of market power over consumers is equal to each unit of market power of one firm over another firm, then the firm providing the most inefficiency to the marketplace can be viewed as "dominating" the other firms.

that we cannot rely on a simple positive correlation between profits and size to establish that the relative size of a firm causes a larger deviation of price from marginal cost because this correlation could be observed even if every firm in the market earned the same profit per unit of sales. Similarly, a positive correlation between prices and size is not persuasive evidence because a larger firms costs might be higher in the absence of economies of scale and scope.

Interdependence in the InterLATA Market

One way to eliminate the need to directly observe the difference between price and marginal cost is to investigate the various forms of interdependence between firms operating in the same or closely related markets. For example, perfectly competitive firms set the price equal to marginal cost because they are price takers. As a result, they do not exercise any market power over consumers. Perfectly contestable firms, on the other hand, are not pure price takers. Although market forces encourage these firms to set their prices equal to marginal costs, they can resist these tendencies. For example, a perfectly contestable firm can choose to set prices above marginal costs and run the risk of losing profits to a firm whose entry was made possible by these inefficient prices. Thus, price or output interdependencies do not exist between perfectly competitive firms. However, they do exist between perfectly contestable firms. It therefore appears reasonable to propose the hypothesis that a firm's market power of over consumers and other firms is a function of the level of interdependence between firms. In order to use the HHI to support this hypothesis, we need to establish a causal relationship, not correlation, between market shares and the structure of interdependence among the firms with these market shares.

The market share data shown in table 3-1 for the interstate segment of the interLATA market indicate that AT&T served approximately 75 percent of this segment in 1988.[6] The next largest firm, MCI, had approximately 11 percent of the market. US Sprint, the next largest firm, had a little over 7 percent. The last grouping contains all other common carriers operating in the interstate segment of the interLATA market. No firm or group of firms had over a 3 percent share of the market segment. For example, the National Telecommunications Network (NTN), an association of independent regional interstate carriers, had almost 2 percent of the segment in 1988.

TABLE 3-1

THE U.S. LONG DISTANCE MARKET
($ Billions)

	1986		1987		1988		First Half 1989
	Net Revenues	Share	Net Revenues	Share	Net Revenues	Share	Net Revenues
AT&T	$35.9	82.1%	$34.4	78.9%	$34.7	74.6%	$17.4
MCI	$3.6	8.2%	$3.9	9.0%	$5.1	11.0%	$3.1
US Sprint	$2.1	4.9%	$2.7	6.1%	$3.4	7.3%	$2.0
NTN	$0.5	1.1%	$0.8	1.8%	$1.1	2.4%	$0.7
Advanced Telecommunication Corporation (ATC) Consolidated Network, Inc. (CNI) LiTel Telecommunications Corp. (LiTel) RochesterTel Telecommunications Group - RCI Long Distance (RCI) Telecom*USA, Inc. (Telecom*USA) Williams Telecommunications Group (WTG)							
Others	$1.6	3.7%	$1.8	4.2%	$2.1	4.6%	N/A
Total Net Revenues	$43.7	100.0%	$43.6	100.0%	$46.5	100.0%	N/A

Sources: Shepherd, Table 1, supra p. 20

[6] The data reflected in the tables in this chapter were prepared by Ms. Janet McLaughlin, of the staff of Putnam, Hayes and Bartlett.

Based on the analysis of the last chapter, these market shares suggest that significant costs would be incurred to initiate and maintain collusive practices in this market segment. Policing costs would be prohibitively high as firms sought to ensure that no other firm shielded its earnings from the profit-sharing pool. More importantly, the uneven market share distributions suggest that firms in this market would have to agree on a profit redistribution rule before joint profit maximization was attempted. It is difficult to imagine how the small firms would be content with small shares of the profit pool having given up their rights to attempt to increase their market share. Consequently, the structure of the interdependence between IXCs is noncollusive.

In principle, two forms of noncollusive behavior are possible in the interLATA market. One firm can dominate all other firms, or each may compete in varying degrees with the firms in the market. The question is whether the firm-specific and market-wide HHIs give information that confirms or denies the qualitative conclusion reached in the preceding chapter that AT&T is not a dominant IXC.

Table 3-2 reveals that AT&T's own share of the HHI for 1988 is in the range of 5,500 to 5,600, while the HHI for the entire market was 5,766 in 1988. HHIs of this magnitude generally are correlated with the need for a firm to lower its prices if it wishes to increase the quantity sold of its

TABLE 3-2

HERFINDAHL-HIRSCHMAN INDEX CALCULATIONS

	1986 HHI	1987 HHI	1988 HHI
AT&T	6740	6225	5565
MCI	67	81	121
US SPRINT	24	37	54
NTN	1	3	6
OTHER	14	18	21
TOTAL	6846	6364	5766

Source: Shepherd, Table 3, supra p. 22.

products and services. What this downward-sloping demand schedule means is that some IXCs have the ability to maintain prices appreciably above marginal cost because the interLATA market is not contestable. And, it is well-known that prices above marginal cost is a necessary condition for market dominance because variations in the level of supranormal profits are a vehicle for controlling the price, output, investment, and product decisions of rival firms. Therefore, the HHIs do not rule out market dominance as an attribute of firm-specific behavior in the inter-LATA market.[7] But neither does it confirm that AT&T is market dominant.

A seemingly useful method for establishing a presumption of market dominance is to rely on the U.S. Department of Justice's (DOJ) guidelines for evaluating the antitrust implications of mergers and acquisitions.[8] This set of quantitative parameters is used to flag the potential to raise market price above marginal cost through either collusive behavior or cutbacks in production. The most important of these parameters is the predetermined threshold value of 2,000 for the market-wide HHI that the DOJ employs to trigger a preliminary investigation of the competitive effects of the proposed new business arrangements. But, an important caution is in order when using the DOJ guidelines for assessing the degree of market power and the potential for market dominance. Specifically, these guidelines are designed for the purpose of evaluating the potential impacts of increases in market shares. They are not necessarily applicable for dealing with deceases in market shares. Hence, a market HHI above 2000 is not *de facto* evidence of market dominance, especially when the trend in market share concentration is downward. At best, a HHI above 2000 indicates that it is appropriate to initiate an investigation of the interrelationships between firms in order to determine the robustness of the competitive process that is operating in the affected market.

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[7] Additionally, a Hirschman-Herfindahl Index above 2,000 implies that one firm in the market has more than a 50 percent market share. A market share of this magnitude has been suggested as one of the necessary conditions for an empirically based indication of market dominance. See: William G. Shepherd, *Public Policies Toward Business* (Homewood, Ill: Richard D. Irwin, 1985).

[8] U.S. Department of Justice, "Merger Guidelines," issued in 1982, as reprinted in the *The Journal of Reprints for Antitrust Law and Economics* 1984 edition. John E. Kwoka, Jr., "The Herfindahl Index in Theory and Practice," *Antitrust Bulletin* Vol. 30 (Winter 1985): 915-947.

Dominance in the InterLATA Market

The existence of market dominance rests on fulfilling both parts of a two-part test. First, one firm must be able to alter irreversibly the price and output decisions of rival firms. This condition can exist, for example, when that firm controls products and services that are used by its rivals as factors of production. When the prices for and output of these products and services are changed unilaterally by the dominant firm, the effects are irreversible because these firms have no choice but to absorb these cost increases. The second part of the test is that no other firm in the market has the same or equivalent capability to affect its rivals' price and output decisions.

