

ESTIMATING ECONOMIC DAMAGES IN ANTITRUST ACTIONS IN LATIN AMERICA*



COMISIÓN FEDERAL DE COMPETENCIA
MÉXICO

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Estimating Economic Damages in Antitrust Actions in Latin America

Mark A. Allen and Victoria A. Lazear

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1. Introduction

The purpose of this guide is to present a framework for estimating economic damages in antitrust actions in Latin America. Although we provide a general discussion of similarities between antitrust law in the United States and Latin America, we do not intend this guide to be an exercise in comparative law. Rather, our goal is to explain the structure that economists use to quantify antitrust damages, which applies across all jurisdictions. Further, although private antitrust litigation is currently quite limited in Latin America, proper economic analysis of anticompetitive harm plays a role in determining criminal and civil fines in many Latin American countries. Accordingly, we approach the topic from the point of view of private antitrust litigation, but recognize that our framework has a broader application in enforcement actions in Latin America.

Although the difference between behaviors judged to be per se illegal under antitrust laws (i.e., collusive behavior) versus those judged anticompetitive using a rule of reason analysis may be important for assessing liability, this distinction is not particularly useful for assessing economic losses.¹ A much more important distinction for economic damages is whether the conduct is horizontal, also called multi-firm—that is, conduct across multiple firms in a market which is usually the result of collusive behavior—or vertical, also called single-firm—that is, conduct within a firm which usually takes the form of constructing barriers to entry through contracts, rebates, tying, or other conduct to raise rivals' costs.

We begin in Section II by explaining the standard approach to quantifying economic damages regardless of the applicable legal context. In Section III, we provide a discussion of general concepts of antitrust damages before considering the legal framework for antitrust laws in Section IV. In Section V, we identify unusual issues economists may encounter in estimating antitrust damages. Such issues include the economics of tied goods, relevant markets and the scope of damages, predatory pricing,

¹ As a matter of law, per se antitrust violations involve conduct deemed to be inherently anticompetitive by its very nature. Other conduct may violate the antitrust laws only upon proof that the conduct unreasonably restrains trade or harms competition, hence the term “rule of reason.” As a matter of economics, however, some conduct may be per se illegal, but not lead to any economic harm. Consider horizontal allocation of a market—that is, a market that is allocated across potential competitors on a geographic basis. If there are economies of scale from servicing multiple customers who are clustered as opposed to being distributed over a wide area, then economic damages may be negative because consumers may pay lower prices due to lower costs.

and the pass-through of price elevation. In Section VI, we discuss two topics that are not unique to antitrust damages but may nonetheless be important: disaggregation and apportionment of damages. Finally, in Section VII, we provide two examples of economic analysis of antitrust damages, one relating to horizontal or multi-firm conduct and the other relating to single-firm or vertical conduct. In this discussion, we assume that the defendant has been found liable and further that the relevant geographic and product markets have been defined.

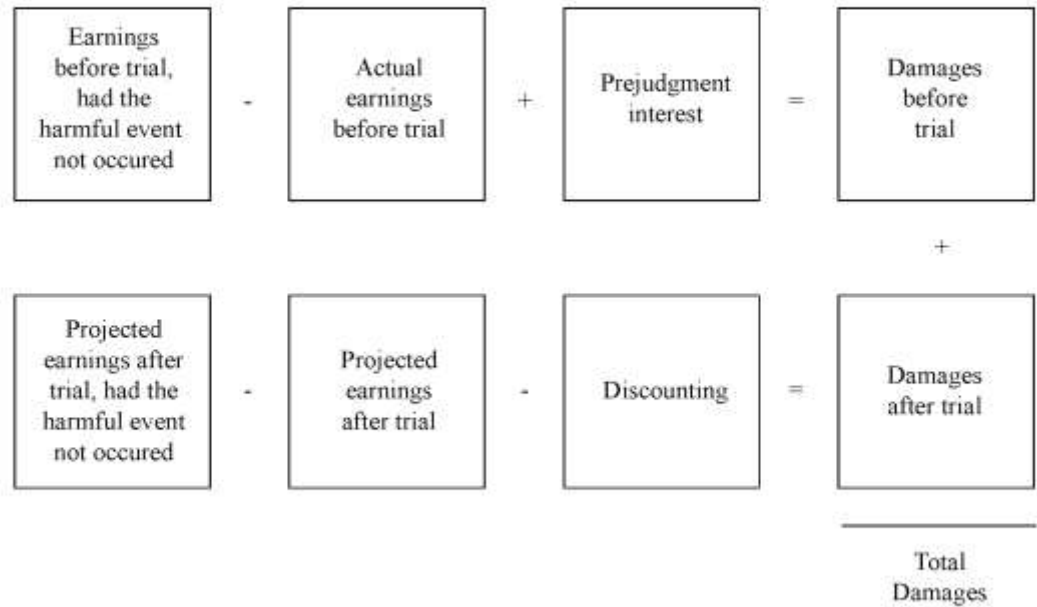
Throughout the text, we provide brief examples to illustrate how damages estimation can vary depending on the conceptualization of the but-for world, but seldom is an approach clearly right or wrong. Outcomes can differ based on fact-specific application of applicable statutes and prior case law, and resolutions can vary substantially by jurisdiction and over time. As would be expected, the perspective taken is seldom dispassionate. Thus, the intent of the examples is not to show a “correct” damage estimation, but rather to highlight important issues that can have a significant impact on damages. All of the examples are drawn from the authors’ experiences in estimating damages.

2. Quantifying Economic Damages in General: The Standard Approach

Our discussion begins by defining the structure of the standard approach to quantifying economic damages, shown in Figure 1. Damages quantification operates on the premise that the defendant is liable for damages from the defendant’s harmful act. The plaintiff is entitled to recover monetary damages for losses occurring before trial and also after trial if the harm continues.² The top line of Figure 1 measures the losses before trial; the bottom line measures the losses after trial.

² In the context of antitrust litigation, even if the anticompetitive conduct ceases at the time of trial, the adverse impact on the market may not be immediately reversible. The damages expert should carefully analyze the impact of the alleged bad act and include future damages if appropriate.

Figure 1
Standard Format for a Damages Study



The goal of damages measurement is to find the plaintiff's loss of economic value from the defendant's harmful act. The loss of value may have a one-time character, such as the diminished market value of a business or property, or it may take the form of a reduced stream of profit or earnings. The losses are net of any costs avoided because of the harmful act.

The essential features of a study of losses are the quantification of the reduction in economic value, the calculation of interest on past losses, and the application of financial discounting to future losses. The losses are the difference between the value the plaintiff would have received if the harmful event had not occurred and the value the plaintiff has or will receive, given the harmful event. The plaintiff may be entitled to interest for losses occurring before trial.³ Losses occurring after trial are usually discounted to the time of trial. The plaintiff may be due interest on the judgment from the time of trial until the defendant actually pays. The majority of damages studies in private litigation fit this format.

³ In the United States, prejudgment interest often is not awarded if the defendant is assessed treble damages as a deterrent.

A) Isolating the Effect of the Harmful Act

The first step in any damages study is the translation of the legal theory of the harmful event into an analysis of the economic impact of that event. In most cases, the analysis considers the difference between the plaintiff's economic position if the harmful event had not occurred and the plaintiff's actual economic position.

In almost all cases, the damages expert proceeds on the hypothesis that the defendant committed the harmful act and that the act was unlawful. Accordingly, throughout this discussion, we assume that the plaintiff is entitled to compensation for losses sustained from a harmful act of the defendant, in this case a violation of a law or statute that prohibits some form of anticompetitive conduct. We also assume that the defendant firm or firms have the ability to control output or prices in such a way as to create an adverse effect on consumer welfare.

The characterization of the harmful event begins with a clear statement of what occurred. This characterization must also include a description of the defendant's proper actions in place of its unlawful actions—what the defendant should or should not have done under the law— and a statement about the economic situation absent the wrongdoing, with the defendant's proper actions replacing the unlawful ones. We refer to this characterization as the *but-for world* or the *but-for scenario*. Damages measurement then determines the plaintiff's hypothetical value in the but-for scenario. Economic damages are the difference between that value and the actual value that the plaintiff achieved. Because the but-for scenario differs from what actually happened only with respect to the harmful act, damages measured in this way isolate the loss of value caused by the harmful act and exclude any loss (or gain) in the plaintiff's value arising from other sources. Thus, a proper construction of the but-for scenario and measurement of the hypothetical but-for plaintiff's value by definition includes in damages only the loss *caused* by the harmful act.

B) The Damages Quantum Prescribed by Law

In most cases, the law prescribes a damages measure that falls into one of the following five categories:

- *Expectation*: Plaintiff is restored to the same financial position as if the defendant had performed as promised.
- *Reliance*: Plaintiff is restored to the same position as if the relationship with the defendant had not existed in the first place. In effect, the plaintiff is placed in

the position it would have been in had the plaintiff never encountered the defendant.

- *Restitution*: Plaintiff is compensated by the amount of the defendant's gain from its unlawful conduct, often called compensation for unjust enrichment or disgorgement of ill-gotten gains. In effect, the defendant is placed in the position it would have been in had the defendant never committed the wrongful act.
- *Statutory*: Plaintiff's compensation is a set amount by statute per occurrence of wrongdoing. In this situation, damages may have no relationship to the economic harm, if any, suffered by the plaintiff.
- *Punitive*: Compensation rewards the plaintiff for detecting and prosecuting wrongdoing to deter similar future wrongdoing.

