

# Industrial Organization

Contemporary Theory & Practice

Third Edition

Pepall · Richards · Norman

# Industrial Organization

## Contemporary Theory & Practice

Third Edition

**Lynne Pepall**  
Tufts University

**Daniel J. Richards**  
Tufts University

**George Norman**  
Tufts University

**THOMSON**  
  
**SOUTH-WESTERN**

---

Australia · Canada · Mexico · Singapore · Spain · United Kingdom · United States



**Industrial Organization: Contemporary Theory and Practice, 3e**  
Lynne Pepall, Daniel J. Richards, and George Norman

**VP/Editorial Director:**

Jack W. Calhoun

**VP/Editor-in-Chief:**

Dave Shaut

**Acquisitions Editor:**

Michael Worls

**Developmental Editor:**

Jennifer Baker

**Marketing Manager:**

Jenny Garamy

**Senior Production Editor:**

Kara ZumBahlen

**Technology Project Editor:**

Peggy Buskey

**Senior Media Editor:**

Pam Wallace

**Senior Manufacturing**

**Coordinator:**

Sandee Milewski

**Production House:**

Cover to Cover Publishing, Inc.

**Printer:**

Transcontinental, Louisville  
Canada

**Internal Designer:**

Bethany Casey

**Cover Designer:**

Bethany Casey

**Cover Images:**

© Digital Vision

COPYRIGHT © 2005

by South-Western, part of the Thomson Corporation. South-Western, Thomson, and the Thomson logo are trademarks used herein under license.

Printed in Canada

2 3 4 5 07 06 05

ISBN: 0-324-26130-6 (Pkg: Text and EconApps)

0-324-22474-5 (Text only)

Library of Congress Control  
Number: 2004107265

ALL RIGHTS RESERVED.

No part of this work covered by the copyright hereon may be reproduced or used in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, Web distribution or information storage and retrieval systems—without the written permission of the publisher.

For permission to use material from this text or product, submit a request online at <http://www.thomsonrights.com>.

For more information contact South-Western, 5191 Natorp Boulevard, Mason, Ohio 45040. Or you can visit our Internet site at: <http://www.swlearning.com>

# About the Authors

**Lynne Pepall** is Professor of Economics at Tufts University. Professor Pepall received her undergraduate degree in mathematics and economics from Trinity College, University of Toronto, and her Ph.D. in economics from Cambridge University in England. She has written numerous papers in industrial organization, appearing in the *Economic Journal*, *Journal of Industrial Economics*, *International Journal of Industrial Organization*, *Journal of Economics and Management Strategy*, *Review of Industrial Organization*, *Canadian Journal of Economics*, and *Economica*. She has taught industrial organization and microeconomics at both the graduate and undergraduate levels at Tufts University since 1987. She is also a former director of the University's *Writing Across the Curriculum* program, in which she worked with faculty from all disciplines to develop teaching methods based on the use of writing as a tool for thinking and learning. Professor Pepall lives in Newton, Massachusetts, with her two sons, a dog, a rabbit, and her husband, a coauthor of this book.

**Dan Richards** is Professor of Economics at Tufts University. Professor Richards received his A.B. in economics and history from Oberlin College and his Ph.D. in economics from Yale University. Professor Richards has written numerous articles in both macroeconomics and industrial organization, appearing in the *American Economic Review*, *Quarterly Journal of Economics*, *Journal of Industrial Economics*, *Economica*, the *B. E. Journals in Economic Analysis and Policy*, *Canadian Journal of Economics*, and the *Journal of Money, Credit, and Banking*. He came to Tufts in 1985 and has taught at both the graduate and undergraduate levels. He served as Director of the Graduate Program in Economics from 1989 through 1998. He has also served as a consultant to the Federal Trade Commission and, since 1996, taught Applied Economics in the Sloan Fellows Program at MIT's Sloan School of Management. Professor Richards lives in Newton, Massachusetts, with his two sons, a dog, a rabbit, and his wife, a coauthor of this book.

**George Norman** holds the William and Joyce Cummings Family Chair of Entrepreneurship and Business Economics at Tufts University. He came to Tufts in 1995 from Edinburgh University, where he had served as head of department. Prior to that, Professor Norman was the Tyler Professor of Economics at the University of Leicester (England). Professor Norman attended the University of Dundee (Scotland) where he was awarded an MA in economics with first class honors. He received his Ph.D. in economics from Cambridge University. His more than 60 published articles have appeared in such professional journals as the *American Economic Review*, *Review of Economic Studies*, *Quarterly Journal of Economics*, *Journal of Industrial Economics*, and *International Journal of Industrial Organization*. He is currently an Associate Editor for two journals, the *Bulletin of Economic Research* and *Regional Science and Urban Economics*. He is also on the editorial board of the *BE Journals in Economic Analysis and Policy*. In addition to *Industrial Organization: Contemporary Theory and Practice*, Professor Norman has written and edited, either alone or in collaboration with others, fifteen other books. Professor Norman has taught courses in industrial organization and microeconomic theory at both the graduate and undergraduate levels. He has also taught introductory economics, corporate strategy, international economics, and business economics. Professor Norman lives in Newbury, Massachusetts with his wife, Margaret, who is *not* a coauthor of this book.