Admittedly, AT&T dominated the interLATA market for a time. The source of this dominance was that rival firms had to lease services from AT&T or its subsidiaries if they were to conduct business in the interLATA market. Consider a predivestiture AT&T unencumbered by regulation or other constraints. Assuming a desire to maximize profits subject to its regulatory constraints, AT&T had the incentive and wherewithal to increase the prices of the services used by its competitors and decrease the prices of services that were substitutes for those supplied by its competitors. If permitted to act on these incentives as it had sometimes done in the past, AT&T irreversibly would have lowered its rivals' profits and prices while increasing their costs. Hence, AT&T would have fulfilled the conditions of the first part of the market-dominance test.

As long as AT&T's rivals had to lease services from AT&T to provide interLATA services to the public, they could not affect AT&T's profits without harming their own. While they could lower their prices, an unencumbered AT&T could have responded in numerous ways. It could have matched the price declines of its rivals, or it could have raised the prices of the services that its rivals leased from it to compensate for the price declines. Hence, the price and output decisions of other firms where not irreversible for AT&T. Consequently, the predivestiture AT&T dictated the terms and conditions of rivalry in the interstate segment of the interLATA market. Hence, it was the dominant firm and its rivals the competitive fringe.

AT&T's market dominance began to erode with the divestiture of its operating companies. It was no longer able to control the prices and output of services used to connect a rival firm to its customers. However, AT&T's excessive market power did not disappear because of its prior efforts at product differentiation, an insufficient regulatory and judicial definition of equal access, and the market anomaly that some of its rivals still had to lease interLATA services from AT&T while they were designing and deploying parallel interLATA networks.

AT&T's market dominance did not disappear until judicial decisions expanded the scope and quality of the access services provided by the local exchange carriers and AT&T's facilities-based rivals completed deployment of their basic networks including the first round of upgrades to bring them on par with AT&T.[9] At the request of MCI and US Sprint, Judge Greene has ordered the Bell Operating Companies (BOCs) to provide more equitable access for nonLEC and nonBOC operator services. He also has ordered the BOCs to permit IXCs other than AT&T to validate the BOC credit cards. In a similar vein, the Divestiture Court encouraged the BOCs to accelerate their deployment of common channel signaling capability so that 800 data base access has been made available at an earlier date.[10] This same technology

[9] Of course, this is not to say that AT&T does not derive any advantages from its large market share. Whereas AT&T's rivals generally lease facilities that connect their points of presence to access tandem, AT&T finds it cost-effective to lease access facilities that connect its points of presence directly to LEC end offices. The technical difference provides AT&T with a shorter call set-up time in the local exchange portion of an interLATA call. As a result, AT&T can maintain call set-up parity even if its interLATA network is less efficient than those of its rivals. However, a call set-up advantage is not sufficient to establish the market dominance of AT&T. This telecommunications variable is controlled in part by the LECs. Therefore, AT&T cannot manipulate these differences in call set-up times to disadvantage its rivals.

[10] The availability of 800 data base access seems to be held by a post dial delay problem that is curable at the customer premises. Until Signaling System No. 7 is deployed down to the end office level, point of sale credit card validation is not possible when 800 data base access is used. This problem arises because the customer equipment disconnects the call before the IXC can connect the call to the verification data base. Hence, the technological problem can be fixed by altering the configuration of the

(Footnote continues on next page)

will be useful for sophisticated 900 service access. Some federal regulatory decisions reinforce these judicial initiatives to increase the competitive of the interLATA market and further the erosion of AT&T's market power. The FCC ordered the BOCs to offer interim 800 access through the use of presubscribed NXX for IXCs other than AT&T. Additionally, some BOCs primarily on the strength of their own business interests offered NXX-based 900 access service. Therefore, these firms are now in the position to provide the same types of services at similar cost to those provided by AT&T. As a result, AT&T's rivals have established the wherewithal to capture many different types of customers from AT&T and retain them.

Consider in this regard how US Sprint is competing in the outlying products sector of the interLATA market. FONVIEW, for example, is a personal-computer-based telephone bill analysis system.[11] Using floppy disks and a menu-driven software package, US Sprint's customers are able to analyze calling patterns by point of origin, geographic region, time of day, busy hour, and other traffic-related variables. The customer then can use these data to better control its telecommunications costs. Does AT&T does have the market power to cause an irreversible change in US Sprint's price for FONVIEW and its output of FONVIEW packages? What's more, can AT&T accomplish this task at no harm to itself? AT&T of course can introduce a

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telecommunications equipment at the point of sale. The economic issue is whether is it more cost beneficial to accelerate the deployment of SS7 to the end office, or the design and change out the affected customer premises equipment. This is a more difficult question than the market strategy questions facing the IXCs that provide 800 services in competition with AT&T. First, these firms have to decide whether they are likely to capture point of sale business from AT&T. Such an occurrence is not likely in short term because of the high premium that point of sale customers place on reliability and accuracy. Second, these IXCs must balance the inability to provide point of sale services against the ability to provide all other 800 services on a basis comparable to that of AT&T. It seems at first blush that the profit potential of all other 800 services exceeds the potential profit loss from not being able to provide point of sale services in the near term.

[11] "US Sprint, Compucom to Unveil PC-based Long Distance Management System Called FONVIEW", *Telecommunications Reports*, 55 no. 33 (August 21, 1989): 10. AT&T has introduced AT&T Card EXECU-BILL. This service provides five different summary billing levels to its subscribers. See: "AT&T Introduces EXECU-BILL Service to Help Businesses Manage Calling Card Expenses", *Telecommunications Reports*, 55 no. 35 (September 4, 1989): 18-19.

similar product. But, it must expend research and development resources and implement a marketing plan to do so. Also, there is no guarantee that the product will be commercially successful. Thus, an AT&T response to FONVIEW causes an immediate drain on profits and the potential of further losses. Consequently, the answer to the second question is no. Assuming however that AT&T feels compelled to respond to FONVIEW, US Sprint is then free to lower its prices or to improve the quality of the product at existing prices. Hence, AT&T can not cause an irreversible change in US Sprint's price for and output of FONVIEW packages. Additionally, AT&T's price and output decisions for its comparable product are reversible.

MCI Telecommunications Co. has elected to use off-tariff contracts for nonstandard services in an effort to win new customers from its competitors. These contracts include additional discounts over tariffed services for accounts such as Westin Hotels, United Airlines, Department of Defense, and Merrill, Lynch, Pierce, Fenner and Smith accounts away from AT&T.[12] AT&T's market response to off-tariff contracts has been Tariff 12 services for customers such as PaineWebber, Kemper Financial, Unisys, and MasterCard.[13] A Tariff 12 service, by design, represents unique terms and conditions for a very small set of customers with specialized communications needs. Usually, these terms and conditions include a price concession in relation to other tariff rates submitted by AT&T. Essentially, MCI and AT&T are attempting to minimize the revenue loss of these price concessions by restricting them to a small number of customers. Because MCI is unregulated, it has taken the direct approach of not offering these price concessions to the general population. AT&T, however, has elected to use the service design process to cause the same effect because it is regulated. In either instance, AT&T cannot respond to MCI's off-tariff rates at no cost to itself. What's more, its market power has not been sufficient to reverse MCI's policy of using off-tariff rates. Hence, AT&T does not dominate MCI.

