INDUSTRIAL ORGANIZATION

THEORY, EVIDENCE, AND PUBLIC POLICY

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PREFACE

The relevant market for industrial organization texts has a concentration ratio of somewhere between 60 and 80 percent. According to the standard industrial organization theory, a concentration ratio in this range creates a significant barrier to entry. More recent developments in industrial organization theory, however, deemphasize concentration and its relationships to entry, profitability, and other performance outcomes. Both new and old approaches to industrial organization focus on the importance of product characteristics in determining a firm's share in the market and its ultimate performance. That is where this book comes in. We believe there are five characteristics that make this book a viable competitor in the highly concentrated industrial organization textbook market.

INTEGRATION OF TRADITIONAL AND RECENT THEORIES

First, our text has interwoven both the standard industrial organization theory and hundreds of accompanying empirical studies with recent developments in the theory of firm behavior and market outcomes. Because these empirical studies draw heavily on microeconomic theory, we have added a small number of appendixes and sections focusing on the relevant tools of price theory. This permits the book to be used with a minimum of one semester of microeconomics. We have reviewed industrial organization studies for the past four decades and have incorporated those that are particularly important for understanding industrial organization today.

EMPHASIS ON PUBLIC POLICY

Second, we have fully integrated the economics of industrial organization with current questions involving public policy, particularly as they relate to judicial decisions and administrative regulations. In that regard we have included a separate chapter discussing the development of legal views of competition and monopoly; an appendix explains how to do legal research in the industrial organization field. Another chapter focuses on current antitrust and trade regu-

lation decisions. A chapter on administrative and regulatory agencies is also included. Each chapter focuses on the interaction of industrial organization and public policy.

MARKET ORIENTATION

Third, to enter such a highly concentrated market, we know that our product must meet consumer demands. To that end we have relied heavily on suggestions and comments from a number of professors who teach and conduct research in the field of industrial organization. The McGraw-Hill Book Company's external reviewers and several other individuals on earlier drafts of the manuscript, rigorously provided comments, and we have attempted to include all of them in one form or another in the text that follows. We have also incorporated comments from those directly involved in the public policy process, including input from the staff of the Department of Justice and the U.S. Senate. In addition, portions of the book have been used extensively in undergraduate and graduate economics of industry classes at the University of Virginia, as well as in economic analysis courses at the University of Miami School of Law.

UNIQUE CHAPTERS

While we have mainly organized the chapters in response to colleagues' comments and suggestions, there are some chapters that we feel are unique. They are as follows:

Chapter 11—Price Discrimination: Methods and Applications The entire chapter is devoted to the types of price discrimination and resulting applications.

Chapter 19—Antitrust and the Courts Today Current antitrust and trade regulation policies are treated concisely.

Chapter 20—Regulatory Agencies Extensive coverage of administrative agencies and their regulations are included.

SPECIAL APPENDIXES

In addition to the unique chapters, we have included a number of special appendixes that provide further insights into understanding industrial organization. These include:

Appendix B to Chapter 2—The Present Value Criterion Provides fundamentals for understanding intertemporal industrial organization problems.

Appendix to Chapter 4—Measurement Problems Focuses on the difficulties of obtaining accurate measures of market structure and performance.

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Appendix to Chapter 18—Legal Research Provides basic background in legal research for public policy industrial organization analysis.

ACKNOWLEDGMENTS

To thank all who have contributed to this volume would turn a short preface into a long chapter. However, we must extend our special thanks to those who painfully reviewed various drafts, including William P. Albrecht, University of Iowa; Roger Beck, University of Alberta; Thomas Borcherding, Simon Fraser University; Andrew Caverly, Department of Justice; Louis De Alessi, University of Miami; John Diehl from the law firm of Nixon, Hargrave, Devans & Doyle, Rochester, N.Y.; Robert Feinberg, Pennsylvania State University; Thomas D. Hall, University of Hawaii; William Hosek, University of Nebraska; Robin Kaperst, University of Miami School of Law; James MacDonald, U.S. Department of Agriculture; William MacLeod from the law firm of McDermott, Will & Emery, Chicago, Ill.; Sharon Oster, Yale University; Richard Rosenberg, Pennsylvania State University; T. Y. Shen, University of California; Henry Steele, University of Houston; Philip Ward, legislative aide in the U.S. Senate; and Steve Wiggins, Texas A&M University.