# Preface

There are many reasons why we are happy to bring out the third edition of *Industrial Organization: Contemporary Theory and Practice*. Principal among these is that it confirms our original view that there is a real need for a text that (a) makes available to students the essentials of modern industrial organization; and (b) also educates students about the economic way of thinking in general, and in particular, the process of modeling. We remain convinced that many of the most important lessons of industrial organization start with the recognition that good analysis involves the construction of a rational argument whose implications are, at least in principle, susceptible to empirical testing. Based on the many encouraging comments that we have received to date, we think that we have made this point successfully as well as presented clearly the many insights into corporate strategy, market outcomes, and public policy that industrial organization reveals. At the same time, we have taken the opportunity of preparing this new edition to make some important changes in the text.

The biggest change is organizational. In an effort to make the book leaner while not losing intellectual muscle, we have broken down the longer chapters of the previous editions into about twice as many shorter chapters. Many commentators have urged us to do so as a means of giving students an obvious break spot at which to stop and digest what has been read. More importantly, perhaps, we hope that in going from twelve to twenty-five chapters we now make it easier for instructors to pick and choose exactly those topics that they most prefer to cover. A rough guide to the new chapter organization and its correspondence with that of the first two editions is shown below.

## 1st and 2nd Edition

Chapters 1 and 2  
Chapters 3 and 4  
Chapter 5  
Chapter 6  
Chapter 7  
Chapter 8  
Chapter 9  
Chapter 10  
Chapter 11  
Chapter 12

## 3rd Edition

Chapters 1–4  
Chapters 5–8  
Chapters 9–11  
Chapters 12–13  
Chapters 14–15  
Chapters 16–17  
Chapters 18–19  
Chapters 20–21  
Chapters 22–23  
Chapters 24–25

The organizational change has been accompanied by both some streamlining and the inclusion of new material. To begin with, we have updated our Reality Checkpoints so that they remain contemporary illustrations of the underlying analysis. More importantly, we have also added new information throughout the text. Some-

times, this has simply meant the inclusion of new data such as data on aggregate concentration (Chapter 3) or on Canadian versus U.S. drug prices (Chapter 5). More fundamentally, however, it has meant the introduction of new ideas. Thus, our analysis of vertical product differentiation in Chapter 7 now includes a simple model explaining the monopolist's selection and pricing of two products that differ vertically in quality. Similarly, in Chapter 11 on sequential entry and the Stackelberg model, we briefly present a model of sequential entry with learning by doing and use it to explain the evolution of the cable TV and satellite dish markets. Then, in Chapter 12, we present the basic analytics of Gibrat's Law as a way to motivate the discussion surrounding the empirical tendency toward market dominance by a few initial incumbents. In Chapter 14, we now give a more complete presentation of the role of multimarket contact in facilitating collusion and present supportive empirical evidence from the airline industry. The fear that vertical integration may permit predatory bundling is now analyzed in a simple model and applied to an analysis of the European Commission's denial of the proposed GE/Honeywell merger in Chapter 17. Chapter 18, which focuses exclusively on the issue of resale price maintenance (RPM), now adds a discussion of the use of such contracts by a manufacturer as a means of dealing with price discriminating retailers. Finally, our discussion of patent policy in Chapter 23 has significantly expanded the examination of business method patents, and our presentation of auction theory in Chapter 25 now includes a section on "almost" common value auctions.

For the most part, we have made the above additions by becoming more efficient and without cutting other topics. The two small exceptions to this are that our analysis of multiproduct cost functions has been somewhat shortened and we no longer discuss strategic trade policy. While we were reluctant to make such cuts, we believe that they do not undermine the pedagogical mission of the book. Indeed, we think that, on balance, the book's coverage has been expanded and updated so that it truly reflects the contemporary theory and practice of industrial organization.