A dominant firm can unilaterally select the market share that maximizes current profits given the existing technology or expected future profits

[12] MCI continues to submit tariffs for its standard services sold to the medium-user and low-user market segments.
[13] *Telecommunication Reports*, 55 no. 37 (September, 18, 1989); and Idem, 55 no. 38 (September 25, 1989).

given the expected evolution of its technology. It can do this because it is not concerned with its competitor's existing or potential market shares at any point in time since it can control its rivals' price, output, and investment decisions. Yet, AT&T's management is very much concerned with this descriptive statistic. This fact alone casts substantial doubt on assertions that AT&T is still market dominant. If AT&T is market dominant, why would its Vice-Chairman note that AT&T's market share is stabilizing and then seek to increase it?[14] Furthermore, why would AT&T develop and deploy new services that are expected to reduce its revenues and increase its traffic volumes? During August and September of 1989, AT&T submitted no less than eleven tariff transmittal letters for services meant to stimulate sales by reducing rates or introducing promotions. These services included Megacom, WATS, Accunet T1.5, Accunet T45, and Software Defined Network (SDN) services.[15] AT&T proposed only one price increase during this period.[16]

Because of the market behavior of AT&T and its rivals, it is difficult to justify the claim that the competitive process during 1989 has been marred by AT&T's alleged market dominance. Reversible price competition has been evident at least in the large-user market segment. Rival facilities-based carriers have introduced new products and services that are capable of capturing and retaining customers. Additionally, these IXCs have deployed capital-intensive technologies such a Signaling System No. 7 (SS7) and other aspects of an intelligent network service architecture (INSA). Lastly, some price concessions are occurring independently of reductions in access charges for the small- and medium-user market segments. This pricing strategy is possible because of AT&T's successful segmentation of the message toll sector with its optional calling plans.

Notwithstanding these gains in the strength of the competitive process in the interLATA market, it still is important to resist the temptation to conclude that the interLATA market may be deregulated because the

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[14] "Tannenbaum Tells Analysts AT&T's Earnings Are Up, IX Market Share Being Stabilized", *Telecommunications Reports*, 55 no. 39 (October 2, 1989): 35.

[15] Accunet is a registered trademark of AT&T.

[16] It wanted to raise the rates for its telephone switch operation functionality applicable to terrestrial television service. See: "Networks Challenge AT&T TV Service Rate Hike, See Worsening Pattern Under Price Caps", *Telecommunications Reports*, 55 no. 34 (August 28, 1989): 11.

relationship between AT&T and its rivals represents competition between contested oligopolists. AT&T and its rivals do not set their prices at marginal cost, average incremental cost, or no higher than a particular set of average costs when the existing technology prevents financial viability at prices equal to marginal costs. Instead, these firms in part set prices with an eye toward the competitive advantage that can be gained from existing institutional constraints. Witness in this respect that as many marketing and pricing battles are fought in regulatory and judicial fora as in the marketplace. In general, these battles are entered into for the purpose of preventing competing firms from taking actions that would be permissible in an unregulated market. Consider the nature of the conflicts that occurred in August and September of 1989, for example.

In this period, the FCC has received a formal complaint against MCI from AT&T, asserting that MCI's off-tariff contracts violate the requirements for tariffs in Section 203 of the Communications Act of 1934.[17] In response, MCI holds that its off-tariff rates are legally permissible because tariffs for interstate services are optional for carriers classified as "nondominant" by the FCC.[18] That is, its voluntary decision not to file tariffs for some or all of its services does not conflict with the Court of Appeals for the District of Columbia decision that the obligation to submit tariffs for interstate basic services is mandated by the Communications Act of 1934.[19] While the legal positioning in this case no doubt will be imaginative, neither the complaint nor the response would have substance in an unregulated market. MCI's off-tariff rates would be accepted as aggressive price competition meant to increase market share. If MCI chose to lose money on these services, it would be its prerogative to do so. The only constraint on this behavior would be the existence of predatory intent actualized by setting prices below some legally mandated price floor. If

[17] "FCC's Forborne Regulation of Non-dominant IXCs Under Competitive Carrier Policies Attacked by AT&T In Complaint Against MCI; AT&T Says Non-tariffed Service Violates Act", *Telecommunications Reports*, 55 no. 32 (August 14, 1989): 6-7.

[18] "MCI Asks FCC to Dismiss AT&T Complaint on Off-tariff Services, Says AT&T Wants to Limit Competition; If FCC Starts Proceeding on Carrier Regulation, MCI Says It Will Try to Show AT&T Retains Pockets of Market Power in Telecommunications Transmission", Idem. 55 no. 38 (September 25, 1989): 10-11.

[19] *MCI Telecommunications Corporation v. FCC* 765 F.2d 1186 (D.C. Cir. 1985).

such an intent could not be proven because MCI could not benefit from this strategy, then its price concessions simply would be viewed as self-destructive marketing behavior.

While MCI has defended its right to offer off-tariff rates to large users at substantial discounts from other tariffed services, MCI has asked the FCC to reject AT&T's Tariff 12 services and to reject any rate changes for Tariff 12 services after they have been approved.[20] Therefore, MCI wants the authority to restrict its price concessions, but it does not want AT&T to have a similar marketing capability. MCI's economic reasoning seems to be that AT&T can use such authority to drive it from the market by acting as a predator. AT&T responds that Tariff 12 service and rate changes are necessary for two reasons. First, Tariff 12 services are required to stem the cross-elastic effects of MCI's off-tariff services on AT&T's revenues and market share. AT&T is therefore suggesting that the loss of market share increases its per-unit costs and thus reduces its profits or places a heavier cost recovery burden on its other services. Second, price changes for Tariff 12 services are required to stimulate or repress demand, thereby maintaining the competitiveness of Tariff 12 services with similar services offered by its rivals.[21]

The first pricing dispute is tied to the fact that firms competing head-to-head with AT&T have accepted willingly the economic burden of the sunk costs necessary to enter the interLATA market. But, sunk costs make it extremely difficult to exit a market gracefully. In fact, they might cause a firm to stay in a market longer than it would have if its capital costs were more easily recovered at the time of exit. Consequently, no firm of this type wants to be subjected to price pressure. Moreover, each firm realizes that a predation strategy would be very costly in the short run for any firm attempting to force another firm out of a market. In fact, the only reason for such a strategy is strong assurances that any resulting

[20] "Challenging AT&T Plan to Reduce VTNS Option IV Rates, MCI Cites Customer Disadvantages", *Telecommunications Reports*, 55 no. 35 (September 4, 1989): 20. Tariff 12 is the vehicle that AT&T has chosen to use in response to the off-tariff rates and special contract rates offered to large users by its rivals.
[21] "AT&T Defends Proposal to Make VTNS Option IV More Attractive in Light of Market Rates", Idem. 55 no. 37 (September 18, 1989): 25.

economic losses could be recovered in the future because subsequent reentry has been foreclosed by the prior predation.

Does the actual and expected operation of the interLATA market provide these assurances? The answer to this question is no. While the interLATA market has some of the characteristics that make predation a potentially viable strategy, it contains other characteristics seemingly more powerful that work against successful predation from the perspective of AT&T. Although entry as a facilities-based carrier is associated with incurring an significant amount of sunk costs, most of these firms have a strong emotional commitment to the interLATA market. Consequently, they have incurred substantial losses to stay in it. Thus, if nothing else, a predation strategy would be costly for AT&T.

Although costly, a successful predation strategy would send a strong signal that could foreclose future entry. However, it is also apparent given the nature of the technology that a successful predation strategy requires causing more than one owner of the network facilities to leave the market. The competitor driven from the market will no doubt sell its network at a discount to some other service provider. This decapitalization of value would bring the new entrant's prices in line with the existing prices of the incumbent. Hence, the incumbent IXC would have to begin another round of predation. As a result of multiple rounds of predation, the winning firm might not be able to recoup its future losses. First, the interLATA market is still regulated. Second, it is likely that this market would be more stringently regulated after the first round of successful predation. Consequently, price could not rise easily. Thus, predation is not expected to be successful in the end.[22]

[22] Given the cost structure of the interLATA market, it is not possible to conclude that predation always will be unsuccessful even if the winning firm is reregulated. Assuming that the prices will not fall as quickly absent competitors as they would with competitors, it may be that slower price declines coupled with a 100 percent market share is the intertemporal profit-maximizing market strategy. The problem is that the IXC engaging in predation knows that it will lose money in the short term. But it can only hope that the rate of decline in the prices subsequent to predation will be slow enough that it will experience a positive net present value on its income statements. Additionally, it can only hope that no other firm will enter the market after a successful round of predation.

