

Economic Authority and the Limits of Expertise in Antitrust Cases

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ECONOMIC AUTHORITY AND THE LIMITS OF EXPERTISE IN ANTITRUST CASES

John E. Lopatka† & William H. Page††

In antitrust litigation, the factual complexity and economic nature of the issues involved require the presentation of economic expert testimony in all but a few cases. This dependence on economics has increased in recent years because of the courts' narrowing of per se rules of illegality and the courts' expansion of certain areas of factual inquiry. At the same time, however, courts have limited the scope of allowable expert testimony through the methodological strictures of Daubert and its progeny and through heightened sufficiency requirements. In this Article, Professors Page and Lopatka make four important points about these judicially imposed constraints on expert testimony. First, they contend that these constraints, in the first instance, rest on "economic authority"—a body of economic ideas adopted by the courts from the scholarly literature. Second, Page and Lopatka analyze a wide range of antitrust decisions to show that much of this economic authority is taken either directly or indirectly from the "Chicago School" of antitrust economics. Third, through analysis of existing case law, the authors show the ways in which the courts apply economic authority as a screen in deciding which evidence to admit and which to exclude. In making this point, the authors highlight four important antitrust categories: determination of predatory pricing; market definition and assessment of market power; characterization of cartels and proof of "agreement" in cartel cases; and the determination of damages. Fourth, Professors Page and Lopatka end by examining the legitimacy of assigning such a defining role to economic authority in general, and to the Chicago School in particular. In making this point, the authors revisit the continuing controversy over the role of "post-Chicago" economic analysis.

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INTRODUCTION

The reorientation of antitrust over the past thirty years has increased the importance of expert economic testimony in antitrust litigation.¹ The Supreme Court's narrowing or elimination of per se illegality has led to an expansion of factual inquiries requiring expert

¹ See, e.g., Herbert Hovenkamp, *Economic Experts in Antitrust Cases*, in 3 MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY 111, 112 (David L. Faigman et al. eds., 2002); Andrew I. Gavil, *After Dauber: Discerning the Increasingly Fine Line Between the Admissibility and Sufficiency of Expert Testimony in Antitrust Litigation*, 65 ANTITRUST L.J. 663, 663 (1997). For concise, nontechnical discussions of the role of economic expertise in recent antitrust cases, see THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY (John E. Kwoka, Jr. & Lawrence J. White eds., 4th ed. 2004) [hereinafter THE ANTI-TRUST REVOLUTION].

testimony by professional economists.² Nevertheless, a jury's evaluation of conflicting economic opinions rarely decides cases because federal judges' choices limit the scope and force of expert testimony. Some of these choices occur in the application of the methodological strictures of the *Daubert* trilogy of Supreme Court decisions;³ others occur in evaluating the sufficiency of expert evidence to support a jury verdict.⁴ This much is well known. This Article argues, however, that regardless of the nominal procedural context, these judicial choices rest on *economic authority*,⁵ a body of authoritative economic knowledge adopted by courts—directly or indirectly—from the scholarly literature.⁶ Although some have suggested that interdisciplinary approaches have made legal scholarship generally less useful to courts,⁷ the use of economics in modern antitrust scholarship has had the op-

² See, e.g., *Cal. Dental Ass'n v. FTC*, 526 U.S. 756 (1999) (requiring a more extensive factual inquiry into a dental association's rules restricting certain types of price and quality advertising); *State Oil Co. v. Khan*, 522 U.S. 3 (1997) (overruling the per se illegality of vertical maximum price fixing in favor of the rule of reason); *Cont'l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977) (overruling the per se illegality of vertical territorial restraints in favor of the rule of reason).

³ See *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999) (holding that *Daubert* applies to testimony by engineers and other non-scientist expert witnesses); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997) (holding that the district court's decision on admissibility under *Daubert* should be reviewed under an abuse-of-discretion standard); *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993) (holding that the Federal Rules of Evidence supply the test for admissibility of expert testimony); see also Roger D. Blair & Jill Boylston Herndon, *The Implications of Daubert for Economic Evidence in Antitrust Cases*, 57 WASH. & LEE L. REV. 801, 802 (2000) ("*Daubert* challenges to the admissibility of the economic expert's testimony already are becoming routine in antitrust cases."); Gavil, *supra* note 1, at 669–88 (detailing the ways in which *Daubert* affects the presentation and acceptance of expert testimony in antitrust cases).

⁴ See Gavil, *supra* note 1, at 664–67, 688–98.

⁵ Our use of this term is an homage to John Monahan and Laurens Walker's concept of "social authority." See John Monahan & Laurens Walker, *Social Authority: Obtaining, Evaluating, and Establishing Social Science in Law*, 134 U. PA. L. REV. 477 (1986). We do not argue, however, that antitrust courts always engage in the sort of screening of economic ideas that those authors propose for social science research generally. See *id.* at 499–509.

⁶ See Richard A. Posner, *The Law and Economics of the Economic Expert Witness*, 13 J. ECON. PERSP., Spring 1999, at 91, 92 ("The considerations, including the economic considerations, that go to shape legal doctrine . . . are not considered questions to be decided by taking testimony and testing its accuracy by cross-examination, but by reference to general questions of law and policy.").

⁷ See, e.g., Richard A. Posner, *Legal Scholarship Today*, 115 HARV. L. REV. 1314, 1324 (2002) (arguing that "interdisciplinary legal scholarship is intended to be read by professors . . . rather than by practitioners (including judges)"). In that article, Judge Posner cites Judge Harry T. Edwards, who complains that many interdisciplinary articles are impractical and useless to courts, Harry T. Edwards, *The Growing Disjunction Between Legal Education and the Legal Profession*, 91 MICH. L. REV. 34 (1992), and Michael McClintock, who finds "a 47.35% decline in the use of legal scholarship by courts over the past two decades, the most notable decline occurring in the past ten years," Michael D. McClintock, *The Declining Use of Legal Scholarship by Courts: An Empirical Study*, 51 OKLA. L. REV. 659, 660 (1998). See Posner, *supra*, at 1324 & n.25; see also Louis J. Sirico, Jr., *The Citing of Law Reviews by the Supreme Court: 1971–1999*, 75 IND. L.J. 1009, 1009–10 (2000) (finding a decline in citation of legal scholarship by the Supreme Court); cf. *Seminole Tribe v. Florida*,

posite effect. Economic authority largely drawn from that scholarship now provides the conceptual basis for many judicial decisions in antitrust cases, including decisions defining the role of expert testimony.

Antitrust law has always implicitly drawn on economic ideas,⁸ but over the past three decades, its reliance on them has become overt and sophisticated.⁹ Judge Richard Posner has gone so far as to suggest that "antitrust law has become a branch of applied economics."¹⁰ It is critical to recognize, however, that the institutional context of litigation influences how courts receive and apply economic theory.¹¹ For example, over the past twenty-five years the Supreme Court has frequently relied on Chicago School¹² models in deciding antitrust cases,¹³ but largely for institutional reasons it has not adopted Chicago

517 U.S. 44, 68 (1996) (criticizing the dissent for "disregard[ing] our case law in favor of a theory cobbled together from law review articles and its own version of historical events").

⁸ See Herbert Hovenkamp, *The Reckoning of Post-Chicago Antitrust*, in *POST-CHICAGO DEVELOPMENTS IN ANTITRUST LAW* 1, 1-3 (Antonio Cucinotta et al. eds., 2002) [hereinafter Hovenkamp, *Reckoning*] (arguing that courts relied on, but did not cite, prevailing economic theory before 1980). See generally Herbert Hovenkamp, *Fact, Value and Theory in Antitrust Adjudication*, 1987 *DUKE L.J.* 897 (detailing various economic theories that have significantly influenced the development of antitrust doctrine).

⁹ See generally William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 *VA. L. REV.* 1221 (1989) (describing the Supreme Court's explicit reliance on economic literature since 1977); Ronald J. Allen & Ross M. Rosenberg, *Legal Phenomena, Knowledge, and Theory: A Cautionary Tale of Hedgehogs and Foxes*, 77 *CHI-KENT L. REV.* 683 (2002) (showing that microeconomic theory has influenced jury instructions far more in antitrust cases than in negligence cases).

¹⁰ RICHARD A. POSNER, *THE PROBLEMATICS OF MORAL AND LEGAL THEORY* 229 (1999).

¹¹ As then-judge Breyer famously wrote:

[W]hile technical economic discussion helps to inform the antitrust laws, those laws cannot precisely replicate the economists' (sometimes conflicting) views. For, unlike economics, law is an administrative system the effects of which depend upon the content of rules and precedents only as they are applied by judges and juries in courts and by lawyers advising their clients. Rules that seek to embody every economic complexity and qualification may well, through the vagaries of administration, prove counter-productive, undercutting the very economic ends they seek to serve.

Barry Wright Corp. v. ITT Grinnell Corp., 724 F.2d 227, 234 (1st Cir. 1983); see also William H. Page, *Legal Realism and the Shaping of Modern Antitrust*, 44 *EMORY L.J.* 1, 49-53 (1995) (arguing that legal process considerations guide the use of theory in antitrust decisionmaking).

¹² See *infra* Part II.A.1. The Chicago School is a tradition of antitrust scholarship based upon a shared set of positive economic models of practices (like cartels, tying arrangements, and predatory pricing) and empirical estimates of the frequency and effects of those practices. The Chicago School is also associated with a set of normative prescriptions for antitrust law. Both the models and the policy program reflect, in general, a confidence in the market's ability to prevent or remedy monopolistic practices (despite asserted "imperfections") and a skepticism about courts' ability to do so. For a description of the Chicago School's principal characteristics, see Page, *supra* note 9, at 1228-43. Virtually all Chicago scholars trace the origins of central ideas and methods of the school to the late Aaron Director. *Id.* at 1229-30 n.44.

¹³ Page, *supra* note 9, at 1255 ("The Court has taken account of the normative implications of the models by reinterpreting existing doctrine.").

proposals for rules of per se legality.¹⁴ Instead, the Court has used the models to replace rules of per se illegality with rule of reason inquiries and to refocus judicial inquiries in subsidiary decisional contexts at various stages of litigation.¹⁵ This process has led courts to open some domains to expert testimony and to foreclose other domains. Moreover, this process has allowed courts to retain ultimate control over the influence that expert testimony has on the outcome of a case. Courts jealously guard their prerogative both to select and to determine the use of the economic ideas guiding antitrust case outcomes. They are “gatekeepers” not only of the reliability of experts’ economic data and methods under *Daubert*, but of the kinds of competing economic theories and policy arguments that matter.

Though related, economic authority and expert testimony, as grounds for decision in antitrust cases, rest on different conceptual foundations. *Daubert*’s inquiry into the reliability of expert testimony reflects a positivist view that scientific and technical knowledge is objectively true and that, consequently, the statements of experts should be testable by recognized methods.¹⁶ In contrast, judicial adoption of economic authority implicitly acknowledges a sociological dimension to the acceptance of theory. The Supreme Court, in particular, has chosen among available models based upon their apparent explanatory value, their prevalence among scholars, and their congruence with the courts’ institutional constraints.¹⁷ This process of choice recognizes that economic knowledge rests, in large part, on a foundation of shared beliefs and values.¹⁸ By choosing among economic models, the Supreme Court has maintained judicial control over the evolution of antitrust doctrine—sometimes foreclosing the use of expert testimony and sometimes insisting on its consideration.

This Article examines the processes by which courts use economic authority to control experts. Part I begins with a brief discus-

¹⁴ *Id.* at 1253–57.

¹⁵ *Id.* at 1257–94 (describing use of models in the contexts of characterization, antitrust injury, and evidentiary sufficiency).

¹⁶ See, e.g., Christopher Slobogin, *The Structure of Expertise in Criminal Cases*, 34 SETON HALL L. REV. 105, 105 (2003) (arguing that *Daubert* and its progeny “push the criminal justice system away from the notion that knowledge is socially constructed and toward a positivist epistemology that assumes we can know things objectively”); see also *id.* at 106 n.8 (responding to the view that *Daubert* and *Kumho Tire* reflect a “realist-constructivist view of science”).