Because we are focused on calculating economic harm, we will not address statutory or punitive damages. Statutory damages are set by statutes and may have little or no correlation with economic harm. Likewise, punitive damages are assessed to deter others from engaging in similar conduct. In some cases, however, punitive damages may be related to economic losses or to monetary compensation for noneconomic harm.⁴

As we will discuss in greater detail below, remedies for antitrust violations usually follow a reliance or restitution remedy, with the important caveat that the plaintiff must prove harm to competition or consumer welfare, as opposed to harm to itself as a competitor with no showing of consumer harm. With this caveat in mind, an antitrust plaintiff generally is restored to the position it would have been in absent the defendant's conduct, and the defendant may be required to disgorge its ill-gotten gains. Note that antitrust defendants also often face statutory penalties, such as civil or criminal fines, as well as damages that are punitive in nature (e.g., treble damages in the United States). However, because we are focused entirely on quantifying economic harm caused by anticompetitive conduct, we will ignore these other remedies.

With the standard approach to quantifying economic damages in mind, we now turn to applying this standard approach to antitrust damages.

⁴ See Polinski, A. Mitchell, and Steven Shavell, "Punitive Damages: An Economic Analysis," 111 *Harvard Law Review* 869 (1997–1998). Polinsky and Shavell argue that *total damages* imposed on the defendant should be the harm caused multiplied by the reciprocal of the probability of detection and conviction. *Punitive damages*, then, can be determined by subtracting compensatory damages from the total. See pp. 874–875.

3. General Concepts of Antitrust Damages

Antitrust damages are losses suffered by purchasers or competitors from unlawful impediments to competition which harm consumer welfare. Where the plaintiff is a customer of the defendant or a purchaser of goods in a market where the defendant's anticompetitive conduct has raised prices, damages are the amount of the overcharge. Where the plaintiff is a rival of the defendant injured by exclusionary or predatory conduct, damages are the lost profits from the misconduct. In some jurisdictions, damages may also include the amount by which the defendant has been enriched, to the extent there is no double counting.

A) Classes of Anticompetitive Conduct

As discussed above, anticompetitive conduct can be divided into two broad categories: *multi-firm* and *single-firm*. Multi-firm conduct is concerted action by multiple firms, while single-firm conduct is that undertaken by a single firm to impede rivals.

Harm to competition resulting from multi-firm concerted action generally violates laws, such as Section 1 of the Sherman Act in the United States, which prohibit joint conduct by sellers. This type of anticompetitive conduct usually results in elevated prices. The injured parties are usually purchasers. Because almost all forms of concerted action among rivals are harmful, determining what types of joint conduct violate antitrust law is not terribly controversial, with the possible exception of implicit collusion. Less common than collusion among sellers, but equally harmful, is anticompetitive concerted action on the part of buyers in a market. The result is depressed prices, and the injured parties are usually sellers. For simplicity, we will presume in the rest of this section that the harm takes the form of price elevation. Examples of concerted action that may be challenged include price fixing, agreements to restrict output, and mergers (for example, if two competitors merge).

Single-firm harm to competition arises when a dominant firm takes unilateral steps to maintain or extend its strong position in a market by means that block the entry or expansion of rivals. The injured parties are customers and rival sellers. In the United States, the laws prohibiting such conduct are covered by Section 2 of the Sherman Act and state laws governing unfair competition. Antitrust cases are often brought simultaneously under federal and state laws. Determining what constitutes a violation of such laws is intensely controversial in almost all cases.

B) General Economic Framework for Calculating Antitrust Damages

The general concepts for calculating damages suffered from anticompetitive conduct are the same as those described above in section II discussing the standard model for quantifying economic losses. Damages are calculated as the difference between the outcome in the but-for world and the outcome that actually occurred, where the difference is discounted back to when the anticompetitive conduct occurred.

However, defining the outcome in the but-for world can be particularly challenging in an antitrust case. In many damages analyses not involving antitrust violations, the harm is confined to a single injured party. Hence, construction of the but-for world need only consider what would have happened to that one party absent the alleged bad conduct. In antitrust cases, however, the alleged bad conduct often affects other firms who participate in the relevant market but are not parties to the lawsuit. A proper analysis of the but-for world in antitrust cases thus requires consideration of the effect on all market participants.

For example, if a seller's alleged misconduct excludes all other potential players in the market, then the damages suffered by any individual player are arguably zero if elimination of the alleged bad conduct permits unrestricted entry. The market could be competitive with no single entrant, including the defendant, earning an economic profit. If, however, damages are measured as defendant's unjust enrichment, then damages could be considerable because the defendant enjoyed monopoly profits.

The next section will provide an overview of antitrust law in Latin America using United States law as a reference point. The remaining sections will provide guidance on calculating antitrust damages.

4. Legal Framework for Antitrust Laws

We begin with a general discussion of antitrust law in the United States, in part because that is the legal framework that we know the best. More importantly, the antitrust laws in Latin America are greatly influenced by, and in many cases generally modeled after, United States antitrust laws. One reason for this influence is that economists have been important in the development of antitrust laws in both the United States and Latin America.

In both Latin America and the United States in particular, the antitrust laws are focused on limiting any action that is harmful to competition. This definition is intended to exclude actions that *only* harm a competitor. For example, a firm that decides to

design its software to operate on any computer may harm a competitor who offers its software only on hardware that it can build. However, the firm's decision benefits consumers because there are many potential sellers of computers but few providers of software. The market composed of potential purchasers of the software is greatly expanded because the price of the hardware has fallen to a competitive price. Thus, the competitor is harmed but consumers benefit. Such actions are generally not considered antitrust violations.

A) Antitrust Laws in the United States

In the United States, there are three sources of federal antitrust law: the Sherman Act, the Federal Trade Commission Act, and the Clayton Act.

The Sherman Act is divided into two sections. Section 1 prohibits joint action by sellers or buyers in a market. Such conduct, often referred to as improper horizontal restrictions, includes such actions as cartel pricing and bid rigging as well as acquisition of a competitor to limit competition. Section 2 concerns actions by single parties that usually take the form of restricting entry by a potential competitor. Sometimes such actions are condoned by the law. For example, patent laws prohibit others from using intellectual property for a prescribed period of time without the consent of the patent owner. However, other actions, such as contracts that require that a purchaser only use the manufacturer's repair facilities, are generally illegal.

The Federal Trade Commission ("FTC") Act bans unfair methods of competition and unfair or deceptive acts or practices. Although all Sherman Act violations also violate the FTC Act, the FTC Act may reach other practices that harm competition that do not fall squarely within the purview of the Sherman Act. Private plaintiffs, however, do not have standing to sue under the FTC Act.

The Clayton Act prohibits mergers and acquisitions where the effect may substantially lessen competition or tend to create a monopoly. It also addresses interlocking directorates. Further, as amended by the Robinson-Patman Act, the Clayton Act also bans certain discriminatory practices in prices, services, or allowances in dealings between merchants. Like the Sherman Act, the Clayton Act allows private plaintiffs to sue to obtain an injunction or damages.

In addition to federal antitrust statutes, states also have provisions prohibiting anticompetitive conduct. These statutes tend to be quite broad and generally ban

unlawful competition defined as any unlawful, unfair, or fraudulent business act or practice and unfair, deceptive, untrue, or misleading advertising.⁵

B) Antitrust Laws in Latin America

“Generalizing about competition institutions in a region as vast and diverse as ‘Latin America’ is a dangerous undertaking, particularly for an outsider.”⁶ We concur with this sentiment, and our comments below are intended to provide points of correspondence that support discussion of damages quantification based on experiences in the United States.

Most Latin American countries have laws that seek to protect competition and the competitive process. For example, the policy objectives of Mexico’s Federal Law of Economic Competition are “to protect the competitive process by preventing monopolies, monopolistic practices, and other restraints of the efficient functioning of markets for goods and services.”⁷ Thus, Latin American antitrust laws limit bad conduct to actions that harm competition—those actions that harm consumer welfare.

As discussed above, anticompetitive conduct is often framed as either per se illegal or illegal only if the conduct unreasonably restrains competition (conduct illegal under the “rule of reason”). However, this characterization describes the proof required to establish liability. In terms of the harm inflicted, antitrust actions in Latin America are framed as prohibitions against horizontal restraints of trade, vertical restraints of trade, and abuse of dominance. In many instances, however, a vertical restraint violation is equivalent to a violation of laws prohibiting abuse of dominance.⁸ Accordingly, our discussion of Latin American antitrust damages will focus on horizontal restraints of trade and abuse of dominance. This framework aligns with damages for antitrust conduct that is multi-firm and single-firm discussed above.

⁵ See, e.g., Cal. BPC. Code § 17200.

⁶ Crane, Daniel A., “Private Enforcement Against International Cartels in Latin America: A US Perspective,” *Competition Law and Policy in Latin America*, ed. Eleanor M. Fox and D. Daniel Sokol, Hart Publishing, Portland, p. 335.

⁷ Article 2, Federal Law of Economic Competition.

⁸ With relatively recent changes, Latin American antitrust law generally appears to equate monopolization and abuse of dominance. For the purposes of our discussion here, we assume that the remedial goals of abuse of dominance actions are the same as for other types of antitrust actions: protecting competition and enhancing consumer welfare.

Most current information about the functioning of Latin American antitrust laws concerns enforcement actions. Generally, a commission or tribunal is responsible for identifying potential offenders and determining if their actions warrant an injunction and/or sanctions. Sanctions may be civil as well as criminal. A related and important function of the commission or tribunal is deciding when mergers should be allowed. There is general sentiment that mergers should be stopped prior to consummation rather than attempting to penalize illegal mergers after the fact. The reasoning is that undoing the harmful effects once a merger has occurred is often impossible.