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The first edition of any book is only the beginning, and we encourage those who use our text to share with us their thoughts as well as their individual contributions to the field.

Kenneth W. Clarkson

Roger LeRoy Miller

CONTENTS

CHAPTER 1

INTRODUCTION

Traditionally, the study of industrial organization investigates the structure of firm sizes, the causes of this structure, and the effects of the structure upon markets. It also places relatively more emphasis on empirical studies of the factors that influence the structure and performance of firms than do other areas of economic inquiry. Equally important, industrial organization focuses largely on public policy questions posed by antitrust laws and regulation. In this sense the field of industrial organization is an extension and application of basic price theory.[1]

THE SCOPE OF INDUSTRIAL ORGANIZATION

Over 12 million business firms exist or operate in the United States, ranging in size from the smallest corner newsstand with a few hundred dollars' worth of assets a year to American Telephone and Telegraph with $113.8 billion in assets in 1979.[2] Of the three basic forms of business organization—proprietorship, partnership, and corporation—the bulk of firms are proprietorships and partnerships, in which one or more individuals own all the resources of the firm and are fully responsible for the operation of the firm. There are over 10 million such small proprietorships and partnerships in the United States. More than a million and a half firms have taken on the corporate form of business organization. Those approximately 1.6 million corporations generate more than twice as much **accounting profit** as the 10 million small proprietorships and partnerships.

[1] Some even maintain that there is no separate field of industrial organization. See, for example, George Stigler, *The Organization of Industry* (Homewood, Ill.: Irwin, 1968), p. 1.

[2] *Fortune*, July 14, 1980, p. 158.

Basically, corporations generate the bulk of manufacturing activity in the United States. Of the 1.6 million corporations in existence, the largest 200 manufacturing corporations generate more than half of all manufacturing sales. Clearly, we will have to study in detail the corporate form of ownership in the United States if we are to understand the economics of U.S. manufacturing and related industries.

ORIGINS OF THE PUBLIC CONCERN OVER INDUSTRY

A significant portion of industrial study focuses on large industrial firms. Large firms are generally believed to develop and behave in a manner that restricts entry into the industry, thus limiting their competition. The ultimate result may be the formation of a **monopoly**. Fear of this sort of development has fostered a large degree of legislation and regulation.

As far back as the fourth century B.C., monarchs realized that political power controls markets and that controlling entry into a market could lead to higher profits for those given that privilege. Salt, tea, and other goods with relatively inelastic demands have often been the subject of royal monopoly. The Ptolemaics in Egypt established royal monopolies between the fourth and first centuries B.C. Later the Roman emperors acted similarly between the first and third centuries B.C. Monopoly privileges were dispensed to nobles by rulers during the Middle Ages and later were given to trading companies and guilds. The granting of legal monopolies to private parties continues to this day.

Legal monopolies may be granted by all levels of government, and they may be taken away. For example, at the federal level the Civil Aeronautics Board (CAB) granted air routes to a select few companies. Furthermore, until recently the CAB regulated prices and dimensions of service quality of the airlines who had been given these routes. The new deregulation programs of the CAB reversed this trend, eroding its power to regulate prices and to prohibit new entrants from serving existing routes.

Monopolies also occur at the local level. In the smallest towns, business regulations in the form of special licenses to operate a business or provide a service are granted and revoked. In other cases, zoning laws effectively prohibit entry of new gas stations, restaurants, or other specific types of business establishments.

Unjust Monopoly Prices

Aristotle wrote often about the unjust prices charged by a monopolist. In a now-famous quote, Adam Smith wrote in 1776 that "[p]eople of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."[3] In an attempt to counter monopolies, laws against private monopolies

[3] Adam Smith, *The Wealth of Nations* (New York: Random House, 1937), p. 128.

started in ancient Babylonia and India. In England, the Parliament even started to limit the right of kings to grant royal monopolies when it passed the Statute of Monopolies in 1624.