¹⁷ See *infra* Part II.A.1.

¹⁸ See Page, *supra* note 9, at 1297 (arguing that judicial adoption of a widely held theory “implicitly recognizes the relationship between theory and the prevailing intellectual climate, since a theory will be more widely held and more persuasive to the extent that it is consistent with the dominant intellectual system”); see also ROBERT H. NELSON, *ECONOMICS AS RELIGION: FROM SAMUELSON TO CHICAGO AND BEYOND* 229 (2001) (arguing that all economics involves “value assumptions” that “shape the form of analysis” and assert the “special merit” of these assumptions as descriptions of “the human condition”).

sion of the role of conceptual models, including expert models, in judicial decisionmaking generally. Part II analyzes the role of economic authority in the judicial development of antitrust law, particularly since the Chicago School's influence began to transform antitrust in 1977. Part II also describes how economic authority guides the application of the four screens that courts apply to expert testimony in the antitrust context: the scrutiny of experts' qualifications and of their testimony's relevance, reliability, and sufficiency. Part III examines the courts' use of these screens in those evidentiary contexts in which the Supreme Court's structuring of the legal framework has made expert testimony most critical: predatory pricing, market definition and market power, cartels, and damages. The goal of our argument to this point is largely positive: to identify the factors governing how courts choose and implement economic authority, particularly when exercising control over expert testimony. The final Part, however, examines the legitimacy of assigning such a leading role to economic authority in the application of the screens, focusing on the continuing controversy over the role of post-Chicago economic analysis in antitrust.

I

CONCEPTUAL MODELS, EXPERT TESTIMONY, AND THE PROCESS OF ADJUDICATION

Before examining the role of economic authority in constraining expert testimony in antitrust cases, this Article considers more generally the nature of fact determination and the role of expertise in it. Fact-finders rely on conceptualizations of reality, explicit or implicit, to evaluate evidence. When courts rely on expert testimony, these conceptualizations become more explicit and subject to direct scrutiny by the opposing parties, the jury, and the court. Despite the relative transparency of this process, it holds well-recognized dangers.

A. Models, Evidence, and Adjudication

Although the legal system formally separates questions of law and fact,¹⁹ the role of the fact-finder necessarily has a normative dimension.²⁰ A party's representation of "what happened" in a case is not simply an arrangement of evidence into a neutral narrative of the

¹⁹ See, e.g., Ronald J. Allen & Michael S. Pardo, *The Myth of the Law-Fact Distinction*, 97 Nw. L. REV. 1769, 1778 (2003) ("Under the conventional view, legal issues concern the applicable rules and standards; factual issues involve the underlying transaction or events, in other words, 'who did what, where, when, how, why, with what motive or intent.'") (internal citation omitted); Lynn M. LoPucki & Walter O. Weyrauch, *A Theory of Legal Strategy*, 49 DUKE L.J. 1405, 1407 (2000) ("In the . . . legal process, courts define facts and then apply law to those facts to generate outcomes.").

²⁰ As Holmes observed:

events, if such a thing is possible.²¹ A party's presentation of its case is an exercise in persuasion²² aimed at fulfilling a strategy.²³ The presentation is guided not only by the applicable legal standards, which determine the relevance of the evidence, but also by shared conceptualizations of the way the world works.²⁴ As Clifford Geertz has observed, making a case involves representing facts and framing arguments in light of prevailing ideas of normal and abnormal behav-

Legal, like natural divisions, however clear in their general outline, will be found on exact scrutiny to end in a penumbra or debatable land. This is the region of the jury, and only cases falling on this doubtful border are likely to be carried far in court. Still, the tendency of the law must be to narrow the field of uncertainty.

OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 101 (Mark DeWolfe Howe ed., Harvard Univ. Press 1963) (1881).

²¹ See, e.g., WILLIAM TWINING, *RETHINKING EVIDENCE: EXPLORATORY ESSAYS* 107–08 (1990) (arguing that fact determinations are not “value-free”); Catharine Wells, *Situated Decisionmaking*, 63 S. CAL. L. REV. 1728, 1743 (1990) (“What we see and hear is filtered and interpreted within a cognitive framework that is constructed largely from our own individual temperament and prior experience.”); cf. David L. Faigman, “Normative Constitutional Fact-Finding”: *Exploring the Empirical Component of Constitutional Interpretation*, 139 U. PA. L. REV. 541, 544 (1991) (critically examining how “[t]he [Supreme] Court interprets facts,” manipulating social “facts” in constitutional interpretation).

²² See Edward D. Ohlbaum, *Basic Instinct: Case Theory and Courtroom Performance*, 66 TEMPLE L. REV. 1, 24–25 (1993). Ohlbaum observes:

The facts are the circumstances of a case—the states of events and of mind—that constitute the universe of components that make up the model of what happened. Fact extraction requires the advocate to evaluate the facts fully and exhaustively, not merely by mulling them over and hypothesizing how they fit or clash with the theory, but by placing the facts in the context of the examinations and arguments in which they will ultimately be featured. Those facts that remain incompatible with the theory must be analyzed and explained, consistent with the principles of persuasion. The advocate must select from among the facts those that strategically may be presented and reinforced most persuasively.

Id. For a recent elaboration on this idea, see generally Binny Miller, *Teaching Case Theory*, 9 CLINICAL L. REV. 295 (2002) (arguing that, over time, case theory has moved more toward a model of “persuasive storytelling”).

²³ LoPucki & Weyrauch, *supra* note 19, at 1409–10 (“Lawyers devote substantial time and energy to the development of legal strategies and regard them as capable of determining outcomes across a wide spectrum of cases.”).

²⁴ See Reid Hastie & Nancy Pennington, *The O.J. Simpson Stories: Behavioral Scientists’ Reflections on The People of the State of California v. Orenthal James Simpson*, 67 U. COLO. L. REV. 957, 959–61 (1996) (arguing that “jurors begin their decision-making process by constructing a narrative to explain the available facts they have heard at trial” and that the “story . . . will consist of some subset of the events and causal relationships referred to in the presentation of evidence, as well as additional events and causal relationships inferred by the juror”); Paul F. Kirgis, *The Problem of the Expert Juror*, 75 TEMPLE L. REV. 493, 493–94 (2002) (“[W]e expect jurors to possess and rely on a large body of general knowledge about the world, and we allow the parties, in determining what evidence to present, to assume that the jurors have such a body of knowledge.”). See generally Anthony J. Bocchino & Samuel H. Solomon, *What Juries Want to Hear: Methods for Developing Persuasive Case Theory*, 67 TENN. L. REV. 543 (2000) (distinguishing the processes of formulating a legal theory, a factual theory, and a persuasive theory of a case).

ior.²⁵ These ideas influence how parties frame legal issues and how juries evaluate the presentation of a case.²⁶ Further, this process requires a party, through evidence and argument, to describe the conduct at issue, as Geertz puts it, in both the “language of specific consequence” and the “language of general coherence.”²⁷ The persuasiveness of the descriptions of what *happened* and of what *happens* reinforce each other.²⁸

Courts channel the construction and representation of a party’s case theory by controlling the domain of the jury²⁹ through a series of decisions: rulings on the pleadings and the scope of discovery, decisions *in limine* and at trial on the admissibility of evidence,³⁰ rulings on motions for summary judgment, and the framing of pretrial orders, among many others.³¹ Of course, to function rationally, the courts must be capable of finding facts. The days are long gone when cases were decided by ordeal, battle, compurgation, or other purely irrational means.³² Nevertheless, since the emergence of trial by jury,

²⁵ CLIFFORD GEERTZ, *LOCAL KNOWLEDGE* 167–75 (1983). Geertz argues that making a case “comes to describing a particular course of events and an overall conception of life in such a way that the credibility of each reinforces the credibility of the other.” *Id.* at 175.

²⁶ These ideas may include certain nonrational biases. See, e.g., Robert A. Prentice & Jonathan J. Koehler, *A Normality Bias in Legal Decision Making*, 88 CORNELL L. REV. 583 (2003) (discussing the effects of omission and normality biases in legal decisionmaking).

²⁷ GEERTZ, *supra* note 25, at 175. Geertz continues, “Any legal system that hopes to be viable must contrive to connect the if-then structure of existence, as locally imagined, and the as-therefore course of experience, as locally perceived, so that they seem but depth and surface versions of the same thing.” *Id.*; see also Hastie & Pennington, *supra* note 24, at 961 (arguing that the jurors’ confidence in a narrative explanation of an event depends on the narrative’s “coverage of the evidence” and its “coherence,” which hinges in part on its “plausibility”—that is, the “extent [to which] it corresponds to the decision maker’s knowledge about what typically happens in the world”).

²⁸ See Mark P. Denbeaux & D. Michael Risinger, *Kumho Tire and Expert Reliability: How the Question You Ask Gives the Answer You Get*, 34 SETON HALL L. REV. 15, 24 (2003) ([A]s to fact witness testimony, and various forms of documentary, physical, or circumstantial proof, the assumption is that average people have developed, through the process of living in society, sufficient knowledge about the world of humans and its workings that they have a fair chance to evaluate and accurately weigh and discount information coming from such familiar sources.

).

²⁹ For an illuminating history of procedural controls on federal juries, see Ann Woolhandler & Michael G. Collins, *The Article III Jury*, 87 VA. L. REV. 587 (2001).

³⁰ See generally Matthew S. Rosengart, *The Motion In Limine: The Hidden Arrow in the Federal Litigator’s Quiver*, 48 FED. LAW., June 2001, at 24 (discussing effective utilization and strategic advantages of motions made *in limine*).

³¹ Cf. Lars Noah, *Civil Jury Nullification*, 86 IOWA L. REV. 1601, 1653–57 (2001) (analyzing devices used to focus civil juries on applicable legal standards).

³² 2 FREDERICK POLLOCK & FREDERICK WILLIAM MAITLAND, *THE HISTORY OF ENGLISH LAW BEFORE THE TIME OF EDWARD I* 632–44 (2d ed. 1968) (describing various common law institutions supplanted by the trial by jury); see also George Fisher, *The Jury’s Rise as Lie Detector*, 107 YALE L.J. 575, 585–602 (2001) (describing the way in which criminal juries came to replace the trial by ordeal).

courts have also taken measures to prevent factual issues from overwhelming the decisional process.³³ The elaborate English system of pleading at common law, to cite an early example, was designed to force the parties to narrow their disagreement to a single decisive issue of fact or law.³⁴

Many aspects of the modern legal system still manifest this “fear of fact”³⁵—not a fear of objective reality, but an apprehension that the fact-finding process, especially where it involves juries, may lapse into irrationality and speculation and thus undermine the substantive law. These manifestations include efforts to impose stricter pleading standards in certain types of disputes³⁶ and to eliminate juries in cases considered too complex for laymen to fathom.³⁷ Many evidence rules likewise reflect an awareness of juries’ limited cognitive capacities.³⁸ But the most significant constraint on jury fact-finding by far is the courts’ ability to adjust the boundaries between fact and law in ways that “do not conform to the theoretical distinction between law and fact.”³⁹ If the courts believe a jury is incapable of determining an issue

³³ See GEERTZ, *supra* note 25, at 172 (“The judge’s job in admissibility questions is to decide . . . when ‘the trial [will be] better off without the evidence.’” (internal citations omitted)).

³⁴ See Stephen N. Subrin, *How Equity Conquered Common Law: The Federal Rules of Civil Procedure in Historical Perspective*, 135 U. PA. L. REV. 909, 916 (1987) (“Under single issue pleading, the parties pleaded back and forth until one side either demurred, resulting in a legal issue, or traversed, resulting in a factual issue.”).

³⁵ GEERTZ, *supra* note 25, at 171.

³⁶ See generally Christopher M. Fairman, *Heightened Pleading*, 81 TEX. L. REV. 551 (2002) (surveying judicial and congressional efforts to impose pleading requirements stricter than the notice requirements of Rule 8 of the Federal Rules of Civil Procedure).

