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Lectures on Antitrust Economics

Michael D. Whinston

The Cairoli Lectures
Universidad Torcuato
Di Tella

The MIT Press
Cambridge, Massachusetts
London, England

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This book was set in Palatino on 3B2 by Asco Typesetters, Hong Kong and was printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Whinston, Michael Dennis.
Lectures on antitrust economics / Michael D. Whinston.
p. cm.
"Based on the 2001 Cairoli lectures"—Data sheet.
Includes bibliographical references and index.
ISBN 0-262-23256-1 (alk. paper)
1. Antitrust law—Economic aspects—United States. I. Title.

HD2758.5.W45 2006
338.8′20973—dc22 2006041955

10 9 8 7 6 5 4 3 2 1

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Series Foreword

Ricardo Cairoli (1921–1998) was a successful businessman and a committed public official, who, throughout his career devoted himself to enhancing the well-being of Argentina's society. In 1991, he founded Capital Markets Argentina, one of the major independent investment corporations in the country, offering services in brokerage and asset management. Since its inception, the corporation has been involved in numerous philanthropic activities. Currently his wife, Mrs. Haydee Morteo de Cairoli, and his children, Graciela and Pablo, continue to support higher education, sponsoring, among other initiatives, the Capital Markets Corporation Conferences in Business Economics. The conferences are organized by the Universidad Torcuato Di Tella, a private university founded in 1991, which rapidly established itself as a center of excellence for education and research in the social sciences in Latin America. The realization and publication of the conference lectures represents the joint commitment of Capital Markets Argentina and the Universidad Torcuato Di Tella to the advancement of knowledge.

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For my father, George Whinston,
and to the memory of my mother,
Joan Aronson Whinston

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Preface

This book is based on material I was honored to present as part of the Cairoli Lectures at the Universidad Torcuato Di Tella in Buenos Aires. I appreciated the opportunity to develop further my thoughts about antitrust economics, to interact with the many fine economists and lawyers who attended the lectures, and to meet the wonderfully welcoming Cairoli family. It was my first trip to Argentina, and I look forward to visiting again.

I owe thanks to a variety of individuals and organizations for their contributions toward this book. Michael Black, Patrick Bolton, Dennis Carlton, Richard Caves, Malcolm Coate, Luke Froeb, Rob Gertner, Aviv Nevo, Volker Nocke, Ariel Pakes, Paul Pautler, Craig Peters, Rob Porter, Richard Posner, Tom Ross, Ernesto Schargrodsky, Greg Werden, and Abe Wickelgren all helped improve the book by sharing their comments with me. I also thank four anonymous readers for their detailed and insightful suggestions. Fan Zhang, Adam Rosen, and Allan Collard-Wexler provided excellent research assistance. John Covell at the MIT Press helped shepherd the book through the editorial process. Thanks are also due to the NSF and the Searle Foundation for their financial support.

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I owe special thanks to three other people. Doug Bernheim and Ilya Segal each have spent countless hours working with me on coauthored projects over the years. Many of those involved issues related to antitrust, and in particular to the vertical contracting issues that I discuss in chapter 4. I've learned a tremendous amount from each of them about that topic, and many more.

My wife, Bonnie Honig, not only provided the usual sorts of spousal support (such as "Get it done already!"), but also was kind enough to read portions of the book and give me some writing tips. I hope the book now shows at least a little of the style that is so evident in her own books.

Finally, I dedicate this book to my father, George Whinston, for his continuing love and support, and to my mother, Joan Aronson Whinston, for having been such a wonderful mother.

MW

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1 Introduction

1.1 Aims of the Lectures

Antitrust law plays a prominent role in the business environment of many nations. In any given week the *New York Times* and *Wall Street Journal* usually include at least one, and often several, articles devoted to some aspect of antitrust policy. Will a recently announced merger of two large oil companies cause gasoline prices to rise? Has an important software company violated the antitrust laws by suppressing competition? Did a group of international producers of vitamins conspire to fix prices? Issues like these are featured regularly, not only in American newspapers, but also increasingly around the world.

Antitrust law regulates economic activity. The law's operation, however, differs in important ways from what is traditionally referred to as "regulation." Regulation tends to be industry-specific and to involve the direct setting of prices, product characteristics, or entry, usually after regular, often elaborate hearings. By contrast, antitrust law tends to apply quite broadly, and focuses on maintaining certain basic rules of competition that enable the competitive interaction among firms to produce "good" outcomes. Investigations

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and intervention are exceptional events, which arise when these basic rules may have been violated.