Civil penalties take the form of fines. These fines are not intended to be calculated as a measure of civil damages, but may be informed by the amount of harm. The commission or tribunal usually has discretion to penalize a firm only up to a certain amount. Sometimes, the fine is set as a percent of revenues. Penalties generally are not paid to the harmed party, but rather are usually given to the government where the funds are sometimes earmarked for special programs. The ability of the commission or tribunal to recover the penalty varies widely from country to country.

As previously discussed, economists are an integral part of the enforcement process in Latin American antitrust law. They may be asked to measure anticompetitive harm even if this measure is not used directly to calculate penalties. As a result, the alleged offending party must also employ economists as part of its defense. Economists are also integral to determining if a merger should be permitted. In the process they, like their counterparts in the United States, have developed sophisticated models to simulate the effects of the contemplated merger. These or similar models may also be used to demonstrate the harm to competition resulting from an abuse of dominance.

In certain Latin American countries, private actions are permitted only if the enforcement agency has determined that an antitrust violation has occurred.⁹ Also, class certification as a mechanism for joint prosecution of private claims is not available in all Latin American countries. In contrast, private actions are frequently brought in the United States, and considerable attention has been focused on methodologies to calculate the monetary harm and resulting damages.

In the next section, we discuss how economists think about the harm caused by violations of antitrust laws.

⁹ For example, Peru. Cuneo, Jonathan, "Overview of the Americas," *The International Handbook on Private Enforcement of Competition Law*, ed. Albert Foer and Jonathan W. Cuneo, Edward Elgar Publishing Limited, Northampton, 2010, p. 438.

5. Quantifying Antitrust Damages

A) The But-for Scenario for Defendant's Antitrust Misconduct

The characterization of defendant's actions but for the unlawful conduct is particularly challenging and controversial in antitrust cases.

1. Lawful Implicit Collusion That Would Have Occurred but for Unlawful Explicit Collusion

In cases involving *explicit* collusion among a group of defendants, the but-for scenario posits the absence of explicit joint action, but the parties may dispute how much *implicit* collusion could have occurred without violating laws such as those that prohibit horizontal restraints of trade.

For example, the plaintiff may argue that, absent unlawful collusion, a market would be "competitive." That term is too vague to serve as the proper description of the operation of a market but for collusion. Economists recognize the concept of *perfect competition*, where the active rivalry of many sellers of identical products pushes the price down to the bare minimum of marginal cost. But the conditions for perfect competition are so strict that they are unlikely to hold in any market where an allegation of explicit collusion is likely to arise. Rather, most markets are oligopolies, where firms behave as rivals, acting to try to take business away from one another. Interaction among such firms follows the economic principles of oligopoly, not perfect competition, and accordingly price is somewhat above marginal cost. Plaintiffs basing damages measurement on a but-for scenario with a "competitive" market rarely assert that the price but for the unlawful conspiracy would have been as low as marginal cost. The question then becomes what legitimate oligopoly behavior should have occurred in a market that was actually unlawfully distorted by explicit collusion.

Economists have developed many models of oligopoly behavior. In fact, the wide range of these models is responsible for most disputes about damages for conspiracies. One model that is attractive to defendants describes *implicit* collusion as an equilibrium of oligopoly.¹⁰ In some situations, this equilibrium is the same as would arise from the most powerful form of explicit collusion, where the parties enforce the monopoly price and divide the benefits among themselves. In this equilibrium, each seller chooses to stick with the monopoly price rather than trying to take business away from its rivals by charging a lower price. The reason the price cut is undesirable is that each seller knows

¹⁰ Shapiro, Carl, "Theory of Oligopoly Behavior," *Handbook of Industrial Organization*, ed. Richard Schmalensee and Robert Willig, Volume 1, Chapter 6, Elsevier, Amsterdam, 1989.

that all of its rivals will join in punishing a deviator by moving to a low price for an extended period. The rivals follow what is called a *trigger strategy*, taking a large step to punish any deviator.¹¹

A plaintiff will argue that a trigger-strategy equilibrium is not a reasonable description of the market outcome under legitimate oligopoly behavior. One important point is that a trigger-strategy equilibrium is almost never the only outcome in an oligopoly model. Under the same conditions that a trigger strategy might govern the market, other, more competitive forms of interaction are also consistent with the same oligopoly structure. In particular, there is a class of oligopoly outcomes (called *Markov-perfect*) that rules out trigger strategies and the resulting uncompetitive conditions in the market, with strong implicit collusion.¹² In those oligopoly outcomes, each seller recognizes that other sellers are present and that the seller has an influence over price—contrary to the situation in a perfectly competitive market. Price is above marginal cost but below the monopoly level.

2. Alternative Lawful Unilateral Conduct That Would Have Occurred but for an Unlawful Act of Monopolization

A wide range of unilateral anticompetitive conduct can be challenged under abuse of dominance and similar laws. Therefore, describing all the types of disputes that will arise over the characterization of the alternative legitimate conduct of the defendant is not feasible. We limit our discussion to two examples from actual antitrust litigations.

In 2000, the United States Department of Justice (“DOJ”) sued American Airlines for predatory pricing on certain routes in and out of Dallas-Fort Worth International Airport, one of American’s primary hubs. A small low-cost rival had begun service on these routes and American responded by cutting fares and adding service. The DOJ argued that this policy created a barrier to entry resulting in excessive fares because low-cost airlines were unwilling to incur the cost of establishing themselves as viable competitors given the low fares they would have to charge to compete with American for service on these routes. The 10th Circuit Court of Appeals affirmed the district court’s dismissal on summary judgment.¹³ Among the reasons the appellate court cited for disallowing the DOJ’s challenge was the government’s failure to state what lawful policy

¹¹ Fudenberg, Drew, and Jean Tirole, “Non-Cooperative Game Theory for Industrial Organization, An Introduction and Overview,” *Handbook of Industrial Organization*, ed. Richard Schmalensee and Robert Willig, Volume 1, Chapter 5, Elsevier, Amsterdam, 1989, pp. 259-327.

¹² Fudenberg, Drew, and Jean Tirole, *Game Theory*, MIT Press, Cambridge, Chapter 13, 1991.

¹³ *United States v. AMR Corp.*, 335 F.3d 1109 (10th Cir. 2003).

American could have followed in responding to the entry of a rival. Although the government did not seek damages, had the government prevailed, follow-on private cases would likely have sought damages on behalf of passengers. The damages experts in those cases would have faced this issue squarely.

A second example illustrating the difficulties of characterizing a defendant's legitimate business conduct involves the DOJ's challenge of Microsoft's policy of bundling Internet Explorer ("IE") with its Windows operating system.¹⁴ The DOJ alleged that Microsoft's bundling was responsible for its victory over rival Internet browsers such as Netscape. If Microsoft sold Internet Explorer separately, what price would it have charged? If it did not bundle IE with Windows, just how easy would it be for a customer to install IE along with Windows? Netscape's damages from lost sales would be highly sensitive to the resolution of this dispute. If Microsoft sold IE completely separately, for \$75 per copy, Netscape would have had a large profit opportunity. On the other hand, if Microsoft gave IE away and made installation easy when setting up a new Windows-equipped computer, Netscape's sales might have been only slightly higher than in actuality, where Netscape faced the obstacle that IE was already available on every Windows machine.

These cases underscore that whereas one party's damages analysis may hypothesize the absence of any act of the defendant that influenced the plaintiff, the other party's damages analysis may hypothesize an alternative, legal act. Although disagreement over the alternative scenario in a damages study is generally a legal question, opposing experts may have been given different legal guidance (with respect to how a law should be interpreted, often arising from imprecision in the drafting of the law or alternative interpretations posited by precedents) and therefore may have made different economic assumptions, resulting in major differences in their damages estimates.

Example: Defendant Copier Service's long-term contracts with customers are found to be unlawful because they create a barrier to entry that maintains Copier Service's monopoly power. Rival's damages study hypothesizes no contracts between Copier Service and its customers, so Rival would face no contractual barrier to bidding those customers away from Copier Service. Copier Service's damages study hypothesizes medium-term contracts with its customers and argues that these would not have been found to be unlawful. Under Copier Service's assumption, Rival would have been much less

¹⁴ See, e.g., *United States v. Microsoft*, 253 F.3d 34 (DC Cir. 2001).

successful in bidding away Copier Service's customers, and damages are correspondingly lower.

Analysis: Plaintiff's damages assume that, based on their head-to-head wins, they would have captured one out of every two customers. Further, their pricing and cost structure would equal that of the Defendant. Plaintiffs would have achieved the expected market penetration but for the antitrust harms. Thus, the but-for world would have the plaintiff making one-half of defendant's profits at the beginning of the damages period. Defendant's expert argues that medium-term contracts, or contracts of three years or less, would have been found legal even if the current long-term contracts of five years were found illegal. The expert further assumed that damages would begin four years prior to trial,¹⁵ and that approximately 20 percent of contracts would come up for renewal each year. Thus, accepting plaintiff damages expert's other assumptions with respect to win ratio and profits, the defendant's but-for world would have the plaintiff making at most 20 percent of defendant's profits the first year of the damages period (which assumes that 40 percent of the contracts would have exceeded three years, and half would become the plaintiff's customers), 30 percent of defendant's profits the second year, 40 percent the third year, and 50 percent thereafter.