³⁷ See, e.g., *In re Japanese Elec. Prods. Antitrust Litig.*, 631 F.2d 1069, 1080 (3rd Cir. 1980) (reading Supreme Court precedent to leave “open the possibility that the ‘practical abilities and limitation of juries’ may limit the range of suits subject to the seventh amendment”).

³⁸ See generally Ronald J. Allen & Craig R. Callen, *The Juridical Management of Factual Uncertainty*, 7 INT’L J. EVIDENCE & PROOF 1 (2003) (analyzing the various evidentiary tools used to limit factual uncertainty in civil cases); Craig R. Callen, *Adjudication and the Appearance of Statistical Evidence*, 65 TUL. L. REV. 457, 475–96 (1991) (discussing the use of summary judgment and burdens of proof to remove some questions from the deliberations of the jury); Craig R. Callen, *Hearsay and Informal Reasoning*, 47 VAND. L. REV. 43, 55–78 (1994) (discussing the use of hearsay rules to place limits on fact-finders).

³⁹ Adrian A.S. Zuckerman, *Law, Fact or Justice?*, 66 B.U. L. REV. 487, 488 (1986). Zuckerman notes that “questions of law—namely, questions which are not concerned with the existence of facts outside the law—are frequently treated as questions of fact” and that “questions concerned with the process of ascertaining the facts sometimes receive the kind of treatment usually accorded to questions of law.” *Id.* For an interesting example of this process at work, see *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9 (D.D.C. 1999), in which Judge Jackson issued “findings of fact” without accompanying conclusions of law. Because the findings were couched in terms made relevant by the law, it was possible to predict the legal conclusions. Judge Jackson told a reporter, “What I want to do is confront the Court of Appeals with an established factual record which is a *fait accompli*,” because “I take mild offense at their reversal of my preliminary injunction in the consent-decree case, where they went ahead and made up about ninety percent of the facts on their own.” KEN

of fact, they may characterize the issue as one of law⁴⁰ or change the law so as to make a more tractable factual issue the relevant one.⁴¹ Moreover, the sufficiency of the evidence needed to support a finding of fact is always a question of law—a principle that allows a trial court to remove questions from the jury through summary judgment or judgment as a matter of law whenever it concludes that no reasonable jury could find a material fact in favor of the party opposing the motion.⁴² In some instances, as we will see repeatedly in Part III, standards of sufficiency themselves can be adjusted for policy reasons. In all of these decisions, formally characterized as “legal,” the courts’ findings of generalized (or “legislative”) facts about society and human nature allow courts to recast the adjudicative roles of judge and jury.

B. Expert Testimony and *Daubert*

Expert testimony occupies a special role in the process of proof.⁴³ Experts are permitted to testify to both fact and opinion because they bring to bear a system of knowledge that is outside the jury’s everyday knowledge.⁴⁴ The law of evidence requires an expert opinion to be based on a theoretical construct or other specialized knowledge that the expert applies to the evidence.⁴⁵ Expert testimony must be stated in the language of general coherence, to use Geertz’s term, but that language must rely on formalized models in addition to common

AULETTA, *WORLD WAR 3.0: MICROSOFT AND ITS ENEMIES* 230 (2001). The court of appeals responded:

Whether the District Judge takes offense, mild or severe, is beside the point. Appellate decisions command compliance, not agreement. We do not view the District Judge’s remarks as anything other than his expression of disagreement with this court’s decision, and his desire to provide extensive factual findings in this case, which he did.

United States v. Microsoft Corp., 253 F.3d 34, 118 (D.C. Cir. 2001).

⁴⁰ Allen & Pardo, *supra* note 19, at 1782 (arguing that “law” and “fact” are “the labels [that] are applied after the pragmatic allocative decision is made”).

⁴¹ See, e.g., Woolhandler & Collins, *supra* note 29, at 631–36 (describing the ways in which nineteenth century judges used jury instructions to specify legal standards, which allowed judges to control the juries’ fact-finding).

⁴² See generally Fleming James, Jr., *Sufficiency of the Evidence and Jury-Control Devices Available Before Verdict*, 47 VA. L. REV. 218 (1961) (discussing “the concept of sufficiency of the evidence and . . . closely related mechanisms” as ways of controlling juries before verdict).

⁴³ For a discussion of the evolution of expert evidence, see Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40 (1901).

⁴⁴ See CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, *EVIDENCE* 723–25 (1995) (cataloging a range of issues to which experts can, and often do, testify in civil and criminal cases).

⁴⁵ Hand, *supra* note 43, at 51–52 (arguing that an expert supplies “general propositions” that, if believed, take the place of the “common knowledge” by which jurors normally evaluate evidence).

sense and other intuitive preconceptions.⁴⁶ Juries are supposed to evaluate the testimony based upon their everyday sense of credibility, measuring the witnesses' accounts against their own experience.⁴⁷ Thus, juries will often be asked to choose between expert accounts that rest on complex analyses far from the jurors' usual experience.⁴⁸

An expert must, therefore, support statements of opinion in an understandable and plausible way, with reasoning that relies on the relevant theoretical construct. Moreover, the expert must maintain the plausibility of the testimony in the face of challenges by opposing counsel and the adversary's expert witnesses. *Daubert* itself stressed that cross-examination, rebuttal, and jury instructions are normally sufficient to control dubious expert testimony.⁴⁹ Nevertheless, the rules governing the admissibility of expert opinions are prime examples of the law's fear of fact.⁵⁰ Conceivably, courts might admit all relevant testimony⁵¹ and rely on the parties to avoid introducing implausible testimony and to attack the plausibility of their rivals' testimony. The law of evidence, however, has never entirely trusted juries to sort out probative expert testimony from superficially plausible nonsense.⁵² Courts have suggested that expert testimony may be too complex to allow juries to use in resolving issues, may fail to consider relevant factors, or may offer a spurious precision that could mislead

⁴⁶ See Eileen A. Scallen & William E. Wiethoff, *The Ethos of Expert Witnesses: Confusing the Admissibility, Sufficiency and Credibility of Expert Testimony*, 49 HASTINGS L.J. 1143 (1998). Scallen & Wiethoff argue that "[e]xpert testimony, even that based on natural or social science, is argumentation" rather than simply evidence. *Id.* at 1144; see also Posner, *supra* note 6, at 95–96 (arguing that concerns about the intelligibility of expert testimony are mitigated by the fact that jurors find clarity more persuasive than credentials and by the fact that "lawyer's [have an] incentive to call persuasive witnesses").

⁴⁷ For data on jurors' assessments of expert credibility, see Sanja Kutnjak Ivkovic & Valerie P. Hans, *Jurors' Evaluations of Expert Testimony: Judging the Messenger and the Message*, 28 LAW & SOC. INQUIRY 441 (2003).

⁴⁸ Hand, *supra* note 43, at 54–55 ("What hope have the jury . . . of rational decision between two such conflicting statements each based on [expert] experience?").

⁴⁹ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993). The exclusion of expert testimony is supposed to be exceptional: "[T]he trial court's role as gatekeeper is not intended to serve as a replacement for the adversary system." FED. R. EVID. 702 advisory committee's note. Confronted by the argument that relaxed standards of admissibility "will result in a 'free-for-all' in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions," *Daubert*, 509 U.S. at 595–96, the Court responded that "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Id.* at 596.

⁵⁰ We exclude from our discussion certain non-evidentiary rules that may result in exclusion of expert witnesses. See, e.g., Kendall Coffey, *Inherent Judicial Authority and the Expert Disqualification Doctrine*, 56 FLA. L. REV. 195 (2004) (discussing judicial doctrines allowing disqualification of experts for conflicts of interest).

⁵¹ Slobogin, *supra* note 16, at 106.

⁵² See Denbeaux & Risinger, *supra* note 28, at 24 ("The commonsense fear is that factfinders will defer to the unreliable expert and treat the unreliable expert's testimony as reliable.").

jurors.⁵³ Because of the hired-gun character of expert witnesses, courts are especially wary of tendentious testimony.⁵⁴ Although some have advocated the use of neutral, court-appointed experts to mitigate this concern,⁵⁵ the most widely used mechanisms to control experts are the special evidentiary standards for admissibility of expert opinion testimony.

The admissibility of expert testimony is governed by the Federal Rules of Evidence, particularly Rule 702, which provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.⁵⁶

Daubert interpreted an earlier version of Rule 702, which ended with the words "or otherwise."⁵⁷ The list of conditions at the end of the present rule, added in 2000 in response to *Daubert* and later cases, "affirms the trial court's role as gatekeeper and provides some general standards that the trial court must use to assess the reliability and helpfulness of proffered expert testimony."⁵⁸

⁵³ See, e.g., *E. Auto Distribs., Inc. v. Peugeot Motors of Am., Inc.*, 795 F.2d 329, 338 (4th Cir. 1986) ("Scrutiny of expert testimony is especially proper where it consists of 'an array of figures conveying a delusive impression of exactness in an area where a jury's common sense is less available than usual to protect it.'").

⁵⁴ See Posner, *supra* note 6, at 93–94 (observing that the "expert has both motive and means of slanting the truth in favor of the client," but further noting that reputational considerations tend to limit such incentives); see also William L. Foster, *Expert Testimony—Prevalent Complaints and Proposed Remedies*, 11 HARV. L. REV. 169, 170–71 (1897) (quoting an earlier commentator's observation that experts do not "wilfully misrepresent what they think, but their judgment becomes so warped by regarding the subject in one point of view that even when conscientiously disposed, they are incapable of expressing a candid opinion"). For an argument that present controls on the dishonesty of partisan experts are insufficient, see Jeffrey L. Harrison, *Reconceptualizing the Expert Witness: Social Costs, Current Controls and Proposed Responses*, 18 YALE J. ON REG. 253 (2001).

⁵⁵ See, e.g., RICHARD A. POSNER, *ANTITRUST LAW* 277–78 (2d ed. 2001) (suggesting the use of a neutral expert agreed upon by each party's expert); Posner, *supra* note 6, at 96 (suggesting replacement of each party's expert with a single, jointly agreed-upon expert); see also Hand, *supra* note 43, at 56 (arguing for "a board of experts or a single expert, not called by either side, who shall advise the jury of the general propositions applicable to the case which lie within his province"); cf. *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 665 (7th Cir. 2002) (Posner, J., majority) (recommending that the district court use the powers granted to it by Rule 706 of the Federal Rules of Evidence to appoint its own neutral expert).

⁵⁶ FED. R. EVID. 702.

⁵⁷ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 588 (1993).

⁵⁸ FED. R. EVID. 702 advisory committee's note.

Rule 702, read alongside *Daubert*, imposes “three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability, and fit.”⁵⁹ *Daubert* is perhaps best known for (and is sometimes used synonymously with) its controversial requirement of “reliability.”⁶⁰ *Daubert* read Rule 702’s characterization of expert knowledge as “scientific, technical, or . . . specialized” to mean that the knowledge must be “derived by the scientific method” to assure its reliability.⁶¹ The Court required consideration of whether an expert’s methodology is objectively testable, whether it was subject to peer review or publication, whether its rate of error is known, whether it was subject to controls, and whether it is generally accepted in the relevant scientific community.⁶² *Kumho Tire*⁶³ later made clear that these standards apply to any testimony based on specialized knowledge, even if it is not strictly scientific.⁶⁴

Although *Daubert* limited its analysis of reliability to the expert’s methodology,⁶⁵ the Court observed later in *Joiner*⁶⁶ that

conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.⁶⁷

Thus, a court must scrutinize not only the expert’s data and formal analysis, but also the expert’s grounds for drawing particular conclusions. The 2000 amendments emphasize this point by requiring the expert’s opinion to be “based upon” data and to apply principles properly.⁶⁸

⁵⁹ *Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000).

⁶⁰ *See Daubert*, 509 U.S. at 590 & n.9.

⁶¹ *Id.* at 590.

⁶² *Id.* at 593–94. On remand, Judge Kozinski read *Daubert* to require courts “to resolve disputes among respected, well-credentialed scientists about matters squarely within their expertise, in areas where there is no scientific consensus as to what is and what is not ‘good science,’ and occasionally to reject such expert testimony because it was not ‘derived by the scientific method.’” *Daubert*, 43 F.3d at 1316.