These lectures are intended to serve as an introduction to the economics behind antitrust law. The lectures do not strive to be comprehensive in their coverage. Rather, I focus selectively on some of the most recent developments in antitrust economics, and on some areas in which I believe important issues require further research. The intended audience is primarily graduate students in economics and practicing economists (both academic and nonacademic) with interests in antitrust policy. My hope, however, is that the book will also find some readers among economically sophisticated antitrust lawyers, especially academic ones. As such, I have tried to confine some mathematics to footnotes and to ensure that the central line of the argument can be followed without necessarily understanding every equation that appears in the body of the text.

The rest of this chapter provides an introduction to the U.S. antitrust laws. The remainder of the book is organized into three chapters. Antitrust analysis can be broken roughly into two categories, one dealing with "collusion" (broadly defined) and the other with "exclusion." In the former category, firms attempt to raise prices through collaboration with rivals, while in the latter category they try to do so through rivals' exclusion. In chapters 2 and 3, I focus on the first type of activity. Chapter 2 discusses price fixing, that is agreements among competitors to restrict output or raise price. Chapter 3 examines horizontal mergers, in which competitors agree to merge their operations. I then shift the focus to exclusionary activities in chapter 4, providing an introduction to the economics of exclusionary vertical contracts.

These three chapters differ significantly from one another in emphasis. Chapter 2, on price fixing, covers what is

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undoubtedly the most settled area of antitrust. Here I try to unsettle the discourse a bit, suggesting that economists know less about price fixing than they think. In contrast, the analysis of horizontal mergers, which I discuss in chapter 3, is an area of antitrust economics that has seen some of the most significant advances over the last 10–15 years. Here I summarize the main issues in evaluating horizontal mergers, paying particular attention to these recent advances, while also discussing some of the important open questions that remain. Exclusionary vertical contracting, which I discuss in chapter 4, is instead one of the most controversial areas of antitrust. It is also an area in which there has been a good deal of recent theoretical work, and in which currently there is little systematic empirical evidence. Focusing specifically on exclusive contracts, here I aim to explain the source of the controversy and describe these recent theoretical advances. In contrast to chapters 2 and 3, my discussion of empirical evidence here is, of necessity, unfortunately limited.

My selective choice of topics leaves out a number of important issues that a more extended set of lectures ideally would discuss. For example, predatory pricing, collusive facilitating practices, and intrabrand vertical restraints are all interesting and important topics. Likewise, a fuller treatment of exclusionary vertical contracting would consider vertical mergers and tying.

In addition, my focus on the economics of antitrust often allows only passing mention to the legal treatment of these practices. This is in many ways unfortunate. Every student of the subject should read the case law on antitrust. Doing so provides an appreciation for both the economic issues involved in antitrust analysis (even when the court may not have recognized them) and the considerable difficulties involved in formulating effective antitrust laws.[1] I also

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highly recommend two classic books on antitrust by leading legal scholars, Posner [1976] and Bork [1978], for interesting and often provocative discussions of many of the central issues in antitrust analysis.[2]

Finally, I am also selective geographically. The discussion that follows focuses almost exclusively on the antitrust laws with which I am the most familiar, namely those of the United States. That said, the focus of the lectures is on economics, and the basic principles apply across national boundaries.

1.2 Overview of U.S. Antitrust Law

As a prelude to our discussion, it is useful to begin with a brief overview of the history and content of U.S. antitrust law.[3] The development of the U.S. antitrust laws was sparked by the post–Civil War transformation of the U.S. economy. Two pressures for reform developed during this period. The first came from farmers, upset over a combination of depressed prices for farm products and high rail rates for shipping farm products. These rail rates often were controlled by (legal) rail cartels. The second pressure came from the public's discomfort with the rapidly growing size of modern business. This discomfort was sharpened, in part, by a number of well-publicized business scandals. Together, these pressures led not only to passage of the Sherman Act in 1890, the United States's first antitrust law, but also to the creation of regulatory agencies such as the Interstate Commerce Commission (in 1887).