Comment: Assessment of damages will depend greatly on the substantive law governing the injury. The proper characterization of Copier Service's permissible conduct usually is an economic issue. However, the expert must also have legal guidance as to the proper legal framework for damages. Thus, part of specifying the but-for world may include any interpretation of what conduct is legally permitted. In many cases, the proper specification of the appropriate legal framework can have a dramatic impact on damages.

B) Proper Consideration of the Amount of Competition in the But-For Scenario

A closely related and important analysis is the proper consideration of the amount of competition in the but-for world. For example, in one case a would-be operator of Japanese-language tours of northern California claimed that an alleged cartel of tour operators excluded it from the Japanese language tour market.¹⁶ Plaintiff's proposed

¹⁵ Assuming that the statute of limitations for antitrust violations is four years.

¹⁶ See *Dolphin Tours, Inc. v. Pacifico Creative Service, Inc.*, 773 F.2d 1506 (9th Cir. 1985).

damages analysis considered a but-for scenario where the plaintiff was the only tour operator to benefit from the absence of the challenged restraint. This analysis was challenged as unrealistic, because if the plaintiff had access to the market, so would other qualified operators. The case stands for the principle that the but-for scenario underlying a damages analysis must be realistic as a matter of business practices and economics. In particular, the expert must consider how much competition would prevail but for the challenged restraint.

The economic theory of entry supposes that entry to a market proceeds until the potential profit of the next potential entrant is negative; in this case the lost profit from exclusion is close to zero if the plaintiff is the marginal entrant and damages for that plaintiff are small. The plaintiff must demonstrate a cost or product advantage over other potential entrants to prove damages from exclusion from a market. On the other hand, a plaintiff driven from the market may suffer losses from the amount of its investment not recoverable from other uses.

The plaintiff may calculate damages for exclusionary conduct on the basis that prices in the market would have been the same but for that conduct. The defendant may argue that the activities of the plaintiff and other firms, absent exclusion, would have driven prices down and thus that the plaintiff has overstated the profit it lost from exclusion.

Example: Concert Promoter from another state is the victim of exclusion by Incumbent through Incumbent's unlawful contracts with a ticket agency. Promoter's damages study hypothesizes that Promoter would be the only additional seller in the area absent the contracts. Incumbent's damages study hypothesizes numerous additional sellers and price reductions sufficient to eliminate almost all profit. Incumbent's estimate of damages is a small fraction of Promoter's damages estimate.

Analysis: Promoter's damages analysis models the but-for world using a Cournot model with two players. Incumbent charges \$100 per ticket, and his costs are \$50 per ticket. If the Promoter and the Incumbent were to split the market, then the expected price would be about \$83 per ticket but total demand would increase about 33 percent. As a result, both Incumbent and Concert Promoter would each make profits of about 44 percent of Incumbent's existing profits. Concert Promoter then estimates his losses as 44 percent of Incumbent's profits each year.

Incumbent's damages analysis argues that Concert Promoter has improperly assumed that no other promoters would enter the market. He presents evidence that there are at least three other potential entrants. Thus, instead of two promoters there would be five. He then models the but-for world using the Cournot model with five players instead of two and concludes that damages would be about 11 percent of Incumbent's profits.

Comment: The elimination of one barrier to entry in the market—the unlawful contracts—will increase the profit available to potential rivals. Thus, some other rivals to the Concert Promoter might enter the market and share the benefits flowing from the elimination of the unlawful contracts. Eliminating unlawful contracts as a barrier to entry limits Concert Promoter's damages. But there may be other barriers to the entry of rivals that are not the result of anticompetitive conduct. For example, it may take an extended period for a new promoter to attract major performers. Concert Promoter, already established in the business out of state, might expect to make added profits from the elimination of the unlawful contracts, even though some new competitors would enter.

C) Classes of Antitrust Damages Studies

We distinguish two broad classes of antitrust damages studies: *benchmark* and *analytical*. Both are widely used in cases involving collusion (i.e., multi-firm) and single-firm conduct.

In a *benchmark* study, the expert identifies a market similar to the market at issue except that the unlawful conduct is absent. The expert then uses prices, price-cost margins, and market shares from this comparison market to project but-for values of those variables in the market at issue. The reasoning is that the market at issue would resemble the benchmark but for the anticompetitive conduct that has raised prices and lowered output.

Alternatively, an expert may compare market conditions in a period affected by the misconduct with conditions in another period, during which the misconduct is known to be absent. Plaintiff's expert may then measure the price elevation caused by the misconduct as the difference between the price in the benchmark period and the price in the effected period. In response, defendant's expert may argue that the misconduct is not the only difference between the periods—that prices rose, for example, because of cost increases or rising demand and not just because of a conspiracy or other misconduct.

Example: The price of plywood rises soon after a meeting of Plywood Producers. Plywood Purchasers attribute all of the price increase to a price-fixing conspiracy. Plywood Producers argue that increases in timber prices would have compelled increases in plywood prices even without a price-fixing agreement; their damages study attributes only part of the price increase to the conspiracy.

Analysis: The price of plywood rises from \$2 to \$3 per square foot soon after a meeting of Plywood Producers. Plywood Purchasers attribute the \$1 price increase to a price-fixing conspiracy. In their damages analysis, Producers claim that 75 percent of their costs are timber and that the price of timber has increased 50 percent, relying on a timber index. They argue that plywood was priced at cost prior to the meeting. Thus, their costs would have increased from \$2 to \$2.75, and at most only \$.25 can be attributed to the alleged conspiracy. On rebuttal, the Purchasers rely on a regression analysis that demonstrates that timber is at most 40 percent of the Producers' costs. Further, they argue that prices for the timber used in making plywood increased only 25 percent, relying on sales data at the wholesale level. As a result, Purchasers argue that the cost of producing plywood only increased by \$.20 ($0.4 \times \2×0.25), and that damages are \$.80 for each square foot of plywood sold.

Comment: Economic analysis is capable, in principle, of inferring how much of a *price* increase is caused by a *cost* increase. Plywood Purchasers' damages analysis could be strengthened in this example by direct evidence on the amount of the price increase determined by the conspirators. In more sophisticated measurements of damages through comparisons of periods with and without the misconduct, experts may use regression analysis to adjust for influences other than the misconduct. Explanatory variables may include general economic indicators such as the national price level and Gross Domestic Product, along with variables specific to the industry.

In an *analytical* study, the expert uses a market model—often an oligopoly model such as Cournot or Bertrand—and fits it to the data for the actual market as affected by the anticompetitive behavior. The expert then re-solves the model using the conditions posited in the but-for scenario free of the harmful conduct. The expert infers the effects of the harmful conduct by comparing the output from the two runs of the model.

Example: Resort Owner is sued by Developer for monopolization of resorts on an island. Only two beaches are available for development. Resort Owner has

successfully blocked Developer from building a competing resort because it owns the only construction company on the island. A local ordinance prohibits outside construction companies from operating on the island. For purposes of this analysis, both experts assume that fixed costs are close to zero because labor, which is the primary cost, can be hired as needed. Developer estimates damages assuming a Cournot model. Resort Owner argues that it already has an expansion plan whereby it would have more than enough rooms to meet all of the demand at the Cournot model prices. Thus, in Resort Owner's damages analysis, Developer and Resort Owner would engage in a price war where the economic profits would be reduced to zero and damages would be zero.

Analysis: Rooms at the existing resort run on average \$500 a night. Developer estimates that the profit, after adjustment for occupancy rates, is 20 percent. After developing his hotel, Developer estimates that prices will drop to \$450 a night but total demand will increase by about 70 percent. Developer's damages would be his lost profits for each year. Resort Owner and Developer would split the guests. As a result, Developer estimates his losses as \$212,550 per year.

Resort Owner counters that his expansion would greatly increase the number of rooms and that would permit him to lower prices. Further, Resort Owner's beach was substantially more attractive than that of Developer so that Resort Owner would successfully be able to capture most of the business. Thus, a more likely outcome would be that Resort Owner would be able to maintain an economic profit at a price where Developer would not make any economic profit. Thus, Resort Owner estimates zero damages.

Comment: The merits of each position are fact based. Rebuttal would require Developer to demonstrate that the two resorts would be equally attractive and that the expansion would not change the pricing for the Resort Owner. Another option might be to argue that Developer's resort would appeal to a specific type of guest.

Auction models are useful for measuring but-for prices in cases where the unlawful conduct is bid-rigging.¹⁷

Example: Refrigerator Maker buys electric motors through procurement auctions. These auctions award the business to the lowest bidder, but at the second-lowest bid price. Motor Makers conspire by rotating the designated winner and submitting rigged bids, where the designated winner bids the lowest price, another company bids the monopoly price, and the remaining companies bid random higher prices. Refrigerator Maker's damages expert obtains data on Motor Maker's costs and simulates the auction under legitimate non-collusive bidding, where the price is the second-lowest cost.

Comment: The concept of cost that Refrigerator Maker's expert should use is the lowest price that Motor Maker would be willing to accept in a secret transaction where it did not have to worry about the effects of a low price on the rest of its sales. The economist William Vickrey observed that the non-collusive outcome of an auction awarding the business to the lowest bidder at the second-lowest price was for the price to be the second-lowest cost. Economists call these Vickrey auctions. This auction mechanism or equivalent ones (such as those on eBay.com) are widely used in procurement and other business-to-business transactions.

6. Topics Specific to Antitrust Damages

Certain topics are likely to arise only in the context of antitrust damages. Such topics include the pricing of a good when there is a tied sale, estimating damages when the alleged bad act causes harm outside of the relevant market, estimating damages when the allegation is predatory pricing, and allocating damages between indirect and direct purchasers.