⁶³ *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999).

⁶⁴ *Id.* at 147.

⁶⁵ *Daubert*, 509 U.S. at 595 (noting that the focus “must be solely on principles and methodology, not on the conclusions that they generate”).

⁶⁶ *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997).

⁶⁷ *Id.* at 146.

⁶⁸ FED. R. EVID. 702 advisory committee’s note (“[W]hen an expert purports to apply principles and methods in accordance with professional standards, and yet reaches a conclusion that other experts in the field would not reach, the trial court may fairly suspect that the principles and methods have not been faithfully applied.”).

In addition to assuring that there is no analytical gap between the expert's data and opinions, *Daubert* instructs the court to consider whether expert testimony will "assist the trier of fact to understand the evidence or to determine a fact in issue,"⁶⁹ as required by Rule 702. This requirement of helpfulness "goes primarily to *relevance*,"⁷⁰ or "fit."⁷¹ Testimony that is either irrelevant to an issue in the case, or relevant but outside the scope of the witness's expertise, will always fail the helpfulness prong of *Daubert*. The relevance standard reiterates Rule 402's requirement that any evidence be relevant,⁷² which Rule 401 defines as "having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence."⁷³ Irrelevant expert testimony, therefore, might be excluded under either the helpfulness prong of *Daubert* or Rule 402. The redundancy, though sometimes confusing,⁷⁴ is harmless so long as courts recognize the distinction between the relevance and reliability inquiries.

The requirement that even relevant expert testimony be within the witness's area of expertise is critical in considering what one scholar has termed "the 'ultimate issue' issue."⁷⁵ Rule 704 makes clear that expert testimony "*otherwise admissible* is not objectionable because it embraces an ultimate issue to be decided by the trier of fact."⁷⁶ Thus, if a legal term has professional significance in the relevant area of expertise, it should be admissible and subject to the usual adversarial testing.⁷⁷ If, however, the law defines an ultimate issue in terms having no meaning—or a different meaning—in the witness's profession, the witness's testimony on that issue may not be "*otherwise admissible*."⁷⁸

Even if evidence is admissible because it meets the conditions of qualification, reliability, and relevance, it may still be insufficient to raise a material question of fact for the jury. The Court stressed in *Daubert* that "in the event the trial court concludes that the scintilla of evidence presented supporting a position is insufficient to allow a rea-

69 *Daubert*, 509 U.S. at 588 (quoting Federal Rule of Evidence 702).

70 *Id.* at 591 (emphasis added).

71 *Id.* (crediting Judge Becker in *United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985), for use of the term "fit").

72 FED. R. EVID. 402.

73 FED. R. EVID. 401.

74 *See, e.g., In re Brand Name Prescription Drugs Antitrust Litig.*, 186 F.3d 781, 786 (7th Cir. 1999) (finding that the objection to expert economic evidence "actually had nothing to do with *Daubert*; it was that the evidence mainly concerned a matter not in issue"). This seems to suggest, incorrectly, that *Daubert* does not itself impose a requirement of relevancy.

75 Christopher Slobogin, *The "Ultimate Issue" Issue*, 7 BEHAV. SCI. & L. 259 (1989).

76 FED. R. EVID. 704(a) (emphasis added).

77 *See* Slobogin, *supra* note 75, at 261-62.

78 *Id.* at 263.

sonable juror to conclude that the position more likely than not is true, the court remains free to direct a judgment . . . and likewise to grant summary judgment.”⁷⁹ The admissibility and sufficiency screens are related, and have the common consequence of removing testimony from the jury’s consideration. But allocating the evaluation of the evidence to the sufficiency inquiry has important procedural consequences on appeal: the district court’s evaluation of admissibility of evidence is reviewed only for an abuse of discretion,⁸⁰ while its evaluation of sufficiency is reviewed *de novo*.⁸¹

II

ECONOMIC AUTHORITY AND EXPERTISE IN ANTITRUST CASES

The preceding Part examined the interaction between factual inquiries and conceptualizations, expert and otherwise, of normal and abnormal conduct. These interactions have special importance in antitrust litigation. The decline of *per se* rules over the past thirty years has made certain factual issues, and the expert testimony necessary to resolve them, more important than they were in earlier decades. The consequences of this trend will be the focus of the remainder of this Article. To understand the special role of expertise in antitrust cases, however, one must recognize that it is subordinate to economic authority—the judicially adopted models and empirical estimates that provide the conceptual basis for legal rules. Courts acquire economic knowledge independently of expert testimony and rely on it to frame rules of liability, standing, and evidentiary sufficiency. These rules are designed to raise issues that courts can practically resolve without deterring benign conduct. This process then determines the qualifications that trial experts must have, the issues about which they may testify, the models upon which they may rely, and the methodologies they may use in formulating their testimony.

A. Economic Authority and Antitrust: Models, Rules, and the Domain of Fact

From the earliest years of the Sherman Act, economic ideas have influenced antitrust law through unstructured judicial adoption.⁸²

⁷⁹ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993).

⁸⁰ *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 141–43 (1997). *But cf.* *United States v. Call*, 129 F.3d 1402, 1405 (10th Cir. 1997) (holding that the court will “review *de novo* whether the district court properly followed the framework set forth in *Daubert*,” but “once we determine that the district court correctly applied the *Daubert* standards, we may reverse the district court only if the exclusion of the expert testimony constituted an abuse of discretion”).

⁸¹ *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1298 (11th Cir. 2003).

⁸² *See* HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW 1836–1937*, at 268–69 (1991) (“Antitrust policy has been forged by economic ideology since its inception.”);

The Supreme Court has approached the formulation of antitrust law as a common law process, finding in the legislative text or history of the statutes few decisive constraints on its rulemaking discretion.⁸³ In this process the Court recognizes economic authority by accepting theoretical and generalized empirical propositions as its basis for formulating or applying rules of law.⁸⁴ The Court adopts this form of authority in much the same way it acquires knowledge of legal precedents: by pragmatically examining the scholarly literature in the context of existing case law and adopting the most persuasive and plausible accounts.⁸⁵

The lower federal courts engage in the same sort of inquiry, constrained to varying degrees by the decisions of the Supreme Court. In many instances, the lower courts have taken the lead in the process of legal change, relying on economic authority in a variety of doctrinal contexts in order to resolve cases in ways that minimize the harmful effects of Supreme Court decisions or that invite Supreme Court correction.⁸⁶ Whatever might be said of its validity in other contexts, judicial inquiry into social science research has been integral to the

Hovenkamp, *Reckoning*, *supra* note 8, at 1–3; Joseph F. Brodley, *Oligopoly Power Under the Sherman and Clayton Acts—From Economic Theory to Legal Policy*, 19 STAN. L. REV. 285, 298 (1967) (“The extent to which the basic economic theory of oligopoly has become explicit in the Court’s recent decisions is striking.”); James May, *Antitrust in the Formative Era: Political and Economic Theory in Constitutional and Antitrust Analysis, 1880–1918*, 50 OHIO ST. L.J. 257, 300–09 (1989) (describing judges’ use of prevailing economic and political theories in early interpretation of the Sherman Act).

⁸³ See, e.g., *Bus. Elecs. Corp. v. Sharp Elecs. Corp.*, 485 U.S. 717, 731–32 (1988) (reasoning that the Sherman Act’s use of common law terminology carries with it the dynamic common law process of legal change); Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696, 1705 (1986) (observing that “[t]he Sherman Act set up a common law system in antitrust” and that “[t]he statute and its legislative history authorize the ongoing transition to an efficiency-oriented approach”). For criticism of the Supreme Court’s approach, see Thomas C. Arthur, *Farewell to the Sea of Doubt: Jettisoning the Constitutional Sherman Act*, 74 CAL. L. REV. 263 (1986), proposing an interpretation of the Sherman Act which is predicated on Congress’s basic policy choices, and David F. Shores, *Antitrust Decisions and Legislative Intent*, 66 MO. L. REV. 725 (2001), criticizing the modern Supreme Court’s failure to rely on legislative intent when interpreting the Sherman Act.

⁸⁴ Page, *supra* note 9, at 1295–98 (describing the process of judicial selection of theories).

⁸⁵ See Robert E. Keeton, *Legislative Facts and Similar Things: Deciding Disputed Premise Facts*, 73 MINN. L. REV. 1 (1988) (describing judicial adoption of facts as premises for formulation of a legal rule); cf. Monahan & Walker, *supra* note 5, at 488–95 (arguing that the adoption of social science research should be treated like the adoption of legal precedent).

⁸⁶ For example, in *Khan v. State Oil Co.*, 93 F.3d 1358 (7th Cir. 1996), Judge Posner held that a dealer suffered antitrust injury from vertical maximum price fixing, but the court expressed “considerable sympathy with the argument that *Albrecht* [*v. Herald Company*, 390 U.S. 145 (1968), which made the practice per se unlawful,] is inconsistent with the cases that establish the requirement of proving antitrust injury.” *Id.* at 1363. The court stated: “In fact, we think the argument is right and that it may well portend the doom of *Albrecht*.” *Id.* The Supreme Court accepted the invitation, overruling *Albrecht* and reversing Judge Posner’s decision. *State Oil Co. v. Khan*, 522 U.S. 3, 22 (1997); see also Fred S. McChesney, *Talking ‘Bout My Antitrust Generation: Competition For and In the Field of Competi-*

development of antitrust law and has framed the role of expertise in antitrust litigation.

1. *Adoption of Economic Authority*

Perhaps the most visible example of courts adopting economic authority in antitrust has been the Supreme Court's acceptance of the Chicago School's economic models of many of the practices that have most concerned antitrust: cartels, vertical price fixing, territorial restraints, tying arrangements, and predatory pricing. As we have explained at greater length elsewhere, the Chicago models show the effects of various practices on individual actors and on overall efficiency, using the standard economic assumption of value-maximizing behavior.⁸⁷ From those assumptions, neoclassical economics has constructed the theories of cost and consumer behavior, the firm, competition, monopoly, and dominant firm pricing. Chicago analysts apply the same assumptions in adapting price theory (understood to encompass considerations of transaction and information costs)⁸⁸ to the antitrust problem.⁸⁹ They assume that firms engage in those practices which enhance profits, either by gaining and exercising monopoly power (through cartels or exclusionary practices), by improving efficiency, or both. The antitrust problem, in Chicago terms, is to identify the likely effects of the practice on efficiency,⁹⁰ bearing in mind that rivals, suppliers, and customers will also respond to monopolistic actions with value-maximizing behavior of their own—increasing output, substituting new suppliers or customers, or entering new markets. Using these assumptions, the Chicago analysis sought to refute traditional monopolistic explanations for a host of practices.⁹¹ The Court has referred to the Chicago models in a variety of doctrinal contexts, adopting much of Chicago's analytical framework, including the assumption that firms act rationally to maximize profits and minimize losses.⁹²

Courts usually offer at best only citations to legal and economic literature when "explaining" the process by which they choose one model over another. In one important case, however, we have inside

tion Law, 52 EMORY L.J. 1401, 1408–11 (2003) (discussing the various ways that lower courts have of minimizing the effect of harmful Supreme Court precedent).

⁸⁷ See Page, *supra* note 9, at 1231–37.

⁸⁸ See Alan J. Meese, *Price Theory, Competition, and the Rule of Reason*, 2003 U. ILL. L. REV. 77, 138 n.328.

⁸⁹ Page, *supra* note 9, at 1237–43.

⁹⁰ See *id.* at 1239.

⁹¹ See *id.* at 1235–37.

