Industrial Organization

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Industrial Organization

Contemporary Theory and Empirical Applications

Fourth Edition

Lynne Pepall

Dan Richards

George Norman

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About the Authors

Lynne Pepall is Professor of Economics and Dean of the Graduate School of Arts and Sciences 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 *Journal of Industrial Economics*, *International Journal of Industrial Organization*, *Journal of Economics and Management Strategy*, *Economic Journal*, *Canadian Journal of Economics*, *Economica*, and the *American Journal of Agricultural Economics.* She has taught industrial organization and microeconomics at both the graduate and undergraduate levels, at Tufts University since 1987. Professor Pepall lives in Newton, Massachusetts, with her two sons, a dog, three rabbits, and her husband, a co-author 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 at 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*, the *Journal of Money, Credit, and Banking*, and the *American Journal of Agricultural Economics.* 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, and has also served as a consultant to the Federal Trade Commission. From 1996 to 2005 he taught in the Sloan Fellows Program at MIT's Sloan School of Management. Professor Richards lives in Newton, Massachusetts, with his two sons, a dog, three rabbits, and his wife, a co-author 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 the department of economics. 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 the M.A. in economics with first class honors. He received his Ph.D. in economics from Cambridge University. His more than 70 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 this book, Professor Norman has written and edited, either alone or in collaboration with others, 17 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 entrepreneurship. Professor Norman lives in Newbury, Massachusetts, with his wife Margaret who, while *not* a co-author, has provided invaluable support and assistance in his work on this book.

Preface to the Fourth Edition

We are greatly pleased by the publication of the fourth edition of *Industrial Organization: Contemporary Theory and Practice*. It confirms our view that students want to learn the essentials of modern industrial organization and, more generally, the process of economic modeling and empirical application. There are immediate insights that come from thinking rigorously through the implications of strategic interaction. However, one of the most important lessons from studying industrial organization is understanding how to construct a rational economic argument whose implications are, in principle, able to be empirically tested. We believe that this edition of our textbook teaches this lesson successfully with its new emphasis on empirical applications.

Overall, the organization of the book remains the same as the previous edition. We have updated the checkpoints so that they remain contemporary illustrations of the underlying analysis. We have also done some pruning to make room for important new contributions and insights. Chapter 3 now includes a more formal presentation of Sutton's (1991) analysis of the relationship between sunk cost and market structure. Similarly, Chapter 8 now includes a discussion of the recent work by Evans and Salinger (2005) and Evans (2006) on competitive bundling and tying. In Chapter 14 we have eliminated the lengthy discussion of possible collusion in a market with two non-cooperative Nash equilibria. Instead that chapter now includes a formal model of optimal antitrust policy in regard to cartels. This theme is continued in Chapter 15 where we have an extended discussion of the role of leniency or amnesty programs in inducing cartel members to confess their activities. Chapter 16 begins with the "merger paradox," but now includes the recent work by Fauli-Oller (2000) and others on sequential mergers as ways to resolve this paradox. In Chapter 20, we have added a section on the Anderson and Renault (2006) model of suppressed advertising content. In Chapter 23 we now give a more formal derivation of the Gilbert and Shapiro (1990) and Klemperer (1990) results on optimal patent length and breadth. We also note briefly the recent work by Lerner and Tirole (2004) on efficient patent pools.

The major innovation in this edition is, however, the new emphasis on empirical industrial organization. Fourteen of our twenty-five chapters now conclude with an in-depth treatment of a relevant empirical investigation. These sections are called Empirical Applications. For the most part, they are expositions of regression-based studies. However, there are also some non-regression-based analyses. Chapter 3 offers the first Empirical Application with a review of Harberger's (1954) study and the many studies that followed on the welfare losses from market power. While this is an old controversy, it serves to introduce students to the idea that important hypotheses can be tested using data in combination with calculations rooted in formal economic analysis. Chapter 4 also has an empirical case study. Here, we focus on the classic work of Christensen and Greene (1976) that helped initiate the estimation of cost functions and, specifically, the translog cost relation. This is a very accessible piece and it allows the instructor to take the student through the basic steps of deriving a cost function from a production relationship, input price data, and the assumption of cost minimization. It also helps students gain some familiarity with regression analysis.