## ACKNOWLEDGMENTS

We have noted before that authors are only one source of a text like this. Our students at Tufts and MIT/Sloan have been extremely helpful and we owe each of them a great deal of thanks. In addition, the comments of formal reviewers and many who taught from the book have been both very gratifying and very insightful. They have offered considerable encouragement regarding what we have tried to do and valuable suggestions about how we might do it better. This group includes:

Sheri Aggarwal, *University of Virginia*  
 Simon Anderson, *University of Virginia*  
 David Audretsch, *Indiana University*  
 Gary Biglaiser, *University of North Carolina, Chapel Hill*  
 Giacomo Bonanno, *University of California at Davis*  
 Stacey Brook, *University of Sioux Falls*  
 Erik Brynjolfsson, *MIT*

Henry W. Chappell, Jr., *University of South Carolina*  
 Yongmin Chen, *University of Colorado, Boulder*  
 Darlene Chisholm, *Suffolk University*  
 Coldwell Daniel III, *University of Memphis*  
 Larry DeBrock, *University of Illinois*  
 Greg Ellis, *University of Washington*

- Glenn Ellison, *MIT*  
 Stephen Erfle, *Dickinson College*  
 Robert M. Feinberg, *American University*  
 Anne Harper Fender, *Gettysburg College*  
 Sara Ellison Fisher, *MIT*  
 Mark R. Frascatore, *Clarkson University*  
 S. N. Gajanan, *University of Pittsburgh*  
 Ian Gale, *Georgetown University*  
 Paolo Garella, *University of Bologna*  
 Gerald Granderson, *Miami University of Ohio*  
 Arne Hallam, *Iowa State University*  
 Mehdi Haririan, *Bloomsburg University*  
 Barry Haworth, *University of Louisville*  
 Hugo A. Hopenhayn, *University of Rochester*  
 Peter Huang, *University of Pennsylvania*  
 Stanley Kardasz, *University of Waterloo*  
 Phillip King, *San Francisco State University*  
 Robert Lawrence, *Harvard University, Kennedy School*  
 John Logan, *Rutgers University*
- Nancy Lutz, *Virginia Polytechnic Institute*  
 Howard Marvel, *Ohio State University*  
 Catherine Matraves, *Albion College*  
 Eugenio J. Miravete, *University of Pennsylvania*  
 Jon Nelson, *Pennsylvania State University*  
 Craig Newmark, *North Carolina State University*  
 Debashis Pal, *University of Cincinnati*  
 Nicola Persico, *University of Pennsylvania*  
 Raymond Raab, *University of Minnesota*  
 Steve Rubb, *Bentley College*  
 Danny Shapiro, *Simon Fraser University*  
 Nicholas Schmitt, *University of Geneva*  
 Sarah Stafford, *William and Mary*  
 Jacques Thisse, *CORE*  
 William C. Wood, *James Madison University*  
 James Zinser, *Oberlin College*  
 Zenon Zyginont, *Reed College*

Among this group, Arne Hallam, Sheri Aggarwal, and Debashis Pal deserve special thanks for their work on successive editions of the Instructor's Manual. Here at Tufts, Lidia Bonaventura gave us, as always, outstanding secretarial assistance. The editorial staff at Thomson Business and Professional Publishing, especially Jennifer Baker and Michael Worls, provided excellent and much-needed editorial guidance. Kara ZumBahlen's production editing was Olympic.

Of course, we owe the greatest debts to our family members. Lynne and Dan wish to thank their sons, Benjamin and William, for their humor, patience, and the independence that they have increasingly shown. The fact that they also occasionally clean their rooms as well as help take care of the family dog (Churchill) and our rabbit (Peter) is more than we ever dared to hope. George would like to thank his wife Margaret for her loving support. Her patience, help, humor, and inspiration are indispensable to his work.

So, for these and countless other reasons, we affectionately dedicate this book to our loved ones.



**Part** one

**Foundations**

**Chapter 1: Industrial Organization:  
What, How, and Why?**

**Chapter 2: Some Basic Microeconomic Tools**

**Chapter 3: Market Structure and  
Market Power**

**Chapter 4: Technology and Cost**



We begin our study of industrial organization by reviewing the basic building blocks of market analysis. The first chapter provides a road map for the entire enterprise. Here, we lay out the essential aim of our analysis, namely, the investigation of firm behavior and industrial outcomes in markets that are imperfectly competitive. We describe how the framework for this analysis has evolved over time and the lens through which such markets are viewed today. The current framework is one that emphasizes strategic interaction as the most salient feature of imperfect competition and it is the framework adopted throughout this book.