A) Tying

When the harmful act is a tied sale, the issue of different conditions absent the harmful act is particularly critical. Tying arrangements are attempts by a business to extend its monopoly in one market into a related market. A purchaser who wants the

¹⁷ Hendricks, Ken, and Robert H. Porter, "Empirical Perspectives on Auctions," *Handbook of Industrial Organization*, ed. Mark Armstrong and Robert H. Porter, Volume 3, Chapter 32, Elsevier, Amsterdam, 1989, pp. 2073-2143.

“tying” good must also purchase the “tied” good. The plaintiff, if a purchaser, may calculate damages as the price paid for the purchase of the tied product, on the theory that the purchase was unwanted and would not have occurred absent the tie. If the plaintiff is a rival in the market for the tied good, the plaintiff may calculate damages on the theory that it would have enjoyed higher sales absent the tie. In both cases, the defendant may respond that, absent the tie, the price for the tying good would have been higher and the price for the tied good would have been lower. Damages are then lower than those calculated by the *purchaser* plaintiff based on the higher price for the tying good. Damages are also lower than those calculated by the *rival* plaintiff because the lost sales would occur at a lower price.

Example: Dominant Diabetes Test Seller has required that purchasers of test equipment also buy the necessary chemicals (reagents) from them. Dominant Seller counters that it would have charged more for the equipment absent the tie. Independent Reagent Seller calculates damages based on the theory that it would have picked up a substantial amount of Dominant Seller’s reagent business. Defendant Dominant Seller responds that it would have charged less for reagents and more for equipment, absent the tie, so Independent Reagent seller would be forced to price the reagents at marginal cost.

Analysis: The test equipment costs \$50,000 and a set of reagents is \$2000. A set lasts on average one month. Independent Reagent Seller provides data that it could sell the same reagents for half as much with a profit margin of 25 percent. It estimates that it would acquire half of Dominant Seller’s reagent business. Thus, it calculates damages as \$1500 per year per test equipment sold by Dominant Seller.¹⁸ Dominant Seller counters by arguing that it sold the test equipment, which contains patented technology, at cost as a way to maximize its profits. However, if forced to compete for sales of reagents, then Dominant Seller would change its pricing. Instead of selling the test equipment at \$50,000, Dominant Seller argues that it would increase the price of a unit to \$75,000 and sell reagents at cost or \$750 a set. As a result, damages for the Independent Reagent Seller would be zero.

Comment: When there is a strict tie between two products, the economist will be careful in interpreting the separate stated prices for the two products. In this example,

¹⁸ Independent Reagent Seller would sell reagents for .5 of the units sold by the Dominant Seller at .5 of the price. Thus, its revenues would be \$6000 for every unit sold with profits of \$1500.

all that matters to the customer is the combined price of equipment and reagents. A full factual analysis is needed to restate pricing absent a tie. For example, eliminating a tie may stimulate entry into the market for the tied product. Economists sometimes disagree why dominant firms use ties rather than simply extracting all of the available monopoly profit from the product in which they are dominant.¹⁹

B) Relevant Market and the Scope of Damages

As a matter of law, the plaintiff challenging single-firm conduct must present an analysis of the relevant market within which the conduct limits competition. Some courts exclude damages arising in markets outside the relevant market. However, under the principle that damages are the plaintiff's loss of economic value caused by the harmful conduct, damages should include all the harm, not just the harm in the relevant market. Disputes about whether damages are limited to the relevant market are thus yet another disagreement as to the but-for scenario that underlies damages quantification.

Example: Organic Breakfast Cereal Maker loses grocery-store shelf space due to exclusionary contracts between Big Cereal Maker and grocery stores. As a result, Organic is unable to obtain shelf space for its line of oatmeal, a product found to be outside the relevant market affected by the contracts. Organic includes lost profits from oatmeal sales, whereas Big Cereal Maker omits those damages because they arise outside the relevant market.

Comment: As discussed above, damages should include all the harm, even with respect to products outside the immediate relevant market.

Disputes about the scope of damages may arise due to disagreements as to the but-for scenario that underlies damages quantification. Recall that the but-for scenario is the device by which the expert limits damages to only those caused by the wrongful conduct.

Example: Trucker's exclusionary conduct has monopolized certain routes, but only modestly raised its market share on many other nonmonopolized routes. Shipper seeks damages for elevated prices in all affected markets, but

¹⁹ Rey, Patrick, and Jean Tirole, "A Primer on Foreclosure," *Handbook of Industrial Organization*, ed. Mark Armstrong and Robert H. Porter, Volume 3, Chapter 33, Elsevier, Amsterdam, 1989, pp. 2145-2220.

Trucker's damages study considers only the routes where monopolization has occurred.

Comment: The disputed issue concerns which routes were adversely affected by the exclusionary conduct. Trucker assumes that the routes not directly affected by the conduct would have had the same price in the but-for scenario as in reality, whereas Shipper argues that the conduct had effects in other markets. Shipper would need to spell out these effects in its but-for scenario and resulting damages quantification. Sometimes the resolution will be legal if, in this example, the price on the nonmonopolized routes were set by an external authority. This might be the case if these routes were interstate but the monopolized routes were intrastate. Often, though, the answer will hinge on specific economic factors. Shipper would have to explain the economic reasoning as to why Trucker's monopolization of some routes would elevate prices on non-monopolized routes.

C) Predatory Pricing

In predatory pricing cases, antitrust law in the United States has moved in the direction endorsed by economists of requiring a demonstration that conduct challenged as predatory pricing be rational in the sense that the defendant would recoup profit lost from low pricing once a rival is driven from the market.²⁰ The same model that demonstrates rationality can be used to measure damages. Purchasers in a market where predatory pricing has occurred receive a benefit from the period of low prices but then suffer harm from the succeeding period of high prices during defendant's recoupment. Damages for predatory pricing are the loss in economic value (usually in the form of elevated prices) but for defendant's conduct. An important consideration, however, is whether these damages must net the early benefit against the later harm.

D) Pass Through of Price Elevation

In most cases involving collusion and in many cases involving single-firm anticompetitive conduct, the harm takes the form of elevated prices. A very general principle of economics holds that elevation of input prices raises the prices of the corresponding outputs. Higher wholesale prices cause higher retail prices; higher energy prices cause higher product prices; and so on. If the immediate purchaser of a product

²⁰ See, e.g., *Matsushita Electrical Industrial Co., LTD v. Zenith Radio Corp.*, 475 U.S. 574 (1986); *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993).

with an elevated price is the intermediate producer of an end product, then not only will the price of the intermediate product be elevated, but so will the price of the end product.

In the United States under the direct and indirect purchaser rules established by *Hanover Shoe v. United Shoe Machinery Corp.* and *Illinois Brick v. Illinois*, only the immediate or direct purchaser may claim antitrust damages, even if the effect of the actual price elevation is spread along the chain of transactions from the immediate purchaser to the final consumer.²¹ But the immediate purchaser may claim the entire elevation, not just the amount it failed to pass along to the next level of purchasers. The reasoning is that calculating damages for indirect purchasers may be difficult, but awarding all of the damages to the direct purchaser serves as deterrent.

Many states have rejected the *Illinois Brick* doctrine in favor of allowing indirect purchasers to recover damages for overcharges.²² Most Latin American jurisdictions appear to follow this rule as well.²³ In these cases, the standard principle of quantifying actual economic harm governs. Plaintiffs at a given point on the path from raw inputs to final consumer purchase suffer economic losses from the point of the price elevation forward. As a practical matter, most price elevation cases focus on consumer harm. The usual measure of economic damages is the elevated price at retail multiplied by the number of consumers' actual purchases.²⁴

Example: The manufacturer of gears for high-end mountain bikes colludes with other gear manufacturers to increase the price by 10 percent. The bike manufacturers file an antitrust suit and request damages for the entire increase even though only a portion is passed on to the bike store and ultimately to the consumer. Bike stores also form a class action as do purchasers. Under

²¹ In *Hanover Shoe v. United Shoe Machinery Corp.*, 392 U.S. 481 (1968), the United State Supreme Court held that direct purchasers may recover the full amount of an illegal overcharge regardless of whether that cost was passed on to downstream buyers. In *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977), the Court denied antitrust standing to downstream buyers regardless of how much of the overcharge was passed on to them.

²² In *California v. ARC America Corp.*, 490 U.S. 93 (1989), the United States Supreme Court held that federal law does not preempt broader state antitrust laws that allow indirect purchaser suits.

²³ See, e.g., Crane, Daniel A., "Private Enforcement Against International Cartels in Latin America: A US Perspective," in *Competition Law and Policy in Latin America*, ed. Eleanor M. Fox and D. Daniel Sokol, Hart Publishing, Portland, 2009, p. 339.

²⁴ Note that the issue of possible pricing of the product out of the consumer market could, in theory, arise in consumer overcharge cases, but we believe this is hardly more than a theoretical possibility. Were this to happen then the economic harm would be understated by this measure.

Illinois Brick, because the two class actions involve indirect purchasers, they can only be brought under state antitrust and consumer protection statutes and not under the federal antitrust laws.²⁵ The gear manufacturer argues that the state-law actions should be barred since the damages would be duplicative of those in federal court.