⁹² As Herbert Hovenkamp has pointed out, even though economists now question the universal assumption of rationality, the law has largely adopted it as both a positive and normative starting point. Hovenkamp, *supra* note 1, at 120 (observing that a "rational actor hypothesis is part of the law of predatory pricing").

information. The Court's decision in *Sylvania*,⁹³ which overturned the per se rule against vertical, non-price restraints established in *Schwinn*,⁹⁴ was driven by Chicago School economics entering the Court's deliberative process directly and indirectly through the legal and economic literature, not through expert testimony.⁹⁵ The Court endorsed an essential Chicago insight: that vertical restraints may enhance interbrand competition by allowing manufacturers to limit free riding by their distributors, thus creating incentives for the distributors and retailers to provide costly pre-sale services.⁹⁶ As Andrew Gavil has shown, Justice Lewis Powell played the pivotal role in persuading the Court to overrule *Schwinn*, and his advocacy within the Court stemmed from an economic conviction shaped by a Chicago analysis that Powell learned outside of the record and briefs.⁹⁷ Powell's law clerk was a former student of William Baxter, a Chicago-oriented scholar at Stanford Law School; the clerk's memorandum to Powell criticizing *Schwinn* highlighted the work of Baxter, Robert Bork, and Richard Posner.⁹⁸ In the margin of his pre-conference notes, Powell wrote three names: "Posner, Baxter, Bork."⁹⁹ And in a critique of his clerk's first draft opinion, Powell wrote: "It also is important to demonstrate the economic illiteracy of *Schwinn*."¹⁰⁰ Powell's final opinion for the Court relied heavily on Chicago scholarship.¹⁰¹ Professor Gavil concludes,

[T]he collective imprint of the Chicago School is unmistakable. By creating an accessible body of academic commentary and criticism that presented an alternative, coherent "school of thought," it is arguable that commentators like Bork and Posner, as well as their predecessors, Director, Levi, Telser, and Bowman, facilitated change, providing specific grounds for displacing and discarding the doctrine they criticized.¹⁰²

⁹³ *Cont'l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977).

⁹⁴ *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967).

⁹⁵ *Sylvania*, 433 U.S. at 54-55 ("Economists have identified a number of ways in which manufacturers can use such restrictions to compete more effectively against other manufacturers.").

⁹⁶ See *Sylvania*, 433 U.S. at 55. The article that introduced this economic theory is Lester C. Telser, *Why Should Manufacturers Want Fair Trade?*, 3 J.L. & ECON. 86 (1960). In recognizing the free rider effect, the Court cited Richard A. Posner, *Antitrust Policy and the Supreme Court: An Analysis of the Restricted Distribution, Horizontal Merger and Potential Competition Decisions*, 75 COLUM. L. REV. 282, 285 (1975). Posner relies on Telser. *Id.* at 283 n.6.

⁹⁷ See Andrew I. Gavil, *A First Look at the Powell Papers: Sylvania and the Process of Change in the Supreme Court*, ANTITRUST, Fall 2002, at 8, 9-11.

⁹⁸ *Id.* at 11.

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 10.

¹⁰¹ See *Sylvania*, 433 U.S. at 48 n.13, 55-58 nn.24, 26, 29 (citing articles).

¹⁰² Gavil, *supra* note 97, at 11.

Justice Powell similarly adopted Chicago models of predatory pricing in his opinion in *Matsushita*.¹⁰³ In neither *Sylvania* nor *Matsushita* did he conduct the sort of inquiry into reliability contemplated later by *Daubert*. Of course, Chicago-inspired arguments have not been universally successful in the Court.¹⁰⁴ The crucial point to note at this stage is that unstructured choice among competing models has been an integral part of the development of legal standards in antitrust.

The question remains as to why courts choose one available model over another. One of the grounds, of course, must be the model's explanatory value. Milton Friedman has famously argued that economists, like all scientists, choose theories (or should do so) based on their predictive accuracy, rather than, for example, the realism of their assumptions.¹⁰⁵ To illustrate, Friedman hypothesizes a theory that the leaves on a tree are distributed as if the leaves were trying to expose themselves to the optimal degree of sunlight; Friedman suggests that such a theory would be perfectly valid if empirical testing showed that it accurately predicted the distribution of leaves.¹⁰⁶ Ronald Coase has objected, however, that no such process of testing typically occurs when economists accept or reject theories.¹⁰⁷ Instead, economists adopt theories of market phenomena based upon an intuitive assessment of how well the theory helps them understand the processes at work.¹⁰⁸ Coase presents a number of instances in which the vast majority of economists adopted a newly presented theory without any evidence at all that it made accurate predictions.¹⁰⁹ Economists are likely to adopt a model identifying previously unrecognized causal factors in a market phenomenon. Coase tellingly argues that Friedman's example of a valid theory of leaf distribution would be extraordinarily unsatisfying, regardless its predictive accuracy: it would be "a very poor basis for thinking about leaves" because it tells us nothing about the biological forces at work in the tree.¹¹⁰

¹⁰³ *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986); see *infra* Part III.A.

¹⁰⁴ See *infra* Part III.

¹⁰⁵ MILTON FRIEDMAN, *The Methodology of Positive Economics*, in *ESSAYS IN POSITIVE ECONOMICS* 3, 15 (1953) (observing that whether or not the assumptions of a theory are valid depends not on whether they are "descriptively 'realistic,'" but on whether the theory "yields sufficiently accurate predictions").

¹⁰⁶ *Id.* at 19–20.

¹⁰⁷ R.H. COASE, *How Should Economists Choose?*, in *ESSAYS ON ECONOMICS AND ECONOMISTS* 15, 16–18 (1994) (arguing that a theory "serves as a base for thinking" and "helps us to understand what is going on by enabling us to organise our thoughts").

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 19–23.

¹¹⁰ *Id.* at 17.

Courts, like economists, are undoubtedly influenced in their choices by intuitions about each theory's explanatory value. Presumably Justice Powell's adoption of the Chicago model in *Sylvania* was based on his sense that it explained manufacturers' use of restricted distribution better than other available models. He certainly required no formal falsification of the competing models, as Friedman's standard of choice would have required. But what accounts for these intuitions? One factor Coase does not discuss is the role of social visions, or *ideologies*—which have influenced antitrust law from its inception.¹¹¹ Ideologies, unlike theories, are highly abstract conceptions of social causation.¹¹² Antitrust law has always been torn between relatively laissez-faire and relatively interventionist visions of the proper roles of the state and the market in organizing economic affairs.¹¹³ The Sherman Act itself is a legislative compromise that relies on the undirected market (framed by common law rules of property and contract) to organize production and allocation of goods and services, but also assumes that sporadic judicial intervention will sometimes be necessary to bring monopolies and cartels to a timely end.¹¹⁴

The interpretation of the statute over the course of antitrust history has likewise been influenced by whether the interpreter—be it a court or a scholar—adheres to a relatively laissez-faire or a relatively *dirigiste* ideology. The populist antitrust of the post-War era reflected a perception that markets tend toward monopoly without constant governmental vigilance.¹¹⁵ The Chicago School's critique of that perception reflected the conviction that the self-correcting forces of the market were powerful and would typically thwart monopolistic practices.¹¹⁶ Economists associated with the Chicago School are influenced by their market-oriented vision when accepting or rejecting theories. Similar factors undoubtedly influence courts in their choices as well. The Chicago School did not gain widespread judicial acceptance until its underlying free-market ideology became more

¹¹¹ See generally William H. Page, *Ideological Conflict and the Origins of Antitrust Policy*, 66 TUL. L. REV. 1 (1991) (discussing the place of various ideologies in the development of national antitrust policy). This Article, as in the article cited above, uses "ideology" and "social vision" in the essentially neutral sense developed by Thomas Sowell. See THOMAS SOWELL, *A CONFLICT OF VISIONS* 14 (1987) (arguing that "visions" are mental constructs that supply "what we sense or feel *before* we have constructed any systematic reasoning that could be called a theory, much less deduced any specific consequences as hypotheses to be tested against evidence"); see also J.M. BALKIN, *CULTURAL SOFTWARE: A THEORY OF IDEOLOGY* 3 (1998) (proposing an "ambivalent conception of ideology," which recognizes that "cognitive mechanisms" can be "useful in certain contexts, but in others . . . can mislead and help produce or sustain unjust conditions").

¹¹² See Page, *supra* note 11, at 9–10.

¹¹³ See *id.* at 9–23, 40–44.

¹¹⁴ See *id.* at 35–39.

¹¹⁵ See *id.* at 18–23.

¹¹⁶ *Id.* at 43–47.

widely held in the judiciary.¹¹⁷ The appointment process no doubt played a role in these changes, but even justices not otherwise commonly associated with political conservatism have been influenced by Chicago ideas.¹¹⁸

Although this Article has suggested that courts accept models on largely the same grounds as economists, even economically sophisticated judges must make their choices under institutional circumstances very different from those of professional economists. Judicial recognition of a theory has far broader consequences than recognition of the same theory by a scholar. Thus, a judge may reject a theory as a basis for resolving a legal issue even if the judge accepts the theory as a matter of abstract economics.¹¹⁹ As the next section explains, institutional concerns strongly influence the kinds of rules in which courts are inclined to embody economic authority.¹²⁰ Such considerations have led the Supreme Court, rightly or wrongly, to give special weight to the immediate or obvious effects of practices on consumers. Theoretical arguments purporting to contradict the obvious evidence of a practice's effect thus face greater obstacles to adoption.

In some instances, this preference for obvious effects has led the Court to rely on post-Chicago analyses that detect inefficiencies in a wider range of circumstances than do Chicago models.¹²¹ These post-Chicago victories have occurred mainly in cases in which the practice at issue results in evident and immediate consumer harms that a Chicago analysis suggests are illusory or transitory. In *Aspen*, for example, the leading operator of skiing facilities stopped participating in an all-Aspen ski pass that it had offered jointly for many years with its smaller

¹¹⁷ Page, *supra* note 9, at 1300; cf. William E. Kovacic, *Judicial Appointments and the Future of Antitrust Policy*, ANTITRUST, Spring 1993, at 8, 9 (concluding, based on an empirical study, that "the Reagan/Bush strategy of nominating conservative academics has exerted an important [i] qualitative influence by fostering acceptance of analytical approaches that discourage judicial intervention"); Keith E. Whittington, *Extrajudicial Constitutional Interpretation: Three Objections and Responses*, 80 N.C. L. REV. 773, 816 (2002) (arguing that political affiliations heavily influence judicial outcomes). Since 1976, judges have also heard about Chicago-oriented economics at institutes sponsored by Henry Manne's Law & Economics Center. See, e.g., William E. Kovacic, *The Antitrust Paradox Revisited: Robert Bork and the Transformation of Antitrust Policy*, 36 WAYNE L. REV. 1413, 1434 (1990).

¹¹⁸ See, e.g., *Atl. Richfield Co. v. USA Petroleum Co.*, 495 U.S. 328 (1990) (Brennan, J.) (holding that "a firm does not suffer an 'antitrust injury' . . . when it loses sales to a competitor charging nonpredatory prices pursuant to a vertical, maximum-price-fixing scheme").

¹¹⁹ In Thomas Cotter's terms, the courts use economic theory pragmatically. See Thomas F. Cotter, *Legal Pragmatism and the Law and Economics Movement*, 84 GEO. L.J. 2071, 2139-40 (1996) (arguing that "the pragmatist accepts the insights of economic analysis for what they are worth," avoiding "brilliant, but acontextual, policy recommendations" in favor of "a more skeptical, neoinstitutionalist approach in considering policy alternatives").

¹²⁰ See *infra* Part II.A.2.

¹²¹ For a survey of post-Chicago successes and failures, see Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257.

rival.¹²² Under a Chicago analysis, at worst this refusal was competitively benign because it could not have reduced output in the market. Nonetheless, the Court affirmed a jury verdict for plaintiffs, observing that consumers wanted the pass and were immediately harmed by its termination.¹²³

Chicago arguments have generally been successful in limiting antitrust liability where the defendant's conduct confers an immediate benefit on consumers.¹²⁴ As then-Judge Breyer put it, courts "should be cautious—reluctant to condemn too speedily—an arrangement that, on its face, appears to bring low price benefits to the consumer."¹²⁵ For example, in cases which have involved maximum resale price fixing¹²⁶ and predatory pricing,¹²⁷ the practices at issue immediately resulted in lower prices to consumers, but plaintiffs alleged that the practices should nevertheless be illegal because they might *eventually* lead to higher prices. The Court has rejected these claims, not because the alleged harm could never occur, but because a rule focusing on an immediate, certain benefit made more sense than one based on possible future harm. In predatory pricing cases, "[e]ven if the ultimate effect of [a price] cut is to induce or reestablish supracompetitive pricing, discouraging a price cut and forcing firms to maintain supracompetitive prices, thus depriving consumers of the benefits of lower prices in the interim, does not constitute sound antitrust policy."¹²⁸

Courts thus adopt theoretical models (and attendant empirical assumptions) from various sources in order both to explain current effects and to predict future effects of practices. They appear to do so on the basis of the theory's explanatory value, its consistency with the court's ideological conception of the relationship between the market and the state, and the special institutional context of antitrust litigation. Part IV examines some of the questions of legitimacy that this process raises. For now, however, it is important only to stress the absence of constraints on reliability analogous to those imposed by

¹²² *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985).