Natural Monopolies and Their Regulation

A ***natural monopoly*** is said to exist if long-run average total costs decline throughout the relevant range of outputs. If total costs of producing any given output are to be minimized, production should be carried out by a single firm. In part, this natural monopoly argument has been used to rationalize public regulation of transportation through the Interstate Commerce Commission and the CAB. In addition, we have seen other government regulatory agencies formed for the purpose of regulating natural gas distribution, telephone service, and the generation of electric power.

Other Forms of Monopoly and Their Control

We have discussed legally granted monopolies and natural monopolies. The third kind of monopoly is the simple, private, so-called artificial monopoly formed by collusion, merger, or a host of other methods designed to restrict production and raise prices to the monopoly level. Economists in the United States have not been unanimously in favor of regulating or even attempting to regulate artificial monopolies. One group felt that combinations in trusts in the nineteenth century were the result of vigorous competition or cost savings. It was thought that if monopoly power obtained by trusts was exercised too much, entry would cause prices to fall. Earlier in this century, a growing number of economists began to doubt this line of reasoning. Today it appears that the majority opinion is one of severe doubt or incredulity over this initial line of reasoning. It is now a minority view that entry outside of the colluding parties will regulate artificial monopolies.

By the late 1800s, both Republicans and Democrats were against trusts and combinations and sought new legislation to constrain them. This resulted in passage of the Sherman Act in 1890 and the Clayton and Federal Trade Commission Acts in 1914. It was not until a number of years later, particularly in the 1930s, that many economists started to side with legislators and laypersons in their distrust of artificial monopolies. It was also in the 1930s that new theories of market structure began to appear. Some economists believed that the polar extremes of pure competition and pure monopoly did not describe the U.S. economy very well. In 1933, for example, both Joan Robinson of Cambridge, England, and Edward Chamberlin of Cambridge, Massachusetts, published books putting forth theories of imperfect, or monopolistic, competition. These theories placed themselves squarely between the two polar extreme models just mentioned. While many questions were answered by their works, others were not, particularly one question regarding behavior and performance of firms in an industry that has a large number of firms, but that cannot be properly

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analyzed by the competitive model. When economists tried to analyze this problem, the field of industrial organization began to take shape.

INDUSTRIAL ORGANIZATION AS A FIELD

Industrial organization as a separate economic field, or specialty, is a relatively recent phenomenon. The label "industrial organization" and the initial impetus to study it came from Harvard University in the late 1930s. Prior to that time, there were descriptive institutional courses in the fields of corporations, agriculture, marketing, utilities, financial organizations, and trusts. These courses were generally not integrated with economic theory. According to Grether,[4] it was the Great Depression coupled with the publication of Berle and Means' *The Modern Corporation and Private Property* in 1932 that led to a demand for a more basic theoretical/empirical approach to the use of economics in understanding business institutions. Additionally, the hearings, studies, and final report of the Temporary National Economic Committee on the concentration of economic power in the late 1930s provided further impetus and apparently welcomed empirical materials for such an approach.

At Harvard, Professors Chamberlin and Mason began the first truly *industrial organization* course. As an introduction to a collection of essays he started writing in 1936, Mason characterized the study of business organizations as "eclectic methodology" and as a "muddy, but not uninteresting, field."[5] Empirical studies started to come out of Harvard at an increasing rate. They included Wallace's study on market control in the aluminum industry[6] and numerous others surveyed by Bain in 1948.[7]

In the late 1930s and early 1940s, the primary interest of investigators in industrial organization was pricing policy or, according to Mason in a 1938 position paper, "the deliberative action of buyers and sellers to influence price" and, in particular, the policies of large industrial firms.[8] All these case studies and empirical work generally focused on theoretical structures associated with pure monopoly. In this context, markets and market structures "must be defined with reference to the position of a single seller or buyer."[9] By 1948 Bain, one of the earliest of Mason's Ph.D.s in the field, had become dissatisfied. He concluded that empirical research until then had made "little definite progress in establishing an objective classification of markets, with subcategories

[4] Ewald T. Grether, "Industrial Organization: Past History and Future Problems," *American Economic Review*, vol. 60 (May 1970), pp. 83–89.