Comment: Under federal antitrust law, the economic harm is usually measured as the entire markup to the wholesaler multiplied by the actual sales at retail. In the state-law actions, the wholesaler, the bike stores and the consumers would be entitled based on harm, roughly, to the markup less what was passed on to the next level times the number of retail units.²⁶ The allocation of damages between direct purchasers and indirect purchasers is unclear in the United States even when the actions of both the direct and indirect purchasers are in the same court. In some cases, the damages have been allocated, but in other cases all of the damages have been awarded twice—once to the direct purchaser and then again to the indirect purchaser.

The contentious issue in consumer-overcharge cases is the amount of the price increase at the wholesale level (or other level where collusion or other misconduct has raised prices) that is passed through to the retail level and thus affects consumers. Economic analysis suggests that some pass-through almost always occurs, but the fraction of wholesale prices that pass through to retail depends on competition in the retail market and on the response of consumers to price changes, if competition is less than perfect.

The most straightforward conclusion is that, under perfect competition, pass through is dollar for dollar. The expert can measure the wholesale price increase resulting from the misconduct and use the same price increase, in dollars per unit, as the resulting increase in the retail price.

As discussed above, however, few retail markets are perfectly competitive. Under less than perfect competition, the curvature of the demand function facing retailers of the product determines the amount of pass-through. If there is no curvature, retail prices rise by only half the dollar amount of the wholesale price increase. Most economists are

²⁵ Note that the federal court typically also presides over the state-law actions through the exercise of supplemental jurisdiction. See 28 U.S.C. §1367.

²⁶ More precisely, it is the lost profit at each level from the increased price at the wholesale level.

skeptical that this case arises in practice. If the demand function has the curvature associated with having a constant elasticity (convex to the origin), pass through is one hundred percent—a 10-percent wholesale price elevation results in a 10-percent elevation of the retail price. Because the retail price exceeds the wholesale price, equal percentage changes mean that a \$1 elevation of the wholesale price cause more than a \$1 increase in the retail price. The increase is the elasticity of demand (stated as a positive number) divided by the elasticity minus one. If evidence is available about retail markups, then the expert can use the markup ratio (price divided by the total marginal cost of a unit) as a good measure of pass-through of an increase in the wholesale price.

Example: Collusion among Vitamin Makers results in an increase of \$1.00 per hundred vitamin C tablets. The damages expert for Consumers obtains data from drug stores showing that the retail markup is 20 percent, and infers a consumer overcharge of \$1.20 per hundred tablets. The damages expert for Vitamin Makers testifies that damages are purely speculative because economic theory predicts a wide range of potential pass-through ratios.²⁷

Analysis: In this case, Consumers' damages expert relies on empirical data on the average retail price observed for Vitamin C tablets for drugstores purchasing the vitamins from Vitamin Makers. The expert observes that the wholesale price per bottle before the increase is \$10, the retail price is \$12, and the markup is 20 percent. Thus, an increase in the marginal cost per bottle of \$1 implies an increase in the retail price to \$13.20.

Lacking these data, the damages expert may need to rely on information about the competitiveness of the retail market for vitamins. If he concludes that the retail market for vitamins is perfectly competitive, then he would also conclude that the markup is \$1.00, the amount of increase from the collusion of the Vitamin Makers. If, however, the damages expert concludes that the market is not perfectly competitive, then he would need some information about how demand varies with price.

If the damages expert assumes that the demand function is linear, then he might conclude that a \$1 increase in the price per bottle always decreased demand by, say, 300,000 bottles regardless of the price level. In this case,

²⁷ In the United States, damages must be proved with reasonable certainty and cannot be speculative. However, the determination of what is speculative is subjective. Although the plaintiff has the burden of proof, in cases where plaintiff is unable to estimate damages with reasonable certainty due to defendant's actions, the burden may shift to the defendant to prove the unreasonableness of the plaintiff's damage estimate.

then he would conclude that the markup was \$.50 per bottle—one-half the whole price increase.

Alternatively, the damages expert might opine that the demand function has a constant elasticity of 6; that is, if the price increases by 10 percent then demand would decrease by 60 percent. In this case, the 10 percent increase in the wholesale price would lead to a 10 percent increase in the retail price. Because the retail price is the wholesale price times one plus the markup, he could estimate the markup from the elasticity of demand, where the markup is the elasticity of demand divided by the elasticity of demand minus 1. If the damages expert had reason to believe that the price elasticity of demand were 6, then the markup would be 20 percent.

Comment: Resolution will likely depend on the evidence from data on overcharges. If the data show consistently that the markup is 20 percent, then Consumers' damages estimate should prevail. If the data demonstrate that the markup varies dramatically, then Vitamin Makers will likely prevail unless the Consumers' expert can establish an empirical rule to predict the markup.²⁸

Another issue under *Illinois Brick* is the volume of purchases to which the price elevation applies. In usual practice, the volume is plaintiff's actual volume, so damages are the extra amount that plaintiff had to spend if it purchased the same volume in the but-for scenario as in reality. Although this approach often gives a good approximation of actual harm, it fails completely if the price increase was large enough to cause the consumers to purchase none of the affected product in reality, even though they would have bought some in the but-for scenario at a lower price.

Example: In a case governed by *Illinois Brick*, Contractor for a Toll Road Partnership used concrete instead of asphalt to build a highway, because unlawful collusion among Asphalt Makers raised the price of asphalt to the point that concrete was a less expensive alternative. At the asphalt price that would have prevailed absent the collusion, Contractor would have used asphalt. Contractor calculates damages as the difference between his actual spending on concrete and the amount he would have spent on asphalt at the but-for price. Asphalt Makers calculate damages by the usual method of price elevation multiplied by quantity of the affected product actually purchased

²⁸ Bresnahan, Timothy, "Studies of Industries with Market Power," *Handbook of Industrial Organization*, ed. Richard Schmalensee and Robert Willig, Volume 2, Elsevier, Amsterdam, 1989.

and conclude that damages are zero, because Contractor actually bought no asphalt.

Comment: The concept of damages is the economic harm suffered as a result of the illegal actions of the defendant. *Illinois Brick* permits direct purchasers to stand in for indirect purchasers when estimating damages. This would include the economic harm suffered by the Contractor even though the Contractor would have passed on at least some of the cost to the Toll Road Partnership.

7. Disaggregation and Apportionment

Disaggregation and apportionment issues can arise when estimating damages in any type of litigation. However, these concepts can be especially important in antitrust cases. Disaggregation of damages is often required when the litigation consists of multiple bad acts but the defendant has been found liable only with respect to some of those acts. Plaintiff's expert must be able to disaggregate damages to include only those acts for which defendant has been found liable. Apportionment is required when the damages must be allocated across multiple defendants.

A) Damages with Multiple Challenged Acts: Disaggregation

Plaintiffs sometimes challenge a number of a defendant's acts and offer an estimate of the combined effect of those acts. If the court determines that only some of the challenged acts are illegal, the damages analysis must be adjusted to consider only those acts. Ideally the damages testimony would equip the fact finder to determine damages for any combination of the challenged acts, but in practice such testimony may be tedious. If there are, say, ten challenged acts, it would take more than 1,000 separate studies to determine damages for every possible combination of liability.

There have been several cases in the United States where the jury has found the defendant only partially liable, but the jury lacked assistance from the damages experts on how damages should be calculated for the combination of acts it found to be unlawful. Although juries have attempted to resolve the issue on their own, appellate courts have often rejected damages found by juries without supporting expert testimony.²⁹

²⁹ See, e.g., *Litton Sys. Inc. v. Honeywell Inc.*, 1996 U.S. Dist. LEXIS 14662 (C.D. Cal. July 26, 1996) (granting new trial on damages only "[b]ecause there is no rational basis on which the jury could have reduced Litton's 'lump sum' damage estimate to account for Litton's losses attributable to conduct excluded from the jury's consideration..."); *Image Technical Services, Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1224 (9th Cir. 1997), cert. denied, 118 S. Ct. 1560 (1998) (plaintiffs "must segregate damages attributable to lawful competition from damages attributable to Kodak's monopolizing conduct").

One solution to this problem is for the court to bifurcate liability and damages—that is, to have liability determined before any damages testimony is heard. The damages experts can then adjust their testimony to consider only the acts found to be illegal.

In some situations, total damages are the sum of separate damages for the various illegal acts. For example, there may be one injury in New York and another in Oregon. Then, the damages testimony may consider the acts separately and disaggregation is not challenging.

However, when the challenged acts have effects that interact, it is not possible to consider damages separately and add up damages for each individual act. This is an area of great confusion. When the harmful acts substitute for each other, the sum of damages attributable to each act separately is *less* than their combined effect. As an example, suppose that the defendant has used exclusionary contracts and anti-competitive acquisitions to ruin the plaintiff's business. Suppose further that the plaintiff's business could not survive if *either* the contracts *or* the acquisitions were found to be legal. Damages for the combination of acts are the value of the business, which would have thrived absent both the contracts and the acquisitions. Now consider damages if only the contracts but not the acquisitions are illegal. In the but-for analysis, the acquisitions are hypothesized to occur because they are not illegal, but the contracts are not hypothesized to occur. But plaintiff's business cannot function in that but-for situation because the acquisitions alone were sufficient to ruin the business. Hence damages—the difference in value of the plaintiff's business in the but-for and actual scenarios—are zero. The same would be true for a separate damages measurement for the acquisitions, with the contracts taken to be legal but not the acquisitions. Thus, the sum of damages for the individual acts is zero, but the damages if both acts are illegal are the value of the business.