¹²³ *See id.* at 606; *see also* John E. Lopatka & William H. Page, *Monopolization, Innovation, and Consumer Welfare*, 69 GEO. WASH. L. REV. 367, 379–83 (2001) (noting that, although the *Aspen* Court arguably should have required a showing that total output declined, the Court "undeniably examined other evidence of consumer harm").

¹²⁴ *See* John E. Lopatka & William H. Page, 'Obvious' Consumer Harm in Antitrust Policy: *The Chicago School, the Post-Chicago School and the Courts*, in *POST-CHICAGO DEVELOPMENTS IN ANTITRUST LAW*, *supra* note 8, at 129–30.

¹²⁵ *Kartell v. Blue Shield of Mass., Inc.*, 749 F.2d 922, 931 (1st Cir. 1984).

¹²⁶ *E.g.*, *State Oil Co. v. Khan*, 522 U.S. 3 (1997).

¹²⁷ *See infra* Part III.A.

¹²⁸ *Brooke Group, Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993); *see also* *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1061–62 (8th Cir. 2000) (holding that Brunswick's market share discounts were simply price cutting and, therefore, protected by the rule of *Brooke Group*).

Daubert. While *Daubert* reflects a belief that scientific and technical knowledge is objectively true and thus should meet criteria of testability, the process of judicial adoption of economic authority implicitly recognizes that economic knowledge may be socially constructed.

2. *Implementation of Economic Authority*

We are now in a position to discuss how courts make use of economic authority in formulating and applying antitrust rules. The implications of a theory allow courts to predict that a practice will have monopolistic effects in specified circumstances. Using these predictions, the courts can identify the sorts of factual inquiries necessary to determine whether liability is appropriate. Courts must then formulate rules that define the factual issues on which the outcome of the case depends. At the most general level, courts may choose to adopt a substantive rule of per se illegality or some version of the rule of reason. But there are many other decisional contexts that affect the outcome of litigation, including rules of antitrust injury or standing and rules defining evidentiary sufficiency. All of these rules define the domain of fact and, hence, the role of expert testimony.

The most sweeping use of economic authority occurs in the adoption of per se rules. When economic authority indicates that a practice would “always or almost always” reduce consumer welfare, a court may announce and apply a rule of per se illegality.¹²⁹ In such a case, the court uses economic authority to give economic content to the law *ex ante*, leaving a relatively narrow range of factual issues for trial courts.¹³⁰ Per se rules, of course, economize on the direct costs of litigation—no small consideration given the daunting evidentiary challenges in antitrust litigation.¹³¹ These costs might be acceptable if the investment in protracted litigation were likely to yield more accurate results, but antitrust commentators have been skeptical that the “big case” is worth its institutional costs.¹³² Apart from the sheer volume of evidence, the issues presented are often technical and remote from the judge’s or jury’s everyday experiences. Parties must, as in other kinds of cases, rely on narratives that describe the events in ways

¹²⁹ *Broad. Music, Inc. v. CBS*, 441 U.S. 1, 19–20 (1979).

¹³⁰ For a fuller discussion of how rules determine in advance what conduct is permissible, leaving only factual issues for courts, see generally Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 559–60 (1992).

¹³¹ MANUAL FOR COMPLEX LITIGATION § 33.1, at 300 (3d ed. 1995).

¹³² See, e.g., Andrew I. Gavil, *The End of Antitrust Trench Warfare?: An Analysis of Some Procedural Aspects of The Microsoft Trial*, ANTITRUST, Summer 1999, at 7 (considering procedural expedients in the Microsoft trial aimed at avoiding the costly and protracted proceedings typical of prior monopolization cases).

jurors will recognize as coherent;¹³³ but the business practices at issue in antitrust cases are not always easily understood in terms of a generalist factfinder's frame of reference.

These concerns at one time led the Supreme Court to justify rules of per se illegality by observing that "courts are of limited utility in examining difficult economic problems. Our inability to weigh, in any meaningful sense, destruction of competition in one sector of the economy against promotion of competition in another sector is one important reason we have formulated per se rules."¹³⁴ As this Article will show, the Court has also denied standing to entire classes of injured parties where it doubted the ability of litigation—even with expert witnesses—to measure individual harm accurately.¹³⁵ The court stressed that "in the real economic world rather than an economist's hypothetical model,' the latter's drastic simplifications generally must be abandoned."¹³⁶

Of course, the inability of courts to weigh actual competitive effects of a practice in litigation does not necessarily mean that the practice should be illegal per se. If the relevant economic authority suggests, *ex ante*, that the practice is unlikely to reduce competition, a rule of per se *legality* may be appropriate.¹³⁷ Some Chicago scholars have argued that there should be a default rule of legality for novel or complex practices because markets generally have a comparative advantage over courts in identifying and destroying monopolies; an erroneous determination that a practice is monopolistic is likely to be long-lasting and costly, while an erroneous determination that the practice is benign will eventually be corrected by market forces.¹³⁸

¹³³ See Joshua A. Newberg, *The Narrative Construction of Antitrust*, 12 S. CAL. INTERDISC. L.J. 181 (2003) (analyzing the competing narratives presented by the parties to the Microsoft litigation); Richard G. Parker, *Simplifying Antitrust Cases*, SH045 ALI-ABA 19 (Westlaw JLR Database) (2002) (describing the importance of presenting an antitrust case in a way that it is consistent with common sense and involves a "simple theme or two around which to organize the evidence").

¹³⁴ *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 609–10 (1972) (citations omitted).

¹³⁵ See *infra* Part III.D.1.

¹³⁶ See *Ill. Brick Co. v. Illinois*, 431 U.S. 720, 742 (1977) (quoting *Hanover Shoe, Inc. v. United Shoe Mach. Corp.*, 392 U.S. 481, 493 (1968)).

¹³⁷ See Richard A. Posner, *The Next Step in the Antitrust Treatment of Restricted Distribution: Per Se Legality*, 48 U. CHI. L. REV. 6, 23 (1981) ("The same considerations of judicial economy and legal certainty that justify the use of per se rules of illegality in some cases justify the use of rules of per se legality in others.").

¹³⁸ See Frank H. Easterbrook, *Comparative Advantage and Antitrust Law*, 75 CAL. L. REV. 983 (1987); see also Frank H. Easterbrook, *Information and Antitrust*, 2000 U. CHI. LEGAL F. 1, 18 (

Per se rules conserve on information and on the costs of litigation. They hold down the sum of excusing conduct that is harmful, condemning conduct that is beneficial, and inducing firms to steer clear of potentially beneficial practices that create risks of condemnation (or costly litigation). We apply per se rules of illegality to cartels and mergers to monopoly. We ap-

The Supreme Court has increasingly recognized the dangers of “false positives” in defined circumstances.¹³⁹

For institutional reasons, however, the Court has usually implemented Chicago models in less sweeping ways, which leave open avenues for factual refutation.¹⁴⁰ In *Sylvania*¹⁴¹ and in *Khan*,¹⁴² the only cases in which the Court has expressly abandoned rules of per se illegality, it replaced them with some version of the rule of reason rather than with the suggested rules of per se legality.¹⁴³

More commonly, the Court has used Chicago models to guide subsidiary inquiries, especially characterization, sufficiency of the evidence, and antitrust injury.¹⁴⁴ First, even if a practice, broadly defined, is per se unlawful, courts must characterize particular conduct as within or without the rule.¹⁴⁵ This inquiry involves a facial evaluation of the practice’s “obvious” tendencies in light of the policies underlying the rule—policies that necessarily reflect the implications of models by which courts understand the practices.¹⁴⁶ Should courts find the per se rule inapplicable, then some form of the rule of reason applies.

Second, courts must determine whether the evidence presented to prove the occurrence of a particular practice is sufficient to create a jury issue. Because sufficiency is a matter of law, the inquiry incorporates policy considerations, which may be guided by models. The Court has even suggested that the plausibility of a party’s theory, viewed in light of the relevant models of rational economic behavior, may influence the burden of production on the party proposing the

ply per se rules of legality in fact if not in name to the introduction of new products (although that may destroy desirable substitutes), to the redesign of old products (same potential effects), to price competition (provided price exceeds cost of manufacture), to charging what the traffic will bear (although that may extract monopoly profits), to expanding capacity (even though new plants may discourage entry), and to non-price vertical restraints. All of this we do on a categorical basis, for to examine the practice at hand in any detail is to abandon per se treatment.

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¹³⁹ See, e.g., *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 414 (2004) (“The cost of false positives counsels against an undue expansion of § 2 liability.”).

¹⁴⁰ See Page, *supra* note 11, at 49–53 (arguing that the Court’s hesitance to adopt rules of per se legality shows the influence of legal process jurisprudence); see also Richard A. Posner, *Reply: The Institutional Dimension of Statutory and Constitutional Interpretation*, 101 MICH. L. REV. 952, 958 (2003) (“Being a judge . . . brings institutional issues to the forefront of consciousness.”).

¹⁴¹ *Cont’l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977).

¹⁴² *State Oil Co. v. Khan*, 522 U.S. 3 (1997) (overruling the per se illegality of vertical maximum price fixing).

¹⁴³ *Id.* at 15–19; *Sylvania*, 433 U.S. at 55–59.

¹⁴⁴ Page, *supra* note 11, at 50–51.

¹⁴⁵ Page, *supra* note 9, at 1257–62.

¹⁴⁶ See *infra* Part III.C.1.

theory.¹⁴⁷ Finally, courts must determine whether the harm that the plaintiff suffered is compensable—that is, whether it constitutes anti-trust injury and whether the plaintiff has antitrust standing.¹⁴⁸ As discussed below, this process requires courts to consider the model of the alleged anticompetitive practice in determining whether the alleged injury bears the necessary relationship to the inefficiency associated with the practice.¹⁴⁹ All of these determinations allow courts, guided by economic authority, to structure the scope of factual inquiry, including the use of expert testimony.

B. Economic Authority and Expert Testimony in Antitrust Cases

To this point, we have shown that antitrust law incorporates economic theory by an unstructured process of judicial adoption. Courts pragmatically select among theories based upon explanatory value, ideology, and the legal process. This process, which establishes economic authority, normally precedes any consideration of expert testimony. The Court in *Khan*,¹⁵⁰ for example, rejected the assertion that it should not overturn the per se illegality of maximum resale price fixing without expert testimony showing that the per se rule had anticompetitive effects.¹⁵¹ Instead, the Court demanded evidence that the rule had positive effects: "It is the retention of the rule of *Albrecht*, and not . . . the rule's elimination, that lacks adequate justification."¹⁵² Notably, the Court referred approvingly to legal and economic scholarship arguing that the adverse effects predicted by *Albrecht* are either implausible or not anticompetitive.¹⁵³ In such instances, the unstructured adoption of economic authority, rather than the structured reception of expert testimony, is the primary mechanism by which antitrust law changes.

Once adopted, economic authority governs factual inquiries, including the use of expert testimony.¹⁵⁴ The pronounced fear of fact that produced the per se rules of antitrust law in pre-Chicago years

¹⁴⁷ Page, *supra* note 9, at 1287–90.

¹⁴⁸ *Id.* at 1268–78.

¹⁴⁹ See *infra* Part III.D.1.