In Chapter 2 we review the basic microeconomics of those markets in which strategic interaction plays little or no role. These are the polar cases of perfect competition, in which each firm is so small that its actions have no impact on any rival, and pure monopoly, in which there is only one firm and therefore no rival that the firm's actions could affect. A study of these two cases permits us to introduce the basics of market analysis, for example, demand curves, cost relationships, and so forth. It also identifies a chief concern of both economists and policy makers, namely, the exploitation of monopoly power and the efficiency or deadweight loss that this can impose on society.

Because we are concerned with the exploitation of market power, Chapter 3 focuses on how we might identify those markets in which such power is likely to be a problem. For this purpose, we need some way to measure market structure or monopoly power. Accordingly, Chapter 3 explores the nature of different measures of industrial structure and the insights and cautionary notes that attend each of these.

Finally, in Chapter 4, we turn to the supply side and, specifically, a consideration of costs. Some productive processes enjoy such extensive scale economies that in these markets monopoly is a natural outcome. Similarly, some production techniques are such that it is less costly for a firm to produce many different but related products rather than focusing on just one commodity as is assumed in the basic textbook case. We need to understand these cost concepts and their implications for firm behavior before we explore the strategic interaction of firms because that interaction will, in part, reflect the underlying cost structure.

A sample of business news stories from the late 1990s and early 21st century includes the following items. Coke and Pepsi found themselves in the middle of a severe price war. Large drug companies such as Bayer and Aventis were found to be paying smaller firms not to produce generic substitutes. Companies from all industries, but especially those in the finance and telecommunications sector, for example, AOL and Time-Warner, had embarked on a huge merger spree in which two or more firms consolidated into one.

Students often feel that there is a considerable gap between stories like those just described and the economics they study in formal classes. This is so despite the fact that most modern texts include real-world applications. Indeed, it is difficult to think of a contemporary economics textbook that does not include examples drawn from practical business experience. Nevertheless, it is not unusual to hear remarks such as “economics is too abstract” or “this wasn’t covered in the microeconomics that I studied.”

This book is very much in keeping with the modern practice of illustrating the application of the theory. However, our aim is more ambitious than just showing that formal economics can illuminate the everyday events of the business world. Instead, our goal is to develop a way of thinking about such experiences—a mental framework that permits students to understand the underlying mechanism behind such events even when those events are different from those presented explicitly in a text and long after the students have left the classroom. Of course, we cannot offer a framework for analyzing all economic phenomena. However, we can develop one that applies to a large class of events including the ones described above. That framework rests solidly on modern game theory and the class of events to which it most readily applies falls under the heading of industrial organization.

## 1.1 WHAT IS INDUSTRIAL ORGANIZATION?

What is industrial organization? For a large number of people, the answer to that question is far from clear. Indeed, on a recent, long, cross-Pacific flight the question elicited a wide set of responses when put to several of our fellow passengers. Most supposed that the field had something to do with business. A few thought it was rooted in psychology and possibly applied to human resource management. One thought it dealt with the pattern of international trade. Each of these answers has a grain of truth, yet each is also wide of the mark. While the field of industrial organization does touch on many aspects of business life, it has come to have a fairly precise meaning in economics. Simply put, industrial organization is that branch of economics that is concerned with the study of imperfect competition.

If you are reading this book, the chances are very good that you already have taken some economics classes, especially microeconomics classes. As a result, you

have probably been exposed to the concept of perfect competition—that somewhat utopian vision of markets populated by numerous small firms and characterized by economic efficiency. You are also likely to have read about the most obvious counter example, a pure monopoly. The case of a market dominated by one firm alone offers a clear contrast to the ideal of perfect competition. But what happens when the truth lies, as it almost always does, between these two polar extremes? What happens where there are two, three, or several firms? How do competitive forces play out when each firm faces only a limited number of rivals? Will prices be cut to (marginal) costs, or will firms compete instead with advertising and other promotional devices? Or will research and development of new products be the major source of competitive pressure? Alternatively, how do monopolies come about? Once a monopoly establishes itself in a market, what can the monopolist do to maintain such power? Is it possible to keep new competitors from coming into the market?

Industrial organization forms the analytical core that economists use to answer these and many other related questions. Economists long ago worked out the analytics of perfect competition. What happens under the more common setting of imperfect competition—how far the outcomes in this environment lie from those of the perfectly competitive market—is much less settled. This less settled domain is the field of industrial organization.

There is a good reason why industrial organization does not yield clear and simple answers regarding what happens in imperfectly competitive markets. A market described as less than perfectly competitive leaves open a wide range of possibilities. It could be a duopoly market with only two firms, or perhaps a market dominated by one large firm competing with many very small ones. The products of the different firms may be identical, as in the case of cement manufacturers, or highly differentiated, as in the case of cosmetics. Entry by new firms may be easy, as in the restaurant business, or difficult, as in the automobile industry. This variety of possible market characterizations makes it difficult to make broad, unambiguous statements about imperfectly competitive markets.