Sections 1 and 2 of the Sherman Act, shown in figure 1.1, contain its main substantive provisions. (Figure 1.1 summarizes the most important provisions of the U.S. antitrust laws.) An instant's consideration reveals their most

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Sherman Act (1890):

Section 1: "Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations, is hereby declared illegal. . . ."

Section 2: "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several states, or with foreign nations, shall be deemed guilty of a felony. . . ."

Clayton Act (1914):

Section 2: Prohibits some forms of price discrimination.

Section 3: Prohibits sales based on the condition that the buyer not buy from a competitor where the effect may be "to substantially lessen competition or tend to create a monopoly in any line of commerce."

Section 7: Prohibits mergers where "the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly" in any line of commerce.

FTC Act (1914):

Creates the Federal Trade Commission

Section 5: "Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce, are declared unlawful."

Figure 1.1
U.S. Antitrust Statutes

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notable feature: they are very *vague*. Indeed, the Sherman Act's two central sections do little more than authorize the U.S. courts to develop a common law of antitrust to fulfill the statute's intent. As it has been interpreted by the U.S. courts, section 1 applies to a wide range of agreements that may be deemed to reduce competition: price-fixing agreements, horizontal mergers, exclusive contracts, and resale-price-maintenance agreements. Section 2 applies to unilateral actions taken by a dominant firm that may further its market power, such as predatory pricing and product bundling. It makes illegal certain acts of monopolizing, not monopoly itself.

The need for courts to interpret these provisions of the Sherman Act raises the question of Congress's intent. The congressional debates leading to passage of the Sherman Act reflected a number of differing and inherently conflicting goals: promotion of healthy competition, concern for injured competitors, and distrust of large concentrations of economic and political power all make appearances in the debates over the bill. These differing goals have continued to surface in its application ever since. In the last thirty years a number of scholars have made strong appeals for the first of these to be the only goal of antitrust policy (see, for example, Posner [1976] and Bork [1978] for two of the most influential discussions). With the development of a more conservative judiciary since 1980 and increasing infiltration of economics into antitrust analysis, this view seems to be winning the debate.

Even so, the precise formulation of even this economic prescription for "healthy competition" remains unsettled. Bork [1978], for example, argues that the appropriate standard is maximization of aggregate surplus.[4] Certainly, to an economist the thought of designing antitrust policy to max-

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imize aggregate surplus comes naturally and, indeed, much of the economics literature implicitly has taken this to be the appropriate objective for antitrust policy. The basis for this view is the observation that the owners of firms are consumers as well, and the belief that redistribution among consumers should occur through the tax system. Nonetheless, in the absence of perfect lump-sum tax policies, the appropriate weight to be given to consumer-versus-producer surplus gains can depend on distributional objectives.[5] As I note at several points later, which welfare standard is adopted can be critical to the evaluation of contested practices.

Although the U.S. courts have adopted varying and evolving standards in evaluating challenged practices (and are often not very clear on the exact test being applied), at present they seem closest to applying a consumer-surplus welfare standard. Similarly, as we will see in chapter 3, the U.S. enforcement agencies [the U.S. Department of Justice (DOJ) and the Federal Trade Commission (FTC)] seem to adopt essentially this standard in their *Horizontal Merger Guidelines* (although even they are not explicit about it).[6]

The vagueness of the Sherman Act created discontent: those concerned with monopoly power felt that the Act could allow businesses to get away with anticompetitive behavior, while businesses were worried that they could not know precisely which behaviors would be illegal. These concerns were further exacerbated by the Supreme Court's ruling in the *Standard Oil* case [221 U.S. 1 (1911)], in which the Court announced the use of the "rule of reason" in evaluating business practices (a practice's benefits and costs had to be weighed in evaluating the practice). This discontent led, in 1914, to passage of the Clayton Act and the Federal Trade Commission Act.

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The Clayton Act named specific practices that would be considered illegal under certain circumstances: certain forms of price discrimination are banned in section 2 of the Act (I do not discuss these issues here), tying and exclusive dealing fall under section 3, and horizontal and vertical mergers fall under section 7.