The second pricing dispute is a nonissue in any unregulated market. Most unregulated firms renegotiate contracts when the relationship between contractor and contractee changes. Presumably, MCI renegotiates its off-tariff contracts rather than lose this customer to a rival. Moreover, as indicated in the preceding two paragraphs, MCI and AT&T would be subject to the constraint that the new contract prices are above the firm's short-run average variable costs.[23]

US Sprint has submitted a formal complaint against AT&T condemning its SDN/D4 channel bank/PBX package charge and alleging that it constitutes an unlawful rebate. By framing the complaint in this manner, US Sprint means to establish the precedent that a regulated firm cannot provide price concessions on unregulated products that may be used along with that IXC's regulated services.[24] AT&T responds that its price concession for the unregulated product is not conditioned upon the purchase of any other AT&T product or service. It has stated the a PBX price concession is needed to promote sales. As for the D4 channel banks, they were not offered to the customer free of charge because the FCC had rejected an AT&T promotion for this regulated product.[25]

In an unregulated market, resolution of this dispute would depend on whether every customer purchasing discounted PBX also had to purchase a full-price SDN service that was largely unavailable from other sources. That is, evidence would have to be introduced that AT&T had used a position of strength in the interLATA market to support a failing position in the PBX market. Under this standard, AT&T could shore up weak positions in the interLATA and PBX markets by packaging these services as long as the discounts were available to everyone electing to buy the package.

Nothing in principle prevents US Sprint (or any other rival for that matter) from offering discounted PBXs with basic transmission services. In

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[23] Phillip E. Areeda and Donald F. Turner, "Predatory Pricing and Related Practices under Section 2 of the Sherman Act," *Harvard Law Review* 88 (1975): 697-733.

[24] "US Sprint Continues Argument That AT&T Illegally Bundled SDN Service, Discounted CPE", *Telecommunications Reports*, 55 no. 38 (September 25, 1989): 40.

[25] "AT&T Denies Charge of Bundling SDN Service, Discounted CPE for Funeral Firm Client", Idem. 55 no. 35 (September 4, 1989): 19.

practice, however, a comparable offering is not possible because AT&T's rivals do not manufacture PBXs or expend the research and development dollars necessary to compete effectively in this market. Consequently, US Sprint is proposing that a horizontally integrated firm cannot offer discounts on any products or services contained in a package that competes with unbundled services offered by rivals that are not horizontally integrated by their own choice.

Lastly, US Sprint and MCI would prefer to treat any attempts to reduce to zero the rate or charge for an individual element of a tariff as a rate restructuring (i.e. the elimination of the rate element from the tariff) and not as a simple price reduction. The difference in interpretation is significant. Under the FCC's existing form of price cap regulation, a rate restructuring goes in effect forth-five days after it is submitted to the FCC. A simple price decline that does not go below the floor set for that category goes into effect after fourteen days. Hence, US Sprint, MCI, and AT&T's other rivals would receive more time to respond under the proposed interpretation of a zero-price rate element.

In an unregulated market, rivals would necessarily be concerned about the reduction of the price of service element to zero. But everyone would know that their concern relates to the price pressure they would be placed under. Consequently, an unregulated MCI or US Sprint competing against an unregulated AT&T would know that the threshold parameter for a legal complaint against AT&T would be that the effect of a zero-price service element has in causing the overall price of the good or service to fall below its average variable cost. But this is not the fault that US Sprint and MCI find with this AT&T price cap strategy. Instead they insist that this strategy harms the regulatory integrity of the price cap process.[26]

Thus far, the discussion has focused on the interdependence among AT&T, US Sprint, and MCI. Now consider the activities of the smaller facilities-based carriers. These regionally focused common carriers engage in their own particular form of price and service competition. While tending to shy away from head-to-head price competition on standardized products and

[26] "MCI, US Sprint Say AT&T Plan to Cut NRCs to Zero Violates Rules for Rate Restructuring", *Telecommunications Reports*, 55 no. 33 (August 21, 1989): 18.

services, they emphasize uniqueness of customer solutions and support to the extent that the most efficient choice of their production technology results in a strategic focus on market niches rather than whole markets. This business approach seems to reflect a profit-maximizing objective designed to minimize the expected costs of exiting the telecommunications market. Hence, cautious price competition guards against the risk of failure associated with entry and participation in the interLATA market. But these activities do not indicate that AT&T is dominant. Market niches are carved out and maintained because a nondominant firm finds it too costly to displace these smaller firms. A dominant firm conversely would not suffer this cost disadvantage. That is, a dominant IXC has the ability to reduce the profits of these firms without having its profits adversely affected.

If AT&T were controlling the investment decisions these smaller common carriers, they might be expected to resist such expenditures to the last possible moment to conserve resources and avoid pitfalls associated with the recovery of sunk costs. Consequently, the expectation is that the smaller IXCs would deploy fiber optics and common channel signaling after AT&T. But some regionally based IXCs such as Litel have deployed new technologies before or at the same time as AT&T. Those smaller IXCs that have not must be presumed to have good business reasons for making this choice.

Another indication of AT&T's nondominance is its pricing strategy. Consider the variant of dynamic-limit pricing that AT&T appears to have used as its regulatory supports were removed systematically. At first, AT&T attempted to remove declining block rates with maximum payments from its WATS tariffs, thereby increasing the costs of its nonfacilities-based rivals without affecting its own costs. AT&T met with regulatory resistance because this is clearly the pricing strategy of a dominant firm. In the face of this resistance, AT&T had two alternatives. It could lower its rates for residential and small-volume commercial services--a pricing strategy that guaranteed the loss of profits and exposed AT&T to charges of price discrimination--or it could hold prices constant and continue to lose market share and profits. AT&T chose the second alternative, which remained in effect until the divestiture of the operating companies. After divestiture, AT&T was permitted to realign these rates and remove the maximum payment limit for the interLATA services used by the nonfacilities-based rivals.

With the loss of its operating companies, AT&T's market power was reduced because it no longer controlled access services. However, its market power remained excessive due to AT&T's prior product differentiation efforts, its long-standing customer relationships, and its integrated network and well-defined diagnostic, maintenance, and billing procedures. Therefore, regulators continued to oversee the prices, terms, and conditions of the services that were offered to consumers and rivals.

This oversight was necessary because a new form of competitor was emerging in the interLATA market. In an effort to control their rising costs of leased interLATA facilities, AT&T's rivals had adopted a facilities-based market strategy. The terms of the AT&T divestiture encouraged this result because of the equal access mandate, which, among other things, equated the dialing parity between AT&T and its rivals. Therefore, AT&T was faced with two forms of revenue loss. It lost revenues from its competitors and it lost revenues from customers captured by its rivals. AT&T elected to stem this decline in revenues by segmenting its residential and commercial services to lower the effective prices of existing services. The actual sources of price reductions were access charge decreases or the introduction of OCPs.[27] Although these OCPs have many of the characteristics of the "fighting brands" used by unregulated firms to shore up the profits of their flagship products and services, they differed in one important aspect. They could not be removed from the marketplace without regulatory approval once the rivals had been beaten off.[28] Consumers favoring the lower prices caused these services to become part of AT&T's product mix. Thus, with the approval of regulators AT&T was

[27] With the introduction and approval of Reach-Out-America, Pro-America I, Pro-America II, Pro-America III, Pro-WATS I, Pro-WATS II, Pro-WATS III, seamless Pro-WATS, Megacom, and Megacom Plus, AT&T adopted a pricing strategy consistent with an expectation that it could not maintain its market dominance once its facilities-based rivals had completed network deployment and established their market presence. As a result, AT&T attempted through its OCPs to recapture as much of its market as it could, thereby stabilizing its revenues.