Matters are further complicated when we consider the decisions that the management of an imperfectly competitive firm must make. Start with a simple case such as a florist setting the price for a dozen roses. Should the price rise on Valentine's Day? Should the price for a dozen roses be exactly 12 times the price of a single rose? Or should the buyer of a dozen roses get a break for buying so many? Or consider Jody Adams, a well-known chef at one of the Boston area's top restaurants, *Rialto*. Jody must choose the complete menu of entrees and appetizers that the restaurant will serve at the start of each season as well as set the price of each menu entry. In making this choice, she must evaluate the cost and availability of different ingredients. For example, what seafood and vegetables are in season and can be served fresh? Should she make available special dishes for those with food allergies? How large a wine list should she maintain? What price should she set for a la carte items and for the fixed price meal? These decisions make clear that product design decisions are certainly as important as pricing decisions. A critical design choice by Microsoft to package its Web browser, Internet Explorer, with its Windows operating system and to sell the two as one product was perhaps the primary reason for Internet Explorer's success against Netscape. It also played a major role in the government's later decision to pursue antitrust charges against Microsoft.

Price and product design choices are not the only decisions that firms make, however. Another choice concerns promotional effort. For example, in 2002 Pepsi paid

over \$200 million to outbid Coca-Cola for the rights to be the official soft drink of the National Football League.<sup>1</sup> By winning this contract, Pepsi gained the right to use the logos of the Super Bowl and other league properties in ads, signs, and banners. However, for this right it paid more than double the amount Coca-Cola had been paying. Was this a wise decision? Another decision is what markets to enter. Southwest Airlines decided in the late 1990s that the time was right to begin service to points in the Northeast. Neither Pepsi's decision nor Southwest's choice were easy ones for the management of these firms.

Firms make all sorts of decisions and few of them are easy. Industrial organization economists analyze these decisions, and this can be an even more difficult task. But as we hope this book shows, industrial organization has gained considerable insight into how markets work in between the poles of perfect competition and monopoly.

## 1.2 HOW WE STUDY INDUSTRIAL ORGANIZATION

One reason that analyzing imperfect competition is difficult is because of the interdependence that characterizes the firms' decisions in their markets. When Southwest Airlines considers offering service to Boston, it has to recognize that this will have an effect on the other airlines that serve the Boston market. These airlines may react by cutting fares, by changing their flight times, or perhaps by cutting back on Boston service so as to avoid a glut on the market. Similarly, when Pepsi thinks about putting in a high bid to become the National Football League's official soft drink, it has to wonder how Coke will respond. Will it bid even higher? If it does, should Pepsi raise its bid still further? Or what if Coke decides to respond to the advertising advantage that Pepsi gains by launching a price war in the soft drink market?

Imperfect competition then is played out against a background of interdependence, or what economists call a setting of strategic interaction. This means that determining a firm's optimal behavior is also difficult. Because the firms are likely to be aware of the interdependency of their actions, each firm will wish to take into account its rivals' response to its action. Yet that response will also depend on how the rivals think the first firm will react to their reaction, and so on. A firm in this situation needs to "put itself in its rival's shoes" to see how the rival will respond to different actions that the firm could take. The firm must do this in order to understand its best course of action. To understand the logic of strategic interaction we use game theory. Game theory provides us with the necessary framework for an analysis of settings in which the participants or players recognize that what they do affects other players and, in turn, what other players do affects them. It is for this reason that much of the recent work in industrial organization uses game theory to understand market outcomes under imperfect competition. While not all of the analysis in this book relies on game theory, a good bit of our discussion is aimed at developing and applying the logic of game theory in market settings.

Game theory permits one to analyze strategic interaction in both a clear and logically consistent manner. For this reason, it has become an indispensable tool in industrial organization. It is equally important, however, to recognize that game theory

---

<sup>1</sup> McKay and Fatsis (2002).

and, more generally, the understanding of strategic interaction also serves a broader goal of illustrating what industrial organization is about. This perhaps is best expressed by reference to a quote from John Maynard Keynes, who wrote insightfully, “the theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking which helps its possessor to draw correct conclusions.”<sup>2</sup> The same can be said for modern industrial organization. It is a technique of thinking. To be precise, it is a means of thinking strategically and applying the insights of such analysis to model imperfect competition.