¹⁵⁰ *State Oil Co. v. Khan*, 522 U.S. 3 (1997).

¹⁵¹ *Id.* at 19.

¹⁵² *Id.*

¹⁵³ *Id.* at 15. The Court observed: "Thus, our reconsideration of *Albrecht's* continuing validity is informed by several of our decisions, as well as a considerable body of scholarship discussing the effects of vertical restraints." *Id.*; see also Roger D. Blair & John E. Lopatka, *The Albrecht Rule After Khan: Death Becomes Her*, 74 NOTRE DAME L. REV. 123, 146–50 (1998) (describing the way the Supreme Court used economic authority to overrule the per se rule against vertical maximum price fixing).

¹⁵⁴ See, e.g., Posner, *supra* note 6, at 92 ("The expert will not be permitted to testify that antitrust law should not forbid price fixing, but will be permitted to testify that the defendants' pricing behavior is inconsistent with their having agreed to fix prices . . .").

has continued to manifest itself in the subsidiary decisional contexts we considered in the last section.¹⁵⁵ Courts have since, of course, opened up factual inquires for expert testimony. At the same time, however, they have expressed skepticism about the utility of expert testimony,¹⁵⁶ especially where it appears to be biased.¹⁵⁷ Because of these concerns, courts have not hesitated to use economic authority to define rules which limit the scope of expert testimony and to scrutinize expert testimony directly in those contexts in which the law permits it.

The previous section discussed the screens the Federal Rules of Evidence have established for expert testimony. This Part briefly describes how economic authority guides each of these screens in antitrust cases. The next section shows how courts have applied them in the particular antitrust contexts in which expert testimony has been most crucial.

1. *Qualifications*

Before examining the reliability, relevance, and sufficiency of expert testimony, a court must decide whether the proposed witness has sufficient “knowledge, skill, experience, training, or education” to qualify as an expert.¹⁵⁸ This requirement has been interpreted liber-

¹⁵⁵ See *Cal. Dental Ass'n v. FTC*, 224 F.3d 942, 959 (9th Cir. 2000) (

[The FTC's] complaint counsel made a tactical decision not to call a previously designated expert economist to counter the testimony of CDA's expert economist. Rather, complaint counsel focused on winning the case under *per se* or abbreviated rule of reason, evidently assuming that the economic literature would suffice to win the case under full-blown rule of reason if the Ninth Circuit or Supreme Court required a more onerous level of analysis.

); see also *In re Compact Disc Minimum Advertised Price Antitrust Litig.*, 216 F.R.D. 197, 212 (D. Me. 2003) (stating that the application of the rule of reason “will require expert testimony defining the market (geographically and by product) and will give the defendants the opportunity to assert business justifications”).

¹⁵⁶ See, e.g., *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 242 (1993) (“Expert testimony is useful as a guide to interpreting market facts, but it is not a substitute for them.”).

¹⁵⁷ See, e.g., *Lantec, Inc. v. Novell, Inc.*, 146 F. Supp. 2d 1140, 1154 (D. Utah 2001) (“[The witness] is clearly a hired gun and any semblance of objectivity is lacking. His opinions lack all indicia of reliability and as such can only confuse and mislead the jury.”); *In re Brand Name Prescription Drugs Antitrust Litig.*, No. 94 C 897, MDL 997, 1999 WL 33889, at *11 (N.D. Ill. Jan. 19, 1999) (asserting that the expert “abdicated entirely the concept of the independence of expert witnesses and simply became the sponsor for the Class Plaintiffs' theory of the case”), *rev'd on other grounds*, 186 F.3d 781 (7th Cir. 1999); *In re Aluminum Phosphide Antitrust Litig.*, 893 F. Supp. 1497, 1499–500, 1506–07 (D. Kan. 1995) (describing expert as “an expert for hire . . . driven by a desire to enhance the measure of plaintiffs' damages, even at the expense of well-accepted scientific principles and methodology”).

¹⁵⁸ FED. R. EVID. 702.

ally¹⁵⁹ and in most antitrust cases the expert's qualifications are not challenged.¹⁶⁰ Antitrust litigation involves large stakes, and expert testimony is often necessary to success. Consequently, the parties in antitrust cases usually have sufficient means and awareness of the issues to choose a qualified expert. Most disputes over expertise relate to the proposed testimony itself, which may be inadmissible, irrelevant, or insufficient even if the witness is a distinguished economist.¹⁶¹

Nevertheless, proposed experts *are* sometimes disqualified, for example, on grounds of inadequate education, teaching, or scholarship.¹⁶² Disqualification, when it occurs, is a necessary implication of economic authority, because the increased sophistication of the economic theory on which antitrust law is based all but forecloses nonacademic experts, and even otherwise qualified economic experts who are not familiar with antitrust law.¹⁶³ Thus, prior testimony in antitrust cases,¹⁶⁴ "general business experience unrelated to antitrust economics,"¹⁶⁵ and training in engineering and experience in market analysis as a business consultant¹⁶⁶ have all been found insufficient

¹⁵⁹ See, e.g., *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 741 (3d Cir. 1994) ("Rule 702's liberal policy of admissibility extends to the substantive as well as the formal qualification of experts."); *Berlyn, Inc. v. Gazette Newspapers, Inc.*, 214 F. Supp. 2d 530, 534 (D. Md. 2002); *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 198 F. Supp. 2d 598, 602 (E.D. Pa. 2002).

¹⁶⁰ See, e.g., *Sanner v. Bd. of Trade of Chicago*, No. 89 C 8467, 2001 WL 1155277, at *3 (N.D. Ill. Sept. 28, 2001); *In re Polypropylene Carpet Antitrust Litig.*, 93 F. Supp. 2d 1348, 1353 (N.D. Ga. 2000).

¹⁶¹ See, e.g., *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1046, 1057 (8th Cir. 2000) (holding that testimony of Stanford economist should have been excluded); *Brand Name Prescription Drugs Antitrust Litig.*, 1999 WL 33889, at *10-11 (excluding the testimony of Nobel Prize economist).

¹⁶² See, e.g., *Thomas J. Kline, Inc. v. Lorillard, Inc.*, 878 F.2d 791, 799-800 (4th Cir. 1989) ("[T]his witness cannot satisfy even the minimal requirements of Fed. R. Evid. 702."); *Berlyn, Inc. v. Gazette Newspapers, Inc.*, 214 F. Supp. 2d 530, 533-36 (D. Md. 2002); *Bailey v. Allgas, Inc.*, 148 F. Supp. 2d 1222, 1237 (N.D. Ala. 2000) (finding expert's lack of expertise "staggering"), *aff'd*, 284 F.3d 1237 (11th Cir. 2002).

¹⁶³ See *W. Parcel Exp. v. United Parcel Serv. of Am., Inc.*, 65 F. Supp. 2d 1052, 1060 (N.D. Cal. 1998) (granting summary judgment for failure to establish the relevant market, and noting that "neither [of plaintiff's experts] has a background in antitrust economics, both disclaimed expertise in antitrust law in their depositions, and neither has offered an opinion on the definition of relevant markets in antitrust litigation"), *aff'd*, 190 F.3d 974 (9th Cir. 1999).

¹⁶⁴ See *Thomas J. Kline*, 878 F.2d at 800 ("[I]t would be absurd to conclude that one can become an expert simply by accumulating experience in testifying.")

¹⁶⁵ *Id.* (reversing district court on admissibility issue for abuse of discretion); see *Berlyn*, 214 F. Supp. 2d at 536. *But see* *Conwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 793 (6th Cir. 2002) (finding that a damage award was supported in part by the testimony of plaintiff's CEO that, but for defendant's conduct, plaintiff "would have had a national market share of approximately 22 to 23 percent").

¹⁶⁶ See *Virginia Vermiculite, Ltd. v. W.R. Grace & Co.*, 98 F. Supp. 2d 729, 732 (W.D. Va. 2000). The proposed witness had no apparent understanding of basic economic concepts, such as elasticity of demand. *Id.* at 734-35.

qualifications. Even economic expertise in one industry may not qualify a witness to testify concerning a separate industry.¹⁶⁷

2. *Relevance and Helpfulness*

Economic authority determines the relevance of expert testimony. First, it forecloses expert testimony not directed to the factual issues that the law defines: "Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful."¹⁶⁸ In *Daubert* terms, courts may make an expert's testimony irrelevant or lacking in fit by adopting or interpreting economic authority. For example, the Court's retention of the per se rule against horizontal price fixing forecloses the use of expert (or other) testimony to show that a naked cartel agreement, if established by direct evidence, did not cause competitive harm in a particular case.¹⁶⁹ Similarly, as this Article will show in more detail below, the Court's adoption of a test expressed in economic terms, like an incremental cost test for predatory pricing, renders irrelevant any expert's testimony based on any other measure of cost.¹⁷⁰ On the other hand, the Court may adopt a rule that explicitly or implicitly contemplates the use of expert testimony. The Court's rejection of a per se rule, whether per se lawful or unlawful, typically implies the need for expert testimony to show the requisite competitive effect.

Even if expert testimony is relevant to an issue in the case, it may still be unhelpful. For instance, an expert's testimony might be redundant or the issue sufficiently simple to be within the common understanding of lay jurors. The test of "helpfulness" implies an assessment of the *marginal* benefit of the testimony in informing the trier of fact. In addition, if the issue is not within the witness's expertise, the testimony is unhelpful.¹⁷¹ For all the influence of economic

¹⁶⁷ See *Lantec, Inc. v. Novell, Inc.*, 306 F.3d 1003, 1025 (10th Cir. 2002) (agreeing with district court that economics expert did not understand computers or the computer market); *In re Baby Food Antitrust Litig.*, 166 F.3d 112, 134 (3d Cir. 1999) (faulting the expert for knowing nothing about the baby food industry). Although certain qualifications are necessary, multiplication of "credentials" does not necessarily make a witness more credible, and may mislead jurors. Jeffrey Harrison argues that courts should constrain appeals to "institutional authority" where credentials are duplicative or irrelevant to the question of competence. See Harrison, *supra* note 54, at 294-301.

¹⁶⁸ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 591 (1993) (quoting 3 JACK B. WEINSTEIN & MARGARET A. BERGER, *WEINSTEIN'S EVIDENCE* ¶ 702[02], at 702-18 (1988)).

¹⁶⁹ *Arizona v. Maricopa County Med. Soc'y*, 457 U.S. 332, 351 (1982) ("The anticompetitive potential inherent in all price-fixing agreements justifies their facial invalidation even if procompetitive justifications are offered for some.").

¹⁷⁰ See *infra* Part III.A.

¹⁷¹ *City of Tuscaloosa v. Harcros Chems., Inc.*, 158 F.3d 548, 567 n.27 (11th Cir. 1998) (noting in dicta that the expert's "opinions regarding the legal standards applicable to the case are outside of his competence as an economist (and are erroneous) and should be excluded").

authority on antitrust law, not all rules of antitrust law are stated in purely economic terms. To the extent that a rule of law incorporates non-economic terms, an economic expert should not be permitted to testify that the rule is or is not satisfied.¹⁷² For example, as discussed later, the Sherman Act does not frame the definition of "agreement" in purely economic terms. Though experts may testify to a number of subsidiary issues relevant to the existence of an agreement, they may not testify to the ultimate issue of whether an agreement exists within the meaning of the statute.

3. *Reliability*

Most of the *Daubert* opinion dealt with the requirement that an expert's methodology be scientifically reliable. This aspect of *Daubert* has provoked the most discussion in antitrust circles because of its potential effect on the way courts treat expert testimony regarding economics, which some have argued is not a science.¹⁷³ Defining the line between science and non-science, however, is less important after *Kumho Tire*,¹⁷⁴ which extended the reliability inquiry to all expert testimony, including economic testimony in antitrust cases.¹⁷⁵ Courts will scrutinize an economist's methodology to ensure that the expert has assembled reliable data, selected reliable principles, and applied the principles in a reliable way.¹⁷⁶ This inquiry is common, as the next Part will show, when expert economists rely on statistical methods such as a multiple regression analysis. In those cases, courts examine

¹⁷² See *infra* Part III.C.2 (discussing expert testimony on the issue of collusion).