When the effects of the challenged conduct are complementary, the sum of damages for each type of conduct by itself will be *more* than damages for all types of conduct together. For example, suppose a party claims that a contract is exclusionary based on the combined effect of the contract's duration and its liquidated damages clause that includes an improper penalty provision. The actual amount of the penalty would cause little exclusion if the contract's duration were brief but substantial exclusion if the duration were long. Similarly, the actual duration of the contract would cause little exclusion if the liquidated damages penalty were small but substantial exclusion if the penalty were large. A damages analysis of the penalty provision in isolation compares the but-for scenario, where the contract has no penalty provision but has a long duration, to the actual scenario, where both provisions are in effect. Damages are large. Similarly,

a damages estimate for the duration in isolation gives large damages. The sum of the two estimates is nearly double the damages from the combined use of both provisions.

Thus, a request that the damages expert disaggregate damages for different combinations of challenged acts is far more than a request that the total damages estimate be broken down into components that add up to the damages attributable to the combination of all the challenged acts. In principle, a separate damages analysis—with its own carefully specified but-for scenario and analysis—must be done for every possible combination of illegal acts.

Example: Hospital challenges Glove Maker for illegally obtaining market power through the use of long-term contracts and the use of a program that gives discounts to consortiums of hospitals if they purchase exclusively from Glove Maker. The jury finds that Glove Maker has attempted to monopolize the market with its discount programs, but that the long-term contracts were legal because of efficiencies. Hospital argues that damages are the same as if both acts were found to be unlawful because either act was sufficient to achieve the observed level of market power. Glove Maker argues that damages are zero because the lawful long-term contracts would have been enough to allow it to dominate the market.

Comment: The appropriate damages analysis is based on a careful new comparison of the market with and without the discount program. The but-for analysis should include the presence of the long-term contracts because they were found to be legal.

Although apportionment is sometimes referred to as disaggregation, it is fundamentally different. A damages measure may be challenged as encompassing more than the harm caused by the defendant's harmful act. The expert may be asked to apportion his estimate of damages between the harm caused by the defendant and the harm caused by factors other than the defendant's misconduct. In this case, the expert is being asked to restate the improper actions, not to disaggregate the damages estimate to account for an improperly inclusive damages estimate. If the expert uses the standard approach to damages analysis and thus properly isolates the effects of only the defendant's wrongful actions, no modification of the expert's estimate of damages is needed to accomplish the apportionment. In the standard format, the but-for analysis differs from the actual world only by hypothesizing the absence of the harmful act committed by the defendant. The comparison of the but-for world to the actual world automatically isolates the causal effects of the harmful act. Thus, no apportionment is needed if the expert properly applies the standard approach to damages estimation.

B) Disputes of Damages Apportionment Among Defendants

When defendants are not jointly liable for the harmful acts, but rather each is responsible for its own harmful act, the damages expert needs to quantify damages separately for each defendant. The issues in damages apportionment among defendants are similar to those discussed above for disaggregation among harmful acts.

1. Apportionment Where Defendants Have Jointly Contributed to Harm Absent Joint and Several Liability

In the simplest case, there are no interactions among the harmful acts of different defendants, and the expert can proceed as if there were separate trials with separate damages analyses.

However, in most cases, the harm is jointly caused and each defendant contributed to that harm but potentially in different amounts. If possible, harm should be allocated among the defendants according to the probability of causing harm.

Example: Five cement manufacturers colluded to distribute bids among themselves and were sued by Contractor. One manufacturer, Big, was twice the size of the others. The court awarded damages of \$100 million and allocated the damages equally across all defendants. The smallest company, Smallest, argues that it should pay nothing because the bid rigging would have occurred even if it had not participated. Smallest argues that it only participated because the other manufacturers threatened to force contractors to boycott using it as a supplier.

Comment: Assuming Smallest can prove it was not a willing participant, the most straightforward approach is for Contractor to estimate total damages and then to estimate damages absent Smallest. Smallest would then be responsible for the difference. Although Smallest may have an action against the others for forcing it to participate in the conspiracy, it still benefitted from the bid rigging.

Alternatively, damages could be allocated based on the benefit each received. This method is attractive if the goal is not only to compensate the victim but also to deter future actions.

Example: Assume the same facts as stated in the example above except for the following. Smallest argues that it was asked to participate after the others had

already decided to rig bids, and therefore it should pay nothing because the bid rigging would have occurred without its participation.

Comment: Even if deterrence is the goal and Smallest can prove its unwillingness to participate, Smallest may still share culpability since it did not report the bid rigging. However, the damages owed by Smallest should most likely be calculated based on the benefit received. In this case, the appropriate resolution may be to allocate the damages based on the percent of the total benefit received by Smallest.

When harm and benefit differ significantly, then most likely there are additional players who are not plaintiffs. For example, in the case above, the additional players could include other contractors who purchase from the cement manufacturers. Thus, the benefit to the bid riggers would include the harm to other contractors.

However, a significant difference between harm and benefit can also arise when the plaintiff is the direct purchaser but indirect purchasers were also affected. For example, the manufacturer could increase the price that the wholesaler pays. Since the wholesaler's costs have increased, he then, depending on the market dynamics, will pass on none of the increase, some of the increase, or even more than the increase to his retail customers. There are then two sets of injured parties, the wholesaler and the retail customer. Thus, if the retail customer ends up paying more than the increase in price charged to the wholesaler, then the harm exceeds the benefit gained by the manufacturer.

As discussed in Section VI.D, federal laws in the United States allow the wholesaler to recover all of the overcharge. Even though the wholesaler passes some of this increase onto the retail customer, the wholesaler retains all of the increase. However, some state laws permit both the wholesalers and the retail customers to seek recovery.

However if there are interactions among the harmful acts, then apportionment among defendants involves puzzles that cannot be resolved by economic principles. If either of the harmful acts of two defendants would have caused all the harm that occurred, then either defendant can argue for zero damages on the grounds that the harm would have occurred anyway, because of the other defendant's act.

Example: Two garbage companies colluded to allocate the territory of surrounding towns and exclude a third garbage company. The third garbage company estimates damages at \$5 million and allocates the damages equally between the two colluding garbage companies. Each of the colluding companies

argues that it owes zero damages because the other could have serviced the entire town and barred the third garbage company.

Comment: The argument would depend on the ability of either company to prove that the other would have succeeded in monopolizing all of the customers absent the participation of the co-conspirator.

2. Apportionment Where the Wrongdoer Is Unknown

A second issue in apportioning damages arises when the harmful conduct is known but it is unclear which defendant is responsible for a specific loss. One approach is to determine the probability that each defendant caused the plaintiff's loss. In some cases, a reasonable assumption may be that the probability that the defendant caused the plaintiff's losses may be determined from its market share.

Example: A cell phone provider alleges that the two largest cell phone providers engaged in unlawful contracts with their customers. The contracts are found to be illegal. Plaintiff estimates damages as the sales it would have had but for the contracts. Plaintiff allocates the damages between the two defendants by market share. Defendants argue that Plaintiff must show the specific customers that they would have acquired.

Comment: Defendants would have to provide a reason why this allocation would not be appropriate. In the United States, most jurisdictions would not require an identification of specific customers and would accept the market share allocation.

8. Illustrations of Damages Estimation

A) Lost Profits for a Business from Monopolistic Behavior

Claims for lost profits for a business as a result of antitrust violations generally arise from a lost stream of revenue. However, lost profits can also arise from increased costs. As an example, a price fixing violation for a good needed in manufacturing of the firm's final product may increase the firm's costs. Most damages studies will follow Figure 1 where earnings are lost profits. For explication, the following is an example of a business lost profits case:

Plaintiff HTC makes cell phone handsets. Defendant PPC is a cell phone carrier. PPC has developed a new network. PPC is now vertically integrated and has its own handset, but previously HTC had the only handsets compatible with PPC's old network.

By denying HTC technical information and by informing HTC's potential customers that HTC's handsets are incompatible with PPC's network, PPC has created a barrier to entry and, as a result, imposed economic losses on HTC. PPC asserts that HTC has failed to consider that HTC and PPC would be competing for business and therefore that HTC's damages are overstated. Trial is set for mid-2012. The respective damages analyses are shown in Table 1 and Table 2 and discussed below.

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Table 1. HTC's Damages Analysis (in Millions of Dollars)

Year	(2) But-For Revenue	(3) But-For Costs	(4) But-For Earnings	(5) Actual Earnings	(6) Lost Earnings	(7) Discount Factor	(8) Damages
2009	\$561	\$374	\$187	\$34	\$153	1.21	\$185
2010	600	400	200	56	144	1.14	164
2011	639	426	213	45	168	1.07	180
2012	681	454	227	87	140	1.00	140
2013	726	484	242	96	147	0.96	141
2014	777	518	259	105	153	0.92	142
2015	828	552	276	116	160	0.89	142
2016	882	588	294	127	167	0.85	143
Total							\$1236

Table 2. PPC's Damages Analysis (in Millions of Dollars)

Year	(2) But-For Revenue	(3) But-For Costs	(4) But-For Earnings	(5) Mitigated Earnings	(6) Lost Earnings	(7) Discount Factor	(8) Damages
2009	\$332	\$249	\$83	\$79	\$4	1.21	\$5
2010	356	267	89	85	4	1.14	4
2011	379	284	195	81	14	1.07	15
2012	404	303	101	98	3	1.00	3
2013	430	323	108	108	0	0.87	0
2014	460	345	115	119	(4)	0.76	(3)
2015	491	368	123	130	(7)	0.66	(5)
2016	523	392	131	143	12	0.57	(7)

Total

\$12

1. Revenue Projection

Projecting lost revenues can be straightforward if the disrupted revenue stream occurs immediately following the bad act and the firm recovers relatively quickly. More complex cases can arise if the effect is delayed or the recovery is slow, intermittent, or nonexistent.