The Federal Trade Commission Act created the Federal Trade Commission as a specialist agency to enforce the antitrust laws. The central substantive provision guiding the FTC's enforcement actions is section 5. The courts have come to interpret section 5 as applying to anything that is a Sherman Act or Clayton Act violation, but also to somewhat "lesser" acts that violate the "spirit" of those laws.[7] This broader interpretation often has been justified on the basis that the FTC is an administrative authority specializing in these issues (as compared with the judges and juries who must decide cases brought by the DOJ) and that the FTC can impose only what is known as equitable relief for antitrust violations (more on this below).

Finally, there are some special provisions in antitrust law (the Hart-Scott-Rodino Act) requiring that parties to sufficiently large mergers provide notification to the DOJ and the FTC prior to consummating their merger, and giving the agencies a period of time to request information from the parties, and to review and possibly object to the merger. The idea behind this requirement is that it is much easier to prevent a merger before it happens than to "unscramble the eggs" after they have been mixed together.

Sanctions

There are three types of sanctions that can be imposed in U.S. antitrust cases: criminal penalties, equitable relief, and monetary damages. Sherman Act offenses are felonies, and

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the DOJ (but not the FTC) can seek criminal penalties for them. (Violations of the Clayton and FTC Acts are not crimes.) In practice, criminal penalties are sought only for the most flagrant offenses, which means overt price fixing. These penalties can include both imprisonment and monetary fines. Currently, a violation of the Sherman Act may lead to up to three years in jail for individuals. Monetary fines for Sherman Act violations were historically very small, but have recently increased dramatically. For example, the maximum fine for corporations was $50,000 until it was increased to $1 million in 1974. In 1990 the maximum fine was raised to $10 million. Equally or more important, since 1987 U.S. Sentencing Guidelines have allowed for an alternative fine of either (i) twice the convicted firms′ pecuniary gains, or (ii) twice the victims′ losses. This alternative was first employed by the DOJ in 1995, and it is what led Archer Daniels Midland to agree to pay a $100 million fine for its role in the recent lysine and citric acid price-fixing conspiracies.[8]

Equitable relief entails undoing the wrong that has occurred. Sometimes this involves forbidding certain actions, sometimes it can involve more affirmative moves to restore competitive conditions such as, for example, divestiture or making certain patents available for license. Both the government and private parties can sue in the federal courts for equitable relief for violations of either the Sherman or Clayton Acts. The result of such a proceeding, should the plaintiff prevail, is a court issued *decree*.[9]

The FTC can also seek equitable relief. Here the procedure is somewhat different and involves a quasi-judicial administrative proceeding within the agency in which the FTC staff and the accused firm(s) present evidence in front of an "administrative law judge." The administrative law judge

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issues an opinion, which is then reviewed by the commission, consisting of five commissioners appointed by the president for seven-year terms. The commission can approve or change (in any way) the administrative law judge's decision, and it is empowered to issue a "cease and desist" order if it finds that violations have occurred. Like lower court rulings for the DOJ or private party suits, these cease and desist orders can be appealed by the firms to the appellate courts.

Finally, private parties who prove in court that they were injured due to Sherman and Clayton Act offenses can recover treble damages. In addition to providing a means for compensating parties injured by antitrust violations, these penalties help to create an army of private enforcers of the antitrust laws (moreover, an army that is perhaps more aware of when violations are occurring than are the governmental enforcement agencies). For price-fixing violations, for example, damages are equal to the amount of the overcharge arising from the conspiracy.[10]

It is of interest to note that monetary damages for Sherman Act price-fixing violations may, in some circumstances, be less effective at deterring illegal behavior than one might initially expect. The reason, as noted by Salant [1987] and Baker [1988], is that buyers who know that they might collect damages may factor this in when they calculate the effective price they are paying. If so, this increases buyers' willingness to pay, which counteracts—sometimes completely—the direct deterrence effect of damages on the sellers' pricing incentives.

To be more specific, suppose that there is a group of firms that, absent collusion, would set price equal to their marginal cost c. Let t denote the damage multiple, let $\phi(p, t)$ be the probability of successful detection and prosecution

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given p and t (we expect this probability to increase as the price and damage multiple increase, so that $\phi_p(p,t) \geq 0$ and $\phi_t(p,t) \geq 0$), and let $x(\cdot)$ be the demand function. The joint monopoly price p^m maximizes $(p-c)x(p)$.