[28] OCPs could not be anticompetitive as long as the prices exceeded average incremental cost. Moreover, they would not reduce consumer surplus as long as no other market segment experienced a price increase because of the introduction of an OCP. These economic criteria were enforced by the FCC.

able to continue its entry-deterring pricing after it reduced or eliminated the profitability of nonfacilities-based common carriers.

AT&T has moved into the third phase of its dynamic-limit pricing cycle. The motivation is the efforts of its facilities-based rivals to realize the traffic volumes consistent with the cost-minimizing output levels of the new technologies used in their networks. Responding to its rivals' attempts to utilize any economies within their networks by rapidly expanding their traffic volumes, AT&T introduced an open-ended Tariff 12 service that mimics custom-designed, customer-specific services at prices lower than those available through the combination of existing tariffs. The procompetitive motivation consistent with this tariff approach is a perceived need to forego profits to prevent the loss of customers. Accepting this motive, AT&T's behavior indicates that its rivals' actions do affect its price and output decisions.

The existence of Tariff 12, more than anything else, alerts us to the fact that AT&T's rivals can reverse AT&T's price and output decisions in the large-user segment of the interLATA market. But what of AT&T's position in the small-user segment of this market? AT&T's actions indicate that the pressure to lower prices is much weaker in this market segment. Although the prices for message toll services (MTS) are not increasing, price declines for this benchmark service tend to occur after a reduction in access charges. There are however some exceptions. The half-hour Reach Out America program submitted for approval in September of 1989 extended optional calling plans to lowest volume users. Additionally, there has been a 5 percent discount for intrastate Reach Out America customers.

Once AT&T flows through access cost reductions to its lower volume end users, its rivals then seek to minimize the damage to their revenue streams. But nothing prevents AT&T's rivals from initiating price declines for this benchmark service to put pressure on AT&T's Tariff 12 services. That is, lower prices for MTS would make Tariff 12 price concessions more painful for AT&T. Apparently, MCI, US Sprint, and the other IXCs do not believe that this competitive strategy is in their best interests. Therefore, it might be concluded that the contribution over marginal cost from this service is needed just as much by AT&T's rivals as by AT&T. Hence, AT&T is not dominating its rivals. What Tariff 12 rates, off-tariff rates and the infrequency of price declines in message toll services indicate is that

opportunities for expanding an IXC's customer base and traffic volumes are becoming more scarce in the interLATA markets.

The evolving attributes of the interLATA market are pointing to the day when an IXC's cost function will play more of a role in determining survival than its demand and marketing considerations. While an IXC must keep up with the products and services of its rivals, it does not appear that a new product or service introduction will displace any existing firm if it is operating efficiently. This result is now reinforced with a demonstration that AT&T's former market dominance is not likely to return. As table 3-1 shows, AT&T's market share has been declining at about four market-share points a year.[29] Continuing this trend, AT&T's market share would be about 50 percent in five years. MCI would attain a market share of 23 percent in five years, while US Sprint would reach a market share of 15 percent. Additionally, NTN would have a market share of 4.5 percent after five years of growth. Other interLATA firms, as a group, would comprise approximately 7 percent of this market.

Because AT&T's rate of decline actually may be slower in the future because of its increased pricing flexibility, this trend indicates that market shares in the interLATA market will remain widely dispersed for some time to come. Therefore, collusion should not be an issue. But more importantly, the growth of the market shares of MCI, US Sprint, and the other IXCs implies that they will approach the cost-minimizing output levels associated with their newer production technologies.[30] Consequently, the profits of these IXCs are expected to strengthen over time. Thus, under this reasoning, AT&T's market dominance is not expected to return.

But what if the decline in AT&T's market share is reversed and it begins to gain market share as it applies a wider range of pricing

[29] Changes in market share imply winners and losers. Although the size of the market may grow absolutely over time, every gain in market share is offset exactly by a loss in market share.

[30] Note, in this regard, that AT&T is not shrinking as its market share declines. Table 3-1 shows that AT&T has been able to maintain relatively steady revenues even while its market share has been shrinking at four points per year because the interstate segment of the interLATA market has been growing at a sustained rate of 15 percent per year. Therefore, the market shares of AT&T's rivals imply that they have experienced growth in excess of the 15 percent secular growth rate.

strategies and resources against its rivals? Does such a change in direction signal the reemergence of a dominant AT&T? To answer this question, recall that market dominance requires one firm to make price, output, and investment decisions without regard to independent production decisions by other firms in the market.[31] That is, it does not raise or lower its level of production because of a production decision made by its rival. Instead, this IXC knows that its rivals will adjust their levels of production in reaction to its decisions in this area. Therefore, this firm is able to select the level of output that maximizes its profits.[32] An IXC does not obtain this capability simply by increasing its market share. Usually, it requires control over an essential factor of production either through upstream ownership of production facilities or more favorable labor contracts. Other times, the deployment of patented technology are the causes of this capability. However, these two sources of market dominance are not available to AT&T at present. Therefore, its former market dominance is not likely to emerge even if it begins to gain market share.

Herfindahl-Hirschman Index for the InterLATA Market

Table 3-2 shows that significant rivals have entered the interLATA market. The HHI has fallen from nearly 10,000 to 5,766 in the twenty years since MCI entered this market. Furthermore, these rivals have reached the critical mass that permits them to withstand the pricing and marketing tactics of AT&T. For example, press releases and reports to Wall Street analysts indicate that some of these common carriers, most notably MCI and US Sprint, have become profitable or have regained their profitability at existing prices and market shares. What this table does not show is that one of the current necessary conditions for profitability in the interLATA market is the deferral of some construction plans. AT&T's rivals have had

[31] That AT&T does not have the capability at present is indicated by the negative 1.7 percent growth rate in net revenues as shown in table 3-1.
[32] The constraint on this decision is that a Stackelberg leader must accept the fact that its rivals will incorporate its production decisions in their competitive behavior.

to implement this plan of action because of price declines in AT&T's voice-grade and data services. However, the deferral of construction is not the elimination of new investment. Despite AT&T's price declines, its rivals are continuing to upgrade and modernize their networks.

Table 3-2 also suggests but does not predict that the HHI for the interLATA market will be somewhere in the neighborhood of 3,500 in five years at assumed rates of growth. A declining HHI means among other things that AT&T will have less revenues available for improving its network. On the other hand, its rivals will be better positioned to continue to lower their per-unit costs and increase their net revenues.

One way to illustrate this point is to compare AT&T's relative position to its rivals under different assumptions concerning its growth of revenues. A larger market share implies less incentive to collude and hold prices abnormally high, and a smaller market share suggests more incentive to collude by jointly maximizing profits. Whenever there are fewer incentives to collude, each firm in the market should be driven toward network investments that improve its competitive position either by lowering its costs or increasing its ability to deploy new services rapidly.