[5] Edward S. Mason, *Economic Concentration and the Monopoly Problem* (Cambridge, Mass.: Harvard University Press, 1957), pp. 4, 8.

[6] Donald H. Wallace, *Market Control in the Aluminum Industry* (Cambridge, Mass.: Harvard University Press, 1937).

[7] Joe S. Bain, "Price and Production Policies," in H. S. Ellis, ed., *A Survey of Contemporary Economics* (Homewood, Ill.: Irwin, 1948), pp. 129–173.

[8] Edward S. Mason, "Price and Production Policies of Large-Scale Enterprise," *American Economic Review*, Supplement (March 1939), p. 55.

[9] Ibid., p. 65.

which would contain industries with uniform and distinctive types of competitive behavior."[10]

Approach to Industrial Organization

One of the major concerns in the development of industrial organization has been the quality of performance, including efficiency, in a particular industry. Indeed, some have said that examining quality of performance is the goal of industrial organization. Industrial organization, then, should be able to help us understand what makes for good or bad performance in an industry. This understanding can assist public policy formation by indicating those ways that will make the economy perform "better." The common framework of analysis in industrial organization has thus become the so-called market structure-conduct-performance approach in which one studies the interrelationships between structure, conduct, and performance, often assuming that structure determines conduct, which in turn determines performance. In most analyses causal relationship goes directly from structure to performance results or from structure to combined conduct-performance results in which business conduct is, in essence, inferred from performance results. To quote Richard Caves, "Market structure is important because the structure determines the behavior of firms in the industry and that behavior in turn determines the quality of industries' performance."[11] Recently the joint interrelationships and dynamics among structure variables, conduct, actions, and performance outcomes have been recognized. In other words, if firms adaptively respond or react, they will alter conduct and/or structure.[12]

In Figure 1-1 we put in schematic form the structure-conduct-performance framework for industrial organization analysis, adding the basic demand and supply conditions.

Market Structure Market or industry structure refers to those attributes of the market that influence the nature of the competitive process. Market structure thus includes size and size distribution of firms, barriers and conditions of entry, and product differentiation, as well as firm cost structure and the degree of government regulation.

Certain types of antitrust laws deal directly with market structure. For example, Section 7 of the Clayton Act (amended) deals directly with market structure by focusing on the number of firms in the industry. It prohibits the

[10] Bain, op. cit., p. 158.

[11] Richard Caves, *American Industry: Structure, Conduct, and Performance*, 2d ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1967), p. 16.

[12] See Almarin Phillips, "Structure, Conduct, and Performance—and Performance, Conduct, and Structure?" in Jesse W. Markham and Gustav F. Papanek, eds., *Industrial Organization and Economic Development: In Honor of E. S. Mason* (Boston: Houghton Mifflin, 1970), pp. 26–37. See also William L. Baldwin, "The Feedback Effect of Business Conduct on Industry Structure," *Journal of Law and Economics*, vol. 12 (April 1969), pp. 123–153.