Of course, no model is a complete description of reality. A full recounting of each aspect of the actual marketplace would be far too lengthy and unwieldy to be of much use. Instead, any market model is like a road map. It is a deliberate simplification of a very complicated terrain, omitting some features and thereby emphasizing others. The aim of the model is to capture and make transparent the essential features of the interaction among firms. In this light, to say that the real world is more complicated than the model is no criticism. Indeed, if the modeling achieves its aim of making clear the underlying structure and the principles governing the market outcome, then its abbreviated portrait of the real world is a strength. Whether this is the case depends, obviously, on what happens when the predictions of the model are tested against actual data or evidence. Even if a model fails this test, however, it does not mean that the procedure of formal modeling is invalid. All that is implied is that we need to go back to that process—back to the “drawing board”—and build a better model.

As you read this book, you will encounter a number of models, each designed to illuminate the strategic interaction in a specific market setting and the outcome that interaction will produce. We think that these models are insightful in this regard and it will be tempting to interpret this material as saying “this is what happens in an imperfectly competitive market when. . . .” However, we have no doubt that the passage of time will reveal that some of these models need improvement. So, it is better to interpret the various readings as “this is how we think about what happens in an imperfectly competitive market when. . . .” This is how we do industrial organization.

### 1.3 WHY: ANTITRUST AND INDUSTRIAL ORGANIZATION THEORY

The text of the principal U.S. antitrust statutes is given in the Appendix to this chapter. Such legislation came early to the United States with the passage of the first major antitrust law—the Sherman Act—in 1890. This predates much of the formal modeling of imperfect competition and the widespread dissemination of that modeling. However, economists had had an intuitive grasp of the potential problems of monopoly as far back as Adam Smith. In his classic, *The Wealth of Nations*, Smith (1776) had written on both collusion among ostensibly rival firms and on the raw exercise of monopoly power:

People of the same trade seldom meet together, even for merriment or diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.

---

2 Keynes (1935).

The monopolists, by keeping the market constantly understocked, by never fully supplying the effectual demand, sell their commodities much above the natural price. . . .

By the late 19th century, many Americans had become convinced that a few very large firms and trusts, such as Standard Oil and American Tobacco, had exploited their market power in just the ways Smith had forecast. There then emerged a consensus—one that has endured throughout the history of antitrust legislation—that some form of legal framework was needed to maintain competition. Moreover, while few people had any understanding of formal economics, there was a reasonably wide familiarity with the sentiments of Adam Smith.

Thus it was that popular sentiment, reinforced by shrewd Smithian insight, led to the enactment of the first U.S. antitrust law, the 1890 Sherman Act. Indeed, it is somewhat remarkable just how directly the concerns of Adam Smith are reflected in the two primary sections of the Sherman Act. Section 1 prohibits contracts, combinations, and conspiracies “in restraint of trade.” Section 2 makes illegal any attempt to monopolize a market. The view that government institutions were necessary to achieve these aims was also later reflected in the Clayton and Federal Trade Commission Acts.

Initially, antitrust policy focused primarily on prosecuting and preventing collusive agreements to raise prices under the authority of Section 1. Early cases such as the *Trans-Missouri Freight Association* and the *Addyston Pipes* cases of 1897 and 1898, respectively, established this tradition, and it remains a centerpiece of antitrust policy to this day.<sup>3</sup> Thus, the agricultural products firm, Archer Daniels Midland, the world’s two largest auction houses, Sotheby’s and Christie’s, and the international pharmaceutical giant, Hoffman-LaRoche, have all been successfully prosecuted for price-fixing in recent years.

Unlike the Section 1 statute, the enforcement of Section 2 on monopolization was initially limited by a rather timid and narrow judicial interpretation. Despite wide public perception that many giant firms emerging from the Industrial Revolution had abused and exploited their monopoly power, it was twelve years before one of the trusts, the Standard Oil Company of New Jersey, was prosecuted under Section 2.<sup>4</sup> Eventually that case came before the Supreme Court, and in 1911 the Court issued its now famous finding. It found that Standard Oil had illegally monopolized the petroleum refining industry—first, by acquiring 120 small rival companies and second, by intending to exclude rivals by means of discriminatory freight rates to restrict competitors’ access to pipelines and to undercut competitors’ prices. The government then won additional cases against a number of trusts, most notably the Tobacco Trust,<sup>5</sup> immediately on the heels of Standard Oil.

An important feature of the *Standard Oil* and *Tobacco* cases is that, unlike the price-fixing cases, the Court’s decision left unclear precisely what actions were illegal. In particular, the court established a “rule of reason” framework for monopolization cases that permitted the courts to examine not only whether monopolization of an industry had occurred but, if so, what the market context surrounding the formation

3 *United States v. Trans-Missouri Freight Association* 166 U.S. 290 (1897) and *United States v. Addyston Pipe & Steel Co.*, 85 F. 271 (6 Cir. 1898).