In the example above, HTC's expert might argue that revenues would have been higher absent PPC's conduct and therefore projects revenues based on revenue growth prior to the introduction of the new network, which reflects increasing sales and increasing prices. His logic is that PPC would have a tough time garnering any sales because HTC was entrenched in the market and that PPC was a new player. Using the same logic, HTC could continue its pricing practice. HTC's projected revenue is shown in Table 1, column 2.

PPC's expert could argue that HTC's projections fail to consider that PPC is a major player in the market. Instead, PPC would gain an increasing share of the market. Thus, after the first year, PPC's expert assumes that the market would be a duopoly and uses the Cournot model to estimate HTC's revenues. PPC's projection of HTC's revenue is shown in the second column of Table 2.

The projection of the revenue stream is likely to be the most controversial part of any damages estimate in a business case because it requires so many assumptions on the part of both experts with respect to the other players in the market and customer demand. The expert must estimate how changes in the market, the market share for the plaintiff, and the price charged by the plaintiff will vary over time.

2. Disputes Regarding Marginal Costs

Another area of dispute that can arise is the measurement of marginal costs. Generally, if the business is an ongoing concern, marginal costs can be determined from existing data. Often this determination is made either by modeling directly the costs needed for the additional revenues or using regression analysis that captures how costs have varied with revenues. The relevant concept is the measure of costs that would have been expended to generate the lost revenues.

In our example, HTC's expert would project that the additional costs would reflect the marginal cost ratio that was derived from a regression model of costs against revenues. PPC's expert might use the average ratio of costs to revenues, arguing that this

measure would be more appropriate because additional workers and equipment would have been needed to generate the increased revenues. The projected costs for both parties are shown in column 3 of Tables 1 and 2.

Costs are often expressed as a percent of revenues, which simplifies the projection of costs. However, this approach can be problematic if there is reason to believe that the profit rate will change over time. The profit rate can change for a number of reasons, including (1) the change in revenues may be so large as to require that an increasing percent of fixed costs will need to be included, (2) the mix of costs may change over time, or (3) the components of cost may grow at disparate rates. If computing costs as a percent of revenues is not viable, then the projected costs should reflect the same assumptions about growth and inflation that were used in the revenue projection.

In this example, PPC's expert decided not to disagree with HTC's expert with respect to how cost should be calculated.

3. Mitigation

Defendant's expert may argue that the plaintiff's *actual* profits are understated because the plaintiff failed to mitigate its losses. For example, the plaintiff's losses may have been minimized by closure of its business. Or the plaintiff perhaps should have invested in alternative facilities while its business was interrupted because it could not use its existing facilities.

In our example, PPC's expert might argue that HTC could have mitigated its losses by obtaining the technical information it needed from other sources and could have counteracted PPC's disparagement with vigorous marketing. HTC's actual earnings are shown in column 5 of Table 1, and PPC's calculation of HTC's earnings with what PPC argues would have been proper mitigation is shown in column 5 of Table 2.

4. Discounting to Present Value

Generally, interest for lost earnings prior to trial is computed at a statutory rate, often not compounded. In our example, trial is set for mid-2012,³⁰ and the statutory rate is assumed to be 7 percent simple (that is, without compounding). If the prejudgment

³⁰ The trial date is usually the date for calculating the present value of future losses as well as past losses.

interest rate is not set by law, economists favor the use of the cost of borrowing for the defendant, because damages are a forced loan to the defendant by the plaintiff.³¹

The rate used to discount future losses back to the time of trial is not set by law and substantial disputes will arise about the discount rate. Generally, economists believe that the discount rate should equal the after-tax cost of capital for the plaintiff.

In our example, HTC argues that the proper discount rate should be based on a 4 percent, after-tax interest rate, obtained by applying HTC's corporate tax rate to PPC's medium-term borrowing rate. PPC, however, believes that the proper discount rate should be HTC's cost of capital, reflecting HTC's cost of equity and cost of debt. Column 7 of Tables 1 and 2 shows the respective discount rates after trial. The resulting damages are shown in column 8 of Tables 1 and 2. As discussed above, most economists would prefer the discount rate based on the cost of capital. However, courts may determine that PPC's borrowing rate is correct depending on the extent to which the plaintiff's investment strategy (and consumption) was affected by the harmful act and the risk associated with the expected award relative to the risks that plaintiff would have pursued absent the harmful act.³²

5. Disagreements about Subsequent Unexpected Events

Disagreements about subsequent unexpected events are likely in cases involving lost profits. For example, the market for the plaintiff's goods may have suffered a substantial contraction a year after the bad act, with plaintiff likely to be forced into bankruptcy even if the wrongful act had not occurred. Alternatively, the plaintiff's costs may have increased dramatically a year later because of shortages that would have necessitated that the plaintiff retool its business even if the wrongful act had not occurred. The plaintiff will argue that subsequent events were unexpected at the time of the bad act and so should be excluded from consideration in the calculation of damages. Plaintiff, therefore, would argue that damages should be calculated without consideration of these events. The defendant would respond that damages should be limited to one year because the unexpected events would have forced the closure of the plaintiff's business.

³¹ See Patell, James M., Roman L. Weil, and Mark A. Wolfson, "Accumulating Damages in Litigation: The Roles of Uncertainty and Interest Rates," *Journal of Legal Studies*, Volume 11, No. 2 (June, 1982), pp. 341–364.

³² Patell, James M., Roman L. Weil, and Mark A. Wolfson, "Accumulating Damages in Litigation: The Roles of Uncertainty and Interest Rates," *Journal of Legal Studies*, Volume 11, No. 2 (June, 1982), pp. 362–364.

In general, random subsequent events should be excluded. If random subsequent events are included then plaintiffs will tend to bring cases where random subsequent damages increase damages and not when a random later event made damages negative. Thus, plaintiffs would on average be overcompensated. If random subsequent events are always excluded, then plaintiffs are compensated for their loss at the time it occurred, and defendants pay for the harm they actually caused.

B) Lost Profits for a Business from Collusion

In this example, both HTC and PPC have been sued by MPC, where MPC argues that HTC and PPC have colluded to the detriment of MPC. MPC argues that, absent the collusion, HTC, PPC, and MPC would have shared the market for handsets for TPC's new network. MPC argues that a minor change to the technical specifications would make it straightforward for MPC to adapt its headsets for use with TPC's network.

The damages calculations for the plaintiff's and defendant's experts are shown in Tables 3 and 4.

Table 3. MPC's Damages Analysis (in Millions of Dollars)

Year	(2) But-For Revenue	(3) But-For Costs	(4) But-For Earnings	(5) Actual Earnings	(6) Lost Earnings	(7) Discount Factor	(8) Damages
	\$	\$	\$	\$	\$		\$5
2009	234	187	47	0	47	1.21	7
	2	2	5		5		
2010	50	00	0	0	0	1.14	57
	2	2	5		5		
2011	66	13	3	0	3	1.07	57
	2	2	5		5		
2012	84	27	7	0	7	1.00	57
	3	2	6		6		
2013	02	42	1	0	1	0.96	58
	3	2	6		6		
2014	24	59	5	0	5	0.92	60
	3	2	6		6		
2015	45	76	9	0	9	0.89	61
	3	2	7		7		
2016	68	94	4	0	4	0.85	61
Total							\$469

Table 4. PPC's Damages Analysis (in Millions of Dollars)

Year	(2) But-For Revenue	(3) But-For Costs	(4) But-For Earnings	(5) Mitigated Earnings	(6) Lost Earnings	(7) Discount Factor	(8) Damages
2009	\$82	\$75	\$7	\$7	\$0	1.21	\$0
2010	88	80	8	8	0	1.14	0
2011	94	85	9	7	1	1.07	1

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2012	100	91	9	9	0	1.00	0
2013	106	97	10	10	0	0.87	0
2014	114	104	11	11	0	0.76	0
2015	121	110	12	12	(1)	0.66	0
2016	129	118	13	13	(1)	0.57	(1)
Total							\$1

The expert for MPC estimates no expansion in the market because of MPC's entry, and he models the market as a Cournot oligopoly with 3 players.

TPC argues that the "minor" change would make its network unattractive to users and would cause a severe loss of sales. Nonetheless, HTC asks its expert to correct the analysis for the plaintiff's expert. HTC's expert argues that damages for the plaintiff are in fact zero. Were TPC to make the "minor" change to its network, then virtually every manufacturer of handsets would be able to have a handset that could be used on TPC's network. In support, HTC's expert lists ten firms that could manufacture such a handset within a month. Consequently, applying a Cournot model, HTC's expert argues that the profit margin would fall to almost zero.

Meanwhile, TPC also asks its expert to prepare a damages analysis. TPC's expert argues that damages are also close to zero. However, he argues that were TPC to make the "minor" change, it would be compelled to increase its price to recoup the research and development costs. In fact, its price increase would be sufficient to reflect the rents it deserved for development of a superior network. As a result, there would be low rents for the sellers of handsets. Further, this minor change would mean that any manufacturer of handsets that wished to sell a compatible handset would enter, and economic profits would fall.

9. Conclusion

In this discussion, we have focused on the conceptual issues that an expert must consider when computing antitrust damages. Damages quantification is generally straightforward once the conceptual basis is carefully laid out, although the underlying market models can be very complex. When different quantifications lead to very different results, the expert is encouraged to determine the underlying conceptual basis to explain the difference.

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