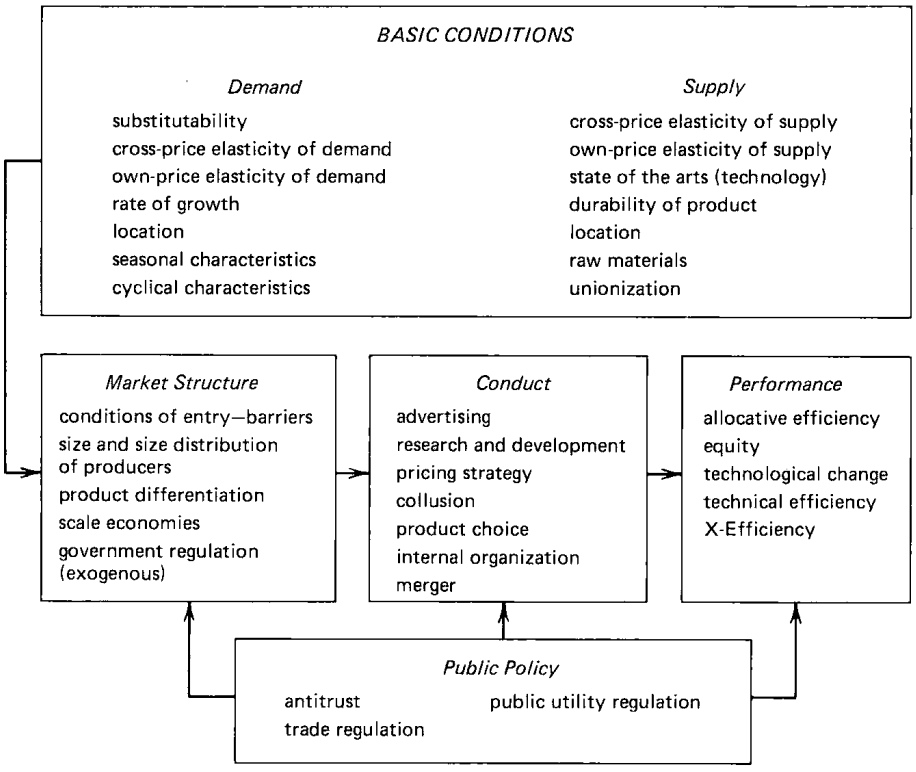

FIGURE 1-1
Traditional industrial organization framework.

development of market structure via the merger route that might discourage competition or encourage a monopoly. Here it is clear that the structure-conduct-performance link is firmly accepted as fact by legislators. Market structure is important because such structure determines the behavior of firms, which then determines the quality of the industry's performance.

However, encompassing the activities of large, diversified corporations within the framework of the structure-conduct-performance analysis creates a serious problem. In particular, how does one apply the market structure framework to such corporations? Some allege that large corporations are free of market competitive forces.[13] But if large corporations are indeed free of market pressures, isn't it futile to analyze their behavior and performance results in the market structure framework just outlined?

There is also difficulty in actually measuring the elements of structure, with the exception of the number of firms and the measures of concentration. Measurement of market structure has not seriously progressed in recent years.

[13] See, for example, John K. Galbraith, *American Capitalism: The Concept of Countervailing Power*, rev. ed. (Boston: Houghton Mifflin, 1956).

Conduct Market structure affects the actual operation and conduct of individual firms. Market structure may, for example, influence internal organization of the firm, including some employment policies, working conditions, and other factors that directly or indirectly affect the allocation of resources within the firm and the products provided by it. Determining the conduct of firms in a market involves studying their product designs and differentiation, the way they establish prices, and the advertising and sales promotion activities they engage in. At this point we ask questions about the degree to which they collude, whether collusion is open or implicit, the degree to which they engage in research and development, and how responsive they are to changes in their economic and legal environment. When we look at certain market conduct phenomena, such as cartelization and collusion, we ask the question, "Are collusive agreements, when existent, durable?"

Performance Market performance is the appraisal of how the economy satisfies specified goals, including, but not limited to, efficiency, growth, equity, and employment. In order to make performance judgments, normative economics must be utilized. The only way we can assess the "goodness" or "badness" of an industry's or an economy's performance is by first postulating normative goals or by placing values implicitly or explicitly on the costs and benefits of different outcomes of industry structure and conduct.

Recent work, however, has weakened the determinacy conditions of the structure-conduct-performance approach. In addition, the dynamic properties of the market have been more heavily emphasized. Thus past performance may be linked with current structure, which in turn determines current conduct and performance.

Recent Trends in Industrial Organization

A number of variations and expansions in the field of industrial organization have occurred since the initial Harvard approach. While Harvard concentrated on industry studies that can be classified as descriptive in nature, varying schools of thought have approached industrial organization in a different manner. The Harvard studies led primarily to the structure-conduct-performance approach that was developed by Bain, Caves, and others. In contrast, the Chicago school relied more on applied price theory in the context of a logical deductive system. In this approach Stigler and others at Chicago treated industrial organization as a logical extension of price theory with a heavy emphasis on empirical testing. This approach relied less on institutional frameworks.

In addition to these methodological differences, industrial organization has become more quantitative over time. In recent years studies have focused more on statistical examinations of interfirm and interindustry differences in explaining behavior and performance.