Consider a single period model in which the firms first set prices and make sales, and then at the end of the period any collusive activity that occurred during the period may be detected and prosecuted. Suppose that the firms secretly collude and set price equal to $p > c$. Then the effective (net of damages) price to a (risk neutral) buyer who might collect damages equal to $t(p-c)$ is $p^*(p,t) = p - \phi(p,t)t(p-c)$. Buyers will therefore buy $x(p^*(p,t))$ units from the cartel, and so the cartel's expected profit is

$$\begin{aligned}\Pi(p,t) &= (p-c)x(p^*(p,t)) - \phi(p,t)t(p-c)x(p^*(p,t)) \\ &= (p^*(p,t)-c)x(p^*(p,t)).\end{aligned}$$

The cartel's profit maximizing choice is clearly to set p such that $p^*(p,t) = p^m$, the monopoly price, if this possible. Figure 1.2a depicts such a case. In such a circumstance, the cartel's output and expected profit are *completely unaffected* by the possibility of damages. In contrast, if there is no p such that $p^*(p,t) = p^m$, as in figure 1.2b, then the cartel chooses p to maximize the effective price $p^*(p,t)$. In this case, damages lower the effective price paid by consumers.[11] For example, if the probability of detection $\phi(\cdot)$ depends only on t, then the cartel can achieve an effective price of p^m if $t\phi(t) < 1$. But if $t\phi(t) \geq 1$, then the best the cartel can do is set p equal to c, so that damages fully deter inefficient pricing.

This simple model makes an interesting observation but probably paints an overly negative picture of the effectiveness of private damages in preventing collusive pricing

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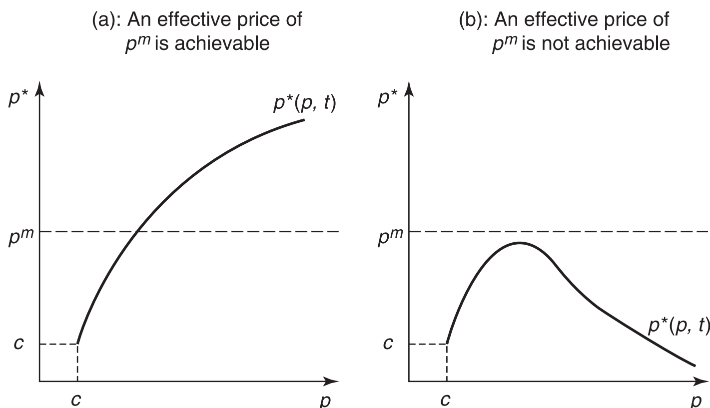

Figure 1.2
The effective (net of damages) price when buying from a cartel

since it omits a number of ways in which private damages may lead to more efficient behavior. First, when damages do lower the expected profit to colluding, they also reduce the likelihood of the cartel forming in the first place. Second, suppose that the cartel faces other penalties $K > 0$ (either fines or jail time) so that its payoff is $\Pi(p,t) + \phi(p,t)K$. In this case, if a greater damage multiple t increases the responsiveness of the detection probability to price (that is, if $\phi_{pt}(\cdot\,,\cdot) > 0$), then it will always lead the cartel to set a lower effective price. Similarly, suppose that we instead consider a multiperiod model. For example, imagine that there are two periods of potential collusion. If collusion in period 2 can occur only if collusion is not detected in period 1, the cartel suffers a loss of, say, $K > 0$ if collusion is detected in period 1. Then, just as when the cartel faces other penalties, a higher damage multiple will lower the first period cartel price if $\phi_{pt}(\cdot\,,\cdot) > 0$. In addition, a new effect arises in the dynamic setting: here, as long as

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$\phi_t(\cdot, \cdot) > 0$, damages increase expected welfare by causing the cartel to end more quickly. Finally, in many cases, buyers will actually be unaware that collusion is taking place, in which case increasing t can be shown (even in the static model) to necessarily reduce the price charged while the cartel is active.[12]

1.3 Looking Ahead

In the next three chapters, we will look at three central topics in antitrust: price fixing, horizontal mergers, and exclusionary vertical contracts. In each case (albeit to varying degrees), economists have made substantial progress in understanding the economic issues involved. Yet, at the same time, some very substantial challenges remain. These challenges are both theoretical and empirical in nature. Moreover, to improve antitrust law and its administration, our economic understanding will need to be joined with an appreciation for issues of judicial procedure. This will not be an easy task. My hope is that this book can help point the way.

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