The next Empirical Application comes in Chapter 7. Here we use the short study by Stavins (2001) to demonstrate the role of price discrimination in airline markets. The application helps to document the nature of airline price discrimination and to explore its strategic use in product differentiated competition. In Chapter 10 we provide another empirical analysis of a product differentiated market in a presentation of Hastings' (2004) study of competition in the southern California retail gasoline market. This application serves nicely to make clear that the nature of consumer preferences and, specifically, whether the relevant differentiation is horizontal or vertical, is an important empirical question. It also serves to illustrate the role that regression analysis can play in isolating the effect of a specific treatment or policy intervention.

Chapters 12 and 13 address predatory conduct, and in Chapter 13 we present the recent Ellison and Ellison (2006) study of possible predation by pharmaceutical firms who are about to face generic competition due to expiration of their patents. Among other features, the two-stage procedure in this study—first testing markets for the likelihood of entry and then testing for entry-deterring conduct in those markets where entry is most probable—helps to make clear how careful we must be in identifying any sort of predatory conduct. In addition, this Empirical Application alerts students to the problems that accompany the use of limited dependent variables.

Both Chapters 14 and 15 are on collusion and price-fixing and each has an extended Empirical Application. Chapter 14 presents Kwoka's (1997) clever analysis of the price effects of collusive bidding in real estate auctions in Washington, DC. In Chapter 15, we review the recent Hinloopen and Soetevent (2006) study of the impact of antitrust policies that grant leniency or amnesty to the first cartel member to confess. This application makes clear that such policies potentially wield a double-edged sword. While they make confession more likely once a cartel is under suspicion, the fact that they offer an escape from punishment for at least one firm may also encourage the formation of cartels in the first place. A further advantage of the Hinloopen and Soetevent (2006) study is that it is based on experimental analysis, and hence, introduces students to the use of this alternative empirical technique.

The next extended discussion of empirical work comes in Chapter 16. Here we present the technique of merger simulation. This application has two major benefits. First, it demonstrates how economic modeling indicates which parameters are needed for evaluating the likely post-merger market outcome. Second, because the effects of merger simulation are relatively sensitive to key elasticity estimates, the application also makes clear how and why economists can differ in their evaluation of a merger. We drive this point home more forcefully by also including a brief review of the Staples and Office Depot merger and the very different conclusions reached by different economists in that case.

Chapter 17 focuses primarily on vertical mergers, and we go over in the Empirical Application the recent study of vertical integration in the ready-mixed concrete industry by

Hortaçsu and Syverson (2006). Chapter 19 includes an Empirical Application on vertical contracts. In this case, it is the study by Sass (2005) of exclusive dealing in the U.S. domestic beer market. Both applications offer clear and accessible results that serve to emphasize that contemporary industrial organization practice involves data analysis. The Sass (2005) study has the added benefit of introducing students to the Seemingly Unrelated Regressions technique.

Chapter 21 on advertising includes an application on Ackerberg's (2001) empirical analysis of the introduction of a new yogurt product by Yoplait in the late 1980s. This application demonstrates perhaps more clearly than any other that when we have access to very detailed data, we can, if great care is taken, distinguish the validity of two competing hypotheses. Here the question is whether advertising works by raising prestige or by providing information. Moreover, because this study uses logit analysis, it gives us a second chance to present to students the underlying logic of empirical models that use limited dependent variables.

We also have included Empirical Applications in Chapters 22 and 23, which are on research and development (R&D). The focus of Chapter 22 is R&D competition under various degrees of spillover from one firm's innovative efforts to the productivity of its rivals and we conclude this chapter with Keller's (2002) empirical study of such spillovers at an international level. Among other benefits, this application helps students understand how research in one area of economics may have implications for policy in other areas. It also introduces students to the idea of non-linear regression. In Chapter 23, which is on patents, we now include an Empirical Application on the Hall and Ziedonis (2001) study of patenting behavior in the U.S. semiconductor industry during the 1980s and 1990s. This application provides a neat illustration of how to identify the sources of dramatic changes in industrial conduct. It also briefly introduces students to the Poisson distribution.

Our final Empirical Application comes in Chapter 24. Here we describe Gandal's (1994) early test for network externalities in the market for spreadsheet software. Although a little older than most of our other empirical studies, this piece is very accessible. Moreover, it has the additional advantage of introducing students to the notion of hedonic regressions and, subsequently, the construction of a hedonic price index.

Our goal in revising the textbook for this edition was to expand and update the material covered. Generally speaking, we have included new material by becoming more efficient and without making extensive cuts to the content covered in previous editions. The updating of theory combined with the inclusion of the fourteen Empirical Applications makes the text more reflective of contemporary theory and practice in industrial organization.

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