Industrial organization has also expanded the types of topics studied. For example, in recent years extensive investigations have been conducted of the

internal structure and organization of firms and how that organization affects behavior. Oliver Williamson, Armen Alchian, and others are associated with this line of inquiry.

Despite the differences in approaches, each method seeks to answer common questions. What determines differences in the market organization? What factors cause differences in profitability among firms and across industries? To what extent can the structure of the firms themselves determine their product choices, their methods of marketing, their pricing policies, and other dimensions of firm behavior? Different approaches have focused on benefits from and costs of diversification, mergers, and differences in plant sizes, as well as on the factors that determine investment and technological innovation.[14]

DEFINING INDUSTRIAL ORGANIZATION

We have made reference to industrial organization as a concept. It is appropriate for us to be more specific in our definition before we go on. Clearly, "industrial organization" really does not tell anybody outside of economics what the subject means or is all about. Industrial organization as a subject does not tell one how to organize a firm. It clearly is not a course in the form of organization and management of industrial enterprises. The formal definition here will be limited to the following:

> **Industrial organization** is a specialty in economics that helps to explain why markets are organized as they are and how their organization affects the way these markets work.

Thus, the study of industrial organization attracts those individuals interested in the way in which industries are organized, what factors influence a firm's behavior, and how these factors affect society in general. The focus of interest in the past, in the present, and probably in the future centers on national economic problems caused by different types of market organization. Industrial organization is intricately tied up with serious public policy questions concerning the desirability of mergers between large firms, antitrust action against existing firms, the possibility of unlawful price fixing, and so on.

Boundaries of the Field

It is interesting to see what has happened to the field since it started in the 1930s. Today the American Economic Association uses a form of classification given in Table 1-1. Here we see that industrial organization is broken into four major subheadings:

1 Industrial organization and public policy
2 The economics of technological change

[14] Values play an important role in answering questions raised by such analyses and in ensuing policy determinations. See Herbert H. Liebhafsky, *American Government & Business* (New York: Wiley, 1971) and Duncan MacRae, Jr., *The Social Function of Social Sciences* (New Haven: Yale University Press, 1976).

3 Industry studies
4 Economic capacity

Within those four broad categories, there are a large number of subheadings that are further divided into sub-subheadings. Thus, the field of industrial organization today covers everything from monopolistic theory to public enterprises, location theory to the effects of taxes and subsidies on research and development, and industry studies in every major industry in the country.

Industrial organization as it is studied today is primarily concerned with those decentralized free enterprise markets characteristic of much of the United States economy. To be sure, many of the principles derived from an industrial organization study can be applied to other types of economic systems, such as socialist and centrally planned economies. But that application would require the field of industrial organization to become even larger than it is today. Furthermore, in order to keep a book of this size manageable, our applications must be concerned primarily with product markets in the manufacturing sector of the economy rather than with agricultural, service, and labor markets.

OUR APPROACH TO INDUSTRIAL ORGANIZATION

Much of the industrial organization literature has explained firm and industry or market outcomes using a partial equilibrium approach, with explanations of how firms interact to produce outcomes based on explicit assumptions about the structure of the industry. As we have seen, this approach has given rise to the structure-conduct-performance paradigm where structure implies conduct, which in turn determines performance. More recent developments in industrial organization focus more on the simultaneous determination of structure and performance using economic theory. Here emphasis is placed on those factors that determine a firm's behavior and how industry structure results from that behavior. In the subsequent chapters, we depart somewhat from the traditional focus on the standard models of competition—monopoly and oligopoly—as the major explanation of firm and market outcomes. We recognize that these models are useful, but they are often incomplete in that they leave unexplained a considerable amount of firm behavior and market outcomes. In this volume we will include a traditional price-theory approach to provide additional insights into industrial organization concerns. At the same time, we will cover the traditional models and representative empirical studies based on these models.

Remember, then, that we will be attempting ultimately to determine how *market* processes (as opposed to political, sociological, or psychological processes) direct the activities of producers in meeting consumer demands. In particular, we will be examining the conditions under which these processes might break down and what governmental policies might be called for to "modify" them in order to improve the performance of an industry (assuming we know what "improve" means).

In Unit I, we will focus on firm and market structure. The chapters in this

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