Pricing Behavior in the InterLATA Market

Pricing behavior in the interLATA market is driven by the interdependence between the firms in that market. The self interest of each IXC determines what it believes to be acceptable and unacceptable price behavior. Layered on top of this self interest are the needs and wants of consumers and other firms that these IXCs serve. This second set of utility-maximizing or profit-maximizing decisions helps to further refine the price boundaries of acceptable and unacceptable price behavior. But consumers and other firms are only one of the external factors that guide the prices for interLATA services. Public policy also affects the boundaries of acceptable pricing behavior.

In recognition of these factors, suppose that regulatory changes reduce entry barriers and cause an influx of new firms into the interLATA market. The incumbent IXCs then are expected to select a set of prices meant to reduce the competitive pressures on all or segments of its product mix. One

mechanism for relieving this pressure is for firms to alter the average price relationship between themselves and those firms that produce closely substitutable interLATA services.

Because an entrant into the interLATA market is apt to set its prices below that of the incumbents to attract customers and establish a viable market position,[33] there are no assurances that the incumbents will not adjust their prices after the entry of this firm. In fact, a downward price adjustment should be expected as long as the expected losses from a reduced market share exceed the expected losses from reduced prices.[34] Hence, the very first market entrant creates downward pressure on the prices currently announced by the incumbent IXCs providing interLATA services. Continued market entry only serves to increase this pressure. Eventually, the costs of lost market share will be too large to ignore, and every IXC in the market will be forced to lower its prices.

Changes in the new entrants' effective average price can have significant effects on its post-entry profitability. These firms could find it more difficult to trade in nearly equally priced services because they lack established track records for customer service and reliability. Moreover, the new entrants' difficulties may multiply if the incumbent IXCs' price reductions are joined with repackaging existing services as has occurred in the interLATA markets. The repackaging strategy can have one of two effects. First, the threatened IXCs have minimized their expected revenue loss by segmenting the market. Second, declines in the market-wide average price for an interLATA service may result in an increase in a particular IXC's revenues and profits if that firm had lost market share to

[33] Although these discounts may be steep, they are required in part to overcome technological and customer service ambiguities affecting new entrants, and in part to overcome customer loyalties assigned to incumbents.
[34] Because AT&T has been more stringently regulated than its rivals, a seemingly permanent gap has emerged between the composite average price of AT&T's services and that of each of its rivals. This gap has allowed the rivals to build market shares.

new entrants. The source of this additional revenue and profitability is recaptured customers.[35]

While the higher profitability potential of an incumbent IXC may return after its price-maintaining response to market entry is abandoned, there is no guarantee that such a result would occur. Therefore, IXCs such as AT&T seeking profit stability generally like to avoid price competition and they tend to concentrate their competitive efforts in the less destabilizing areas of customer service, reliability, and new services.[36] Conversely, other IXCs seeking market share improvement and customer growth will tend to forge ahead with price reductions perhaps upon the assumption that some mechanism can be developed that will prevent the expected aggressive price response from other firms.

The tension between growth and protection has caused most firms in the interLATA market to offer promotions and price discounts at one time or another. These relieve the pressure on management by bringing new customers into the fold and keeping existing customers. However, these marketing mechanisms have a downside. Their continued use creates the potential that other services may be called on eventually to take on a larger share of the burden of keeping profits at an acceptable level.

Pricing behavior also is affected by the level of unused capacity currently available to most facilities-based IXCs operating in the interLATA

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[35] AT&T's market segmentation efforts are subject to the condition that repackaged services add net revenues, thereby increasing profitability whenever possible. This result is possible when the repackaged services take customers away from the new entrants.

[36] In the area of new enhanced services, Call Interactive is being offered jointly by AT&T and American Express Company. The first commercial application was aired on broadcast television. See: "VTNS Option III High-Volume Calling Capabilities Used for Football Game Phone-in Poll", *Telecommunications Reports*, 55 no. 37 (September 18, 1989): 38-39. With respect to new basic services, AT&T has decided to offer its Signaling System No. 7 network for lease by independent local exchange companies. AT&T intends to offer 800 data base, line information data base, and calling card verification features by 1991. See: "AT&T to Offer Virtual Signaling Network Service, Providing SS#7 to Independent Telcos", *Telecommunications Reports*, 55 no. 33 (August 21, 1989): 13.

market.[37] To eliminate this drag on the bottom line, these firms find it preferable to lower prices and increase the utilization rate. That is, unused capacity should be viewed as a market disequilibrium which is eventually corrected as IXCs introduce new services made possible by new technologies.

Risk Relationships in InterLATA Markets

In addition to different production characteristics, IXCs have different risk profiles in the eyes of investors. To an investor, the ability to rapidly affect the costs of production implies lower risk and more products and services. Both of these attributes suggest an enhanced ability to raise new capital for investment and for research and development. Conversely, an IXC with less flexibility in the cost of production faces higher costs of obtaining equity capital because of its competitive weakness. Consequently, these firms turn to the debt market as an important source of financing, thereby elevating their financial risk.

The preceding relationships suggest that the risk characteristics of any IXC can be improved when its perceived market position has been improved. Such an improvement occurs after costs are brought under control and new products are introduced successfully. That is, there has been a perceived reduction in the market power of the other firms. Some readily available financial indicators suggest that this equilibrating process is well under way, implying that AT&T's market power has eroded. As shown in table 3-3, Standard and Poor's and Moody's Investors Service places AT&T's bonds at quality levels comparable to its partially regulated rivals such as Rochester Telephone and US Sprint. However, AT&T's bond rating are superior to those of its unregulated rivals. A similar trend exists for AT&T's stock price, which fluctuates in the same proportions as parent companies that own

[37] AT&T has overinvested because competitive pressures by new market entrants such as US Sprint have forced it to deploy new technology before its existing technology was fully amortized. The other common carriers have overinvested because of discrepancies between their market-share forecasts and their market-share realizations.

fully regulated local exchange companies in addition to interLATA common carriers. However, it is less volatile than those of interLATA common carriers not owned by a parent with fully regulated subsidiaries. Lastly, the AT&T debt/equity level falls into the low end of the range implied by table 3-3. Only Rochester Telephone has a lower debt/equity ratio. These data indicate that AT&T's business and financial risks are approximately equal to those of US Sprint and other subsidiaries of regulated firms. They also suggest that a return to a single provider of interLATA services on the basis of capital insufficiency is extremely unlikely.

TABLE 3-3

THE UNITED STATES LONG DISTANCE MARKET
CAPITAL MEASURES OF FIRMS

Capital Measure	AT&T	MCI	United	Rochester	Williams
Debt/Equity Ratio	44.7%	67.4%	57.1	43.1%	51.7%
Beta	0.85	1.20	0.85	0.70	1.38
Standard & Poor's Debt Rating	A-	BB	A-	A	B

Source: Putnam, Hayes & Bartlett, Inc. July 5, 1989

Conclusion

Comparing the firms in the interLATA market, investors seem to prefer the larger firms for several reasons. First, access facilities are needed to connect consumers and producers. Second, the IXCs have to own or lease a transmission network. Third, switching and signaling capabilities are required to complete and hold connections. Thus, significant amounts of sunk costs have to be incurred, and therefore, relatively high traffic volumes are required to justify deployment of these facilities.

Despite this cost structure, the presence of several larger IXCs seems to indicate that the interLATA market is not a natural monopoly. Parallel nationwide networks have been financed and deployed. Access arrangements exist across all market segments from message toll service to 900 services. What's more, it is not apparent that one firm can meet the entire market demand at lowest cost. Thus, it remains an open question as to how many firms represent the optimal market structure.

Not every market can support a large number of firms producing relatively small amounts of the overall market demand at existing prices. The joining of the best available production processes to the existing demand for services may cause the result that only a few firms can profitably populate the market. When the market is a natural oligopoly in the sense just outlined, efforts to increase the number of firms by fiat represent a diversion of resources and a corresponding reduction in economic welfare. Moreover, the market will revert back to its natural structure once these administrative supports are removed.