4 *Standard Oil Co. of New Jersey v. United States*, 221 U.S. 1 (1911). See also Posner (1970).

5 *United States v. American Tobacco Co.*, U.S. 221 U.S. 106 (1911).

of that monopoly was and the business practices used to achieve it. Only if this additional inquiry found that the firm had had intent to monopolize or had exploited its monopoly power was there a true violation. Practically speaking, this meant that there was a lot of ambiguity in exactly what actions would be found to be violations.

The success against Standard Oil encouraged the belief that antitrust legislation was useful. Simultaneously, those who feared that the rule of reason argument might weaken further antitrust enforcement were motivated to pursue additional reforms so that Section 2 of the Sherman Act would not become a “paper-toothed tiger.”<sup>6</sup> The result was that in 1914, the Clayton Act was passed to cover practices that were not included in the Sherman Act. In particular, the Clayton Act was designed to prevent monopoly “in its incipiency” by making explicitly illegal a number of business practices used by John D. Rockefeller, Standard Oil’s chairman. Thus, Section 3 of the Clayton Act limits the use of tying and exclusive contracts that oblige a purchaser of a manufacturer’s product not to deal in products of competitors. Section 4 allows private parties injured by violations of both the Sherman Act and the Clayton Act the right to sue violators for treble damages. Section 5 eases the burden of proof required by plaintiffs for proving such violations. It permits an adverse judgment in a case brought by the Department of Justice to be used as *prima facie* evidence against the defendant.<sup>7</sup> Section 7, which was later amended in the 1950s, was passed to prevent anticompetitive mergers.

The Federal Trade Commission Act was also passed in 1914. It established an administrative agency, the Federal Trade Commission, endowed with powers of investigation and adjudication to handle Clayton Act violations. As later amended it also outlaws “unfair methods of competition” and “unfair and deceptive acts or practices.” This gave antitrust policy a second arm of law enforcement in addition to that provided by the Justice Department.

Yet the flurry of legal activity and institution building that came on the heels of the Standard Oil case did not succeed in establishing a clear and unchanging course in antitrust policy. Instead, that policy has gone through a number of cycles over the last 90 years. The first of these turns came with the *U.S. Steel* case of 1920. In that case, the Court made clear that in its view “the law does not make mere size an offense or the existence of unexercised power an offense—it does not compel competition nor require all that is possible.”<sup>8</sup> As a result, the Court found *U.S. Steel*—a firm that had through a series of mergers grown to control over 70 percent of *U.S. steel-making capacity*—innocent of any antitrust violations. This case ushered in a 25-year period in which enforcement of Section 2 (but not Section 1) was rather lenient.

The *U.S. Steel* decision had a major impact on both the steel industry and the *U.S. legal framework*. But perhaps its most important consequence was an intellectual one. For the conclusion to which many analysts were led by the 1920 decision was that without a good economic road map by which to understand imperfect competition, the making of antitrust policy was a difficult proposition at best. It was this need that motivated the first consistent studies in the field that we now call industrial organization.

---

<sup>6</sup> Berki (1966), p. ix.

<sup>7</sup> Treble damages are not awarded in a private suit if the Department of Justice case is settled by a consent decree. Not surprisingly, this creates a strong incentive for firms to settle an antitrust case amicably through a consent decree. Otherwise, they face the possibility of losing a court battle and subsequently being sued privately for treble damages.

<sup>8</sup> *United States v. United States Steel Corporation*, 251 U.S. 417 (1920).

Economists such as Edward Chamberlin (1933) and Edward Mason (1939), both at Harvard, led the way. In their view the microeconomics of the time offered little guidance either to policy makers or the legal system as to what evidence might be useful in determining the likely outcome that a market would produce. Thus, the Supreme Court's dismissal of the government charges of monopolization in the *U.S. Steel* case was based on an argument that no exploitation of monopoly power or intent to monopolize had been shown. Only U.S. Steel's large market share had been documented and, "*the law does not make mere size an offense*" [emphasis added]. Unless there was good reason to believe that a large market share offered strong evidence of abusive monopolization, or until there was a coherent argument that identified other observable characteristics that in turn implied illegal behavior, the court's decision had a fair bit of justification.

More generally, these scholars realized that any informed legal judgment would require some practical way to determine from observable evidence whether the industry in question was closer to perfect competition or closer to monopoly. Accordingly, they viewed the highest priority of industrial economics to be the determination of whether and how one could infer illegal behavior from either firm size or other structural features. It was precisely to provide this policy guide that the field of industrial organization began to emerge. The very name of the field—industrial organization—dates from this time.