With respect to the telecommunications market, these possibilities leave us with the question of how many firms can the demand for interLATA services support. The answer lies in the pace and character of technological change juxtaposed with the pace and character of the change in market demand and the change in products and services themselves. The answer does not lie in a predetermined distribution of market shares and the number of firms implied by it. That is, production and demand do not adjust to the number of firms in the market and their shares of the market. It is the other way around.

Although the forms of competition for a 3-firm, 5-firm, 10-firm or 100-firm market are qualitatively different, one form is not necessarily effective and the others are not. What can not be forgotten is that the best market structure is determined by the interplay of supply and demand disciplined by the firms' selection of their preferred production processes. Hence, one public policy objective is to assure that competition is robust among the so-defined optimal number of firms. A less efficient objective is to select a predetermined number of firms and then to assure their continued existence through administrative procedures.

The existence of more than one firm producing products and services does not mean that a particular firm does not dominate a market. Market

dominance can occur even when there are many firms supplying services to consumers, and market dominance can disappear with as few as two firms supplying users. Its presence or absence turns on the form of the interdependence between firms. If a firm cannot develop its current business plan upon the assumption that it controls how its competitors will react, then it must be cognizant of the tactical and strategic plans of its rivals and react accordingly. Under these conditions, a market would not be dominated by any specific firm even if there were only two or three firms in it.

AT&T does not dominate the interLATA market because it can no longer immunize itself against the effects of the strategic and tactical decisions of its competitors. Consider, for example, the role that AT&T's Tariff 12 has played in the evolution of the interLATA market structure. Tariff 12 has caused AT&T to lose revenues in order to maintain market share. But, it has also made it more difficult AT&T's competitors to win the bidding for high usage contracts. Thus, the gains in traffic volumes realized by AT&T's rivals come at a higher cost; that is, at less revenue per employee. To replenish these lost revenues, both AT&T and its competitors will have to find new customers that do not burden them with substantial start-up costs. Therefore, we may expect that competition between AT&T and its rivals will heat up in those markets closely tied to basic interLATA services. These markets would include international, enhanced, and information services.

Lastly, a feature-rich interLATA market has important implications for the market behavior of the IXCs. A continual flow of new products and services works against the equilibration of market shares and the tendency toward collusion that may be inferred from such a result. Since the interLATA market is not expected to be collusive, IXCs will have incentives to engage in research and development, price competition, and reliability-based competition.

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

Few regulatory activities raise blood pressures more rapidly or lowers expected profits more steeply than decisions concerning the market dominance of an incumbent public utility. The managers of the regulated firm expect more lost customers, revenues, and opportunities when a decision of continued dominance is returned. Likewise, the managers of unregulated firms expect that a deterioration in their survival probabilities will accompany a decision against market dominance. These reactions are not surprising. Besides being an important economic phenomenon, market dominance is a volatile political issue where the assertion of harm often is an effective technique of persuasion.

The objective of our analysis has been to determine whether AT&T dominates the interLATA markets. To answer this question, we analyzed separately and jointly the structure and configuration of this market. Economic concepts as well as qualitative and quantitative modes of thinking have been applied to this task. However, the use of quantitative methods was kept simple because of data limitations.

Market dominance has been explained in the context of institutionally constrained forces that create a unique and potentially anticompetitive form of market asymmetry. As previously mentioned, a market-dominant firm exists if and only if a particular two-part test is passed. First, the firm must be able to improve irreversibly its profit position at the expense of its rivals as, for example, when an IXC is in the position to change the price and/or output of an economic good that is used by a rival as a factor of

production.[1] Second, no other firm in the interLATA market has same capability. Market dominance therefore is observed in the production, prices, and investment decisions of the IXCs.

Dominant and Nondominant Behavior in the InterLATA Market

The form and content of economic decisions are affected by any type of interdependence between IXCs that arises because a few of them are operating in a noncontestable market. Interdependence may occur as a result of the corporate interests of these firms, or it may emerge from the implementation of selected public policy decisions. In both regards, it is possible that regulatory, legislative, and judicial decisions can alter the dominance or nondominance of a firm. Consider, for example, that the market dominance of an IXC may recede when regulatory changes make entry into the interLATA market easier.

A new entrant tends to invest in the market it is entering. The need to recover this investment as quickly as possible and the desire to attract customers and establish a market position may cause this firm to set its price below that of the incumbent IXCs. Hence, additional investment in a market can be associated with lower prices for interLATA services if the incumbent firms respond to the entry plans of new firms. But as argued in other parts of this report, new entrants would not cause a market-dominant firm to lower prices and reduce profits. Instead, one or more market mechanisms would exist enabling the dominant IXC to maintain substantially the same prices and profits as it increases the costs and reduces the investments of new entrants. That is, a market-dominant IXC can have a significant effect on the post-entry profitability of a new firm without appreciably affecting its own prices, costs, and production levels.

Market dominance does not necessarily exist because one firm has made it more difficult for other firms in the market. A nondominant IXC can

[1] Profit irreversibility means that rival firms must reduce their levels of production and absorb some portion of the additional costs when a dominant firm increases the price and offers fewer units of an economic good that is used as a factor of production by its rivals.

substantially affect its profits in the face of market entry by reducing its labor and capital costs. Such opportunities are possible because this firm is not obligated to minimize its preentry costs of production by selecting the best available production technology. Hence, a nondominant IXC is not in the position to maintain its prices. Its motivation for cost reductions is apt to be its expected price reductions caused by the lower prices of the new entrant.

While the profitability of the nondominant IXC may return after its price response to new market entry, no such result can be guaranteed. Consequently, these firms have an incentive to avoid price competition whenever possible; instead, they seem to prefer to concentrate their competitive efforts in customer service, reliability, and new services. But the ongoing struggle between the young and old IXCs often upsets this plan. The younger firms have an incentive to lower prices to encourage customer growth if market sharing at higher prices cannot be arranged. This tension between growth and protection has caused most IXCs to offer promotions and price discounts at one time or another.

End of Dominance in the InterLATA Market

AT&T once dominated the interLATA market because each of its rivals leased services from AT&T or its subsidiaries. This entree into its rivals' operations gave AT&T the power to raise or lower its rivals' costs of production, thereby affecting their price and investment decisions.

AT&T's dominance began to erode with the divestiture of its operating companies. It did not disappear, however, until its facilities-based rivals completed deploying and upgrading their basic networks to bring them on par with the network owned by AT&T. AT&T's rivals are now in control of the same types of costs that AT&T controls. Meanwhile, AT&T cannot manipulate the costs of these firms as it did in the past. Hence, AT&T's rivals can introduce new products and services that cause AT&T to lower its costs, prices, and profits. Perhaps the strongest piece of evidence in this area

is the ongoing dispute over off-tariff rates and Tariff 12 services.[2] Both types of services demonstrate the ability of any IXC to reverse the price and output decisions of each other.

But the competitive process applying to the interLATA market is not perfect. One road that may be taken to improve and strengthen it is to continue to lower the costs of entry into this market. Meeting this objective requires more than dismantling administrative and legal obstacles facing a new entrant, or making it easier for new entrants to access the features and functions available in the local exchange and interexchange networks. It also requires that methods be devised to deal with the entry-deterring effects of the sunk costs that must be incurred to enter the interLATA market.