Early work was focused on the key question: how is the production of the industry organized? How is the market structured? How many firms are there and how large are they relative to each other? Are there clear barriers to entry? It was recognized from the outset, however, that answering these questions would not be enough to provide the legal framework needed by legislators and courts to determine whether the antitrust laws had been violated. Achieving this goal required not only that an industry's structural features be revealed but that clear links between structure and market outcomes also be identified. That is, industrial economists needed to obtain data on prices, profits, and market structure, and then use these data to identify statistical relationships between various market structures on the one hand, and industrial performance on the other.

This agenda was explicitly announced by Edward Mason, who in 1939 wrote, "The problem, as I see it, is to reduce the voluminous data concerning industrial organization to some sort of order through a classification of market structures. Differences in market structure are ultimately explicable in terms of technological factors. The economic problem, however, is to explain, through an examination of the structure of markets and the organization of firms, differences in competitive practices including price, production and investment policies."<sup>9</sup> In sum, the early industrial organization economists viewed their goal as one of establishing links between market structure on the one hand, and the conduct of firms in the market on the other. In turn, that conduct would determine the likely outcome or performance of the market in terms of economic efficiency or general social welfare. For this reason, this early approach is typically referred to as the structure-conduct-performance, or SCP, approach. Presumably, if the outcome for a particular industry given its structure was sufficiently bad, legal action was justified either to alter the conduct that structure would otherwise generate or, if necessary, to change the structure itself.

---

<sup>9</sup> Mason (1939), 61–74.



The basic principle behind the SCP paradigm was that perfect competition and monopoly are usefully viewed as opposite ends of a spectrum of market structures along which all markets lie. One natural measure of market structure is the degree of concentration, or the percentage of market output produced by the largest firms in that industry. Accordingly, the practice of industrial economics at that time became one of (1) accurately describing the structure of different markets and (2) deriving empirical relations between structures and outcomes in terms of price-cost margins, innovative efforts, and other performance measures. It thus became an effort to examine statistically the broad hypotheses on market structure and performance implied by the SCP paradigm. Here, structure was often identified with the degree of concentration or the percentage of total market output accounted for by the few largest firms. Finding a road map for policy was interpreted to mean providing numerical answers to questions such as how much would a bit more concentration or a bit higher entry barriers raise price above cost.

In pursuit of the SCP quest, the 1940s and 1950s witnessed a vast array of studies attempting to document and to measure the link between industrial performance, say profitability, and an industry's structural features, such as concentration. Moreover, the results of these studies also seemed fairly clear. The bulk of the research established a positive link between a measure of industrial concentration and industry profit and a similarly positive link between advertising and profitability. The first stylized fact gave support to the view that an industry in which there was more than one but still just a few large firms was indeed close to the monopoly pole. The second finding was interpreted as evidence that firms used advertising to build customer loyalty and, thus, to deter other firms from entering the market, so that the incumbent firms could enjoy monopoly power and profit. Together, these and other findings and interpretations increasingly seemed to suggest that perhaps a firm's "mere size" *could* suggest a legal offense if it is sufficiently large.

At about the same time, policy makers seemed to be growing increasingly concerned about the market dominance of large firms. In 1936, Congress passed the Robinson-Patman Act to prohibit price discrimination that allegedly lessened competition. Price discrimination occurs when different buyers of the same good pay a different unit price. In the 1930s, there was increasing awareness and concern that large firms, such as the big supermarket chains, were able to buy from wholesalers in bulk and therefore at a lower unit price than smaller stores, such as street-corner outlets. In turn, this led Congress to fear that large firms could use this buying advantage to drive out their smaller competitors who could not buy in such large quantities.<sup>10</sup>

As the United States moved into the 1940s both intellectual and legislative developments expressed a heightened concern that large firms in concentrated industries constituted a serious threat to economic welfare. The practical question then became whether these developments would also herald a similar change towards a more activist role by the judiciary. The 1945 *Alcoa* case suggested that indeed such a change had occurred.

---

<sup>10</sup> In many respects, the Robinson-Patman Act is an odd companion to the antitrust laws because it is primarily designed to limit price-cutting. The view among its supporters was and continues to be that the law is meant to prevent predatory price reductions aimed at preserving monopoly power by driving rivals out of business. Note that passage of the Robinson-Patman Act did not weaken the Court's stance against collusive price agreements as demonstrated in its decisive rejection of such an agreement in *United States v. Socony-Vacuum Oil Co., Inc.*, 310 U.S. 150 (1940).