Another avenue to improved competitiveness is for consumers to become more proactive in stating their tastes and preferences. More market research and market trials are required if this objective is to be met. Conversely, fewer resources need to be devoted to explaining the benefits of one technology over another. While technical superiority can be proven in a laboratory, economic superiority is demonstrated when consumers choose it over other alternatives. Such choices cannot be made when consumers are offered a service because it is now technologically feasible to do so. Instead, these choices are made when consumers are given a chance to indicate their preferences for products and services that require this technology.

Competitive Process in the InterLATA Market

Variations in price and market shares lie at the base of the competitive process in the interLATA market. They serve to reflect the

[2] At a different policy level, price competition has spread to most segments of the interLATA market. While the larger price concessions are accruing to the large users, some price declines at the margin are occurring for the small- and medium-user market segments. However, in the main, price declines for the latter two market segments tend to occur after a reduction in access charges.

interdependence between incumbent firms,[3] while simultaneously providing some guidance concerning the logical relationship between potential entrants and the existing characteristics of the marketplace. For example, variation in the level of prices for interLATA services in relation to the minimum efficient per-unit cost of production reveals information about the strength of the entry barriers that are still in place in the interLATA industry.[4] Similarly, variations in the interLATA market shares tend to reflect the effectiveness of advertising and other forms of service and quality competition after regulatory policies affecting this variable have been liberalized. In recent years, however, changes in regulatory policies have been the most influential source of changes in the share distribution of the interLATA market. There has been the FCC's implementation of the equal access mandate of the *Modification of Final Judgment*,[5] and its revealed preference for open access.[6] Or, there are its policies of unrestricted use of most telecommunications services combined with the resale of services containing volume discounts. However, most of the impacts of these regulatory policies have been exhausted in the interLATA market.

AT&T's rivals began to act consistently with this market reality shortly after tariff arbitrage opportunities were reduced substantially. US Telecom and MCI launched network expansion and modernization efforts. GTE Sprint and US Telecom merged for financial and technological reasons. In general, the construction, enhancement, and improvement of alternative networks were undertaken to gain control over production costs. But the *quid pro quo* for the control of costs is that AT&T's formerly hit-and-run

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[4] Because most strategic maneuvering in an oligopoly takes place between incumbents, the characteristics of new and potential entrants do not and cannot supercede the strength of the competitive process within the market.

[4] The measure of minimum efficient per-unit cost depends on the cost characteristics of the industry structure under consideration. Marginal cost or average incremental cost are the correct choices when returns to scale are constant or decreasing. Average cost or ray average costs are appropriate when there are increasing returns to scale.

[5] *United States v. American Telephone and Telegraph Company* 552 F. Supp. 131 (D.D.C. 1982). *aff'd sub nom. Maryland v. United States* 460 U.S. 1001 (1983).

Amendment of Sections 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), CC Docket No. 85-229, *Report and Order* (released June 16, 1986).

rivals had to incur sunk network costs, thereby committing them to long-term operation in the interLATA market.

Subsequent to building alternative networks, AT&T's rivals invested heavily in customer service, network diagnostic, marketing, administrative, and billing and collection systems. Upgrading these "backroom" capabilities to suitable quality proved to be expensive and time-consuming with the result of further committing AT&T's facilities-based rivals to the interLATA market.

Although numerous and robust in the past, the investment-based options for strengthening the competitive process in the interLATA market are drawing to a close. MCI and US Sprint have deployed common channel signaling, and each is preparing to offer integrated services digital network features and functions on an interLATA basis.[7] The Federal Telephone Service (FTS) 2000 contract has been awarded. Its ripple effect on network investment has about run its course.

Marketing successes will be an important but not the predominant cause of success in the interLATA market. In order to truly successful, an IXC will have to propose and implement marketing plans that reduce the firm's per-unit costs, while establishing a product difference in the eyes of consumers. That is, quality-of-service strategies can no longer be supplemented by price concessions financed by price changes in other market segments. For better or for worse, head-on service and

[7] During 1990, US Sprint intends to introduce six network features that utilize its common channel signaling capability. These services are primitive integrated services digital network (ISDN) applications. For the most part, their development seems to have been motivated by US Sprint's successful bid that won 40 percent of the FTS 2000 Contract. The network features are: (1) primary rate interface, (2) integrated packet data access, (3) call-by-call service access, (4) calling number identification, (5) virtual private network/private branch exchange feature internetworking, and (6) switched digital service. See: "US Sprint Announces Plans to Roll Out Six ISDN Features During First Quarter of 1990", *Telecommunications Reports* 55 no. 35 (September 4, 1989): 11. MCI's new feature introduction is less extensive, partly reflecting, perhaps, its loss of the FTS 2000 bid. In mid-1990, MCI intends to offer call-by-call service selection, automatic number identification for 800 calls, and calling station identification for its switched private network calls. See: "MCI Plans Mid-1990 ISDN Roll-Out; Call-by-Call Service Selection, ANI to be Offered", *Telecommunications Reports* 55 no. 39 (1989): 4.

price competition are an unmistakable result of the evolution of the interLATA market.

The current evolution of the interLATA market fits well the hypothesis that growth in cost-reducing technology outstripped the growth in demand for interLATA services. Essentially, recent entrants into this market have felt that they could be profitable because they believe themselves to be inherently more cost efficient than AT&T. Hence, they do not show much concern over the number of new entrants or the historical growth rates for telecommunications products and services. Because of this perception, these firms do not have an incentive to devote resources to obtaining an understanding of the structure of growth rates for the interLATA market and the structure of this market itself.

Failing to understand the relationship between technology and market size may have provided some IXCs with difficult financial times. Consider an interLATA network containing digital switches and fiber optic transmission capabilities. Because these technologies replace existing analog and copper-based facilities, an IXC may have to write-off existing investment after the transition of traffic from one network to the other, or it may elect to switch over traffic as the analog and copper-based facilities reach the end of their depreciation lives. In the first instance, the IXC's bottom line is affected adversely. In the second instance, the firm may be placing itself at a competitive or cost disadvantage since the economic life of an asset may be less than its depreciation life. In either event, the deployment of a digital-switch, fiber-optic-based network is costly.

The costliness of this network design is reinforced by the fact that its technical efficiency is improved by the addition of common channel signaling and more powerful switch-based software that provide more features and functions. Consequently, facilities-based common carriers can be expected to reach their cost-minimizing outputs at levels that are large in

relation to market demand, if these production processes are characterized by economies of scale.[8]

Conclusion

An oligopolistic industry structure does not mean that a market is dominated. Dominance in part depends on the attributes of the production processes used by the firms in the market. If these processes are interdependent in any significant sense, then a dominant firm is a possibility. However, the likelihood of a market-dominant firm does not increase because it is cheaper for one to produce its optimal share of the market output than for that level of output to be produced by more than one firm.

The absence of market dominance does not mean that the interLATA market should be deregulated. Nondominant firms can act anticompetitively by setting prices below average incremental cost. These activity is possible whenever nondominant oligopolists operate in a noncontestable market. Specifically, these firms can earn supranormal profits by raising prices above a selected set of average costs.

[8] The US Sprint experience indicates that profitable, if not cost-efficient, output for an all digital-switch, fiber-optic network with common channel signaling capabilities requires something approaching one-tenth of the existing telecommunications market at currently announced prices. US Sprint had approximately 7 percent of the interLATA traffic before it won the 40 percent share of the FTS - 2000 contract. US Sprint announced it had operated in the black for the first time shortly after winning this contract. On the other hand, MCI with its longer market presence and antitrust damages, has been profitable with a market share that approximates the same level currently enjoyed by US Sprint. Thus, it does not appear reasonable to expect that the telecommunications industry in general, and the interLATA market in particular, will be populated by many firms with output levels that are small relative to the total quantity of products and services demanded by the marketplace at the currently announced prices.