¹⁷³ Many have questioned whether economics is truly a "science," given the difficulty of testing the implications of economic models by the scientific method. See Gaval, *supra* note 1, at 675 (arguing that "the testability and rate of error factors from *Daubert* did not contemplate economics, or any other social science for that matter"); see also Brooks Fiber Communications of Tucson, Inc. v. GST Tucson Lightwave, Inc., 992 F. Supp. 1124, 1132 (D. Ariz. 1997) (holding that *Daubert* did not apply to expert economist testimony using "basic economic modeling principles regarding price and cross-elasticity"); Bell Ad. Bus. Sys. Servs., Inc. v. Hitachi Data Sys. Corp., 1995-2 Trade Cas. (CCH) ¶ 71,259, at 76,130-31 (N.D. Cal. 1995) (holding that *Daubert* was not applicable to expert's testimony concerning whether and how consumers perform total cost of ownership analysis).

¹⁷⁴ *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999).

¹⁷⁵ See *Coastal Fuels, Inc. v. Caribbean Petroleum Corp.*, 175 F.3d 18, 34 n.12 (1st Cir. 1999) ("The district court's gatekeeping function extends to all expert evidence, including economic analysis, not merely to evidence involving scientific conclusions." (citing *Kumho Tire*, 526 U.S. at 138)); see also Hovenkamp, *supra* note 1, at 121 (discussing pre-*Kumho Tire* precedent).

¹⁷⁶ See *Coastal Fuels*, 175 F.3d at 34 (stating that "*Daubert* requires 'that the proponent of the evidence show that the expert's conclusion has been arrived at in a scientifically sound and methodologically reliable fashion'" (quoting *Ruiz-Troche v. Pepsi Cola Bottling Co.*, 161 F.3d 77, 85 (1st Cir. 1998))).

the data set itself, in addition to the selection and use of statistical methods.¹⁷⁷

Reliability differs from relevance. One court erroneously suggested that an expert's "methodology must be guided by the controlling legal principle, and to the extent that the expert ignores that principle, the expert's testimony fails *Daubert's* test of a reliable methodology."¹⁷⁸ This statement confuses *Daubert's* methodological inquiry with its requirement that the testimony be relevant to the issues defined by the law. An economic expert may propose to offer methodologically sound testimony unexceptionable among economists, yet excluded as irrelevant or held insufficient to support a jury verdict, *if the fact is not in issue under the appropriate legal standard.*

Reliability is nevertheless related to relevance because antitrust law imposes significant constraints on methodology. The economic authority underlying antitrust rules may have methodological implications that displace or overlap with professional criteria of reliability. Most disputes over the reliability of economic testimony in antitrust cases turn on the requirements that the testimony be "based upon sufficient facts or data" and that it rest upon "reliable principles and methods."¹⁷⁹ Courts say that the expert must have "applied the principles and methods reliably to the facts of the case," and that the testimony must "incorporate all aspects of the economic reality of the . . . market," including "inconvenient" evidence.¹⁸⁰ Moreover, under *Joiner*,¹⁸¹ even if the methodology is sound, the testimony may still be excluded if "there is simply too great an analytical gap between the data and the opinion proffered."¹⁸²

Antitrust law, however, has also incorporated criteria like these into the framework of liability itself. The determination of issues such as the definition of "relevant market" requires the consideration of both empirical studies and theoretical models. For example, in *Microsoft*,¹⁸³ the court of appeals rejected the plaintiff's definition of the market for Internet browsers because there was insufficient evi-

¹⁷⁷ See, e.g., *Conwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 793 (6th Cir. 2002); *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1056–58 (8th Cir. 2000); *Blomkest Fertilizer, Inc. v. Potash Corp.*, 203 F.3d 1028, 1038 (8th Cir. 2000); *Blue Dane Simmental Corp. v. Am. Simmental Ass'n*, 178 F.3d 1035, 1040–41 (8th Cir. 1999); *In re Polypropylene Carpet Antitrust Litig.*, 93 F. Supp. 2d 1348, 1358 (N.D. Ga. 2000); *In re Aluminum Phosphate Antitrust Litig.*, 893 F. Supp. 1497, 1504 (D. Kan. 1995).

¹⁷⁸ *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 198 F. Supp. 2d 598, 607 (E.D. Pa. 2002).

¹⁷⁹ FED. R. EVID. 702.

¹⁸⁰ *Concord Boat*, 207 F.3d at 1056–57.

¹⁸¹ *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997).

¹⁸² *Id.* at 146.

¹⁸³ *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

dence in the record to support it.¹⁸⁴ The court could have reached this same result using *Daubert* criteria for reliability.¹⁸⁵ Instead, the court faulted the testimony of the plaintiff's experts on the issue for "uncertainty"¹⁸⁶ because it offered "little more than conclusory statements" rather than concrete evidence.¹⁸⁷ The court's analysis of the fit and reliability of the expert's testimony made no reference to *Daubert*. Instead, the court treated the requirements of certainty and supporting evidence as part of the legal standard for market definition. This characterization of the issue bypassed the *Joiner* rule that trial court rulings on the admissibility of evidence are reviewable only for an abuse of discretion;¹⁸⁸ the legal sufficiency of the evidence is reviewable de novo.

The approach to expert testimony in *Microsoft* illustrates a more general point about the significance of *Daubert* for antitrust. Before *Daubert* purportedly relaxed the standards for admissibility of expert testimony, federal courts evaluated scientific testimony under *Frye v. United States*,¹⁸⁹ which focused on whether the expert's methodology had gained general acceptance in the relevant field.¹⁹⁰ Significantly, courts in antitrust cases never applied the *Frye* test,¹⁹¹ yet they now routinely apply the *Daubert* trilogy. Thus, while *Daubert* "may create a less stringent evidentiary standard than *Frye*, its standard appears to apply to a greater range of expert testimony."¹⁹² Nevertheless, both

¹⁸⁴ *Id.* at 82–83.

¹⁸⁵ For an example, see *Worldwide Basketball and Sports Tours, Inc. v. NCAA*, 273 F. Supp. 2d 933, 944 (S.D. Ohio 2003), in which the court excluded, on *Daubert* grounds, expert testimony that pre- and post-season college basketball tournaments are a submarket of the market for Division I college basketball. The court noted that the expert "fail[ed] to offer a basis from which to conclude that this [was] an appropriate definition," and instead "testified in conclusory fashion as to the definition and parameters of this submarket." *Id.* The court concluded that the "testimony as to tournament games submarket lacks a sufficient indicia of reliability to be admissible for purposes of Rule 702." *Id.*

¹⁸⁶ *Microsoft*, 253 F.3d at 83.

¹⁸⁷ *Id.* "Simply invoking the phrase 'network effects' without pointing to more evidence does not suffice to carry plaintiffs' burden in this respect." *Id.* at 84.

¹⁸⁸ It is fairly rare to find explicit appellate applications of the *Joiner* rule to expert testimony in antitrust cases, though such examples do exist. See, e.g., *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1323 (11th Cir. 2003) (affirming exclusion); *Couwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 781, 792–95 (6th Cir. 2002) (affirming refusal to exclude); *Coastal Fuels, Inc. v. Caribbean Petroleum Corp.*, 175 F.3d 18, 33–34 (1st Cir. 1999) (affirming refusal to exclude); *City of Tuscaloosa v. Harco Chem., Inc.*, 158 F.3d 548, 562–65 (11th Cir. 1998) (reversing some exclusions and affirming others).

¹⁸⁹ 293 F. 1013 (D.C. Cir. 1923).

¹⁹⁰ *Id.* at 47.

¹⁹¹ See Christopher B. Hockett & Frank M. Hinman, *Admissibility of Expert Testimony in Antitrust Cases: Does Daubert Raise a New Barrier to Entry for Economists?*, ANTITRUST, Summer 1996, at 40, 42.

¹⁹² *Id.*

judges¹⁹³ and mainstream economists¹⁹⁴ have expressed the belief that courts in antitrust cases do not disregard expert testimony much more after *Daubert* than they did in the years immediately before. This should not be surprising. Economic authority is embodied in rules defining the elements of antitrust offenses, the requirements for antitrust injury, and other substantive antitrust rules guiding both the methodology and relevance of economic testimony. Consequently, economic authority pervasively controlled antitrust decisionmaking before *Daubert*, and it continues to do so regardless of the procedural heading under which courts deploy it.

4. *Sufficiency*

The primacy of economic authority is perhaps most evident in the criteria for the legal sufficiency of evidence. As *Daubert* itself emphasized, expert testimony, even if admissible, may be found insufficient to create an issue of fact for a jury.¹⁹⁵ Thus, a court's finding that evidence meets the threshold standard of reliability does not bar the court from finding the evidence insufficient to raise a jury issue—even on the specific issue the testimony addresses. More importantly, the issues of relevance and helpfulness also necessarily affect sufficiency. A court will grant summary judgment to the defendant if it finds that the plaintiff's expert's testimony is irrelevant because the testimony applies a standard inconsistent with economic authority.¹⁹⁶ The same result could follow if the court allowed expert testimony on subsidiary legal issues, but excluded testimony on the ultimate issue on the ground that such testimony was outside the expert's area of expertise. In such a case, the court would be required to determine whether a jury, based on the expert's evidence, could reasonably infer the existence of the necessary fact from all of the evidence, including the expert's testimony on the subsidiary issues.

In antitrust cases, however, economic authority has a special role in the analysis of the sufficiency of evidence. In some instances, the Court has placed particular weight on certain theoretical propositions about business behavior and its relationship to antitrust policy. Where the Court has determined, based on economic authority, that allegations "make[] no economic sense,"¹⁹⁷ it has required more than the usual amount of evidence of the conduct to create a jury issue. In

¹⁹³ See *Interview with Judge Kathryn Vratil*, ANTITRUST, Spring 2003, at 19, 20–21 (stating that while *Daubert* motions are burdensome and frequently unsuccessful, they are often nonetheless useful because they facilitate an early evaluation of the economic issues in the case).

¹⁹⁴ See *Economists' Roundtable*, ANTITRUST, Spring 2003, at 8, 14.

¹⁹⁵ See *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993).

¹⁹⁶ See *infra* Part III.

¹⁹⁷ *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986).

effect, the Court increased the plaintiff's burden of production on the issue. In such circumstances, the Court has approved summary judgment even where expert testimony on the issue was admissible.¹⁹⁸ Once again, economic authority defines the role of expert testimony; the sufficiency inquiry "forces the antitrust judge to get into the expert's discipline itself, rejecting the expert's own substantive conclusions in favor of the judge's own."¹⁹⁹

III JUDICIAL CONTROL OF EXPERT TESTIMONY IN CRITICAL CONTEXTS

Thus far, this Article has considered the rubrics under which courts decide whether juries will be allowed to consider expert testimony on antitrust issues. A court may disqualify an expert altogether. If the expert is found qualified, the court may still exclude the expert's testimony on a motion in limine on the ground that it is irrelevant, unhelpful, or unreliable. Even if the testimony is not excluded at this stage, the court may consider its consistency with legal standards and its sufficiency to create a jury issue on a motion for summary judgment or on a motion for judgment as a matter of law. Thus, many of the same issues considered on the motion in limine may be considered at various points in the process of adjudication. The procedural context is less important in determining the extent of judicial control than the applicable economic authority.

This Part examines how the Supreme Court and the lower federal courts have used economic authority to control expert testimony in the doctrinal contexts in which it has proven most important.²⁰⁰ In each case, courts have confined expert testimony by formulating rules defining the offense and the scope of liability. Having defined the boundaries of the offense, courts then police the boundaries by evidentiary rulings on either admissibility (usually for relevance) or sufficiency. In some instances, courts have used the *Daubert* inquiry to examine methodologies against the standard of the economics profession. The extent and effect of judicial control vary depending upon the nature of the issue the court must resolve.

198 *Id.* at 598.

199 Hovenkamp, *supra* note 1, at 137.

200 Our concern is with the mechanisms for judicial deployment of economic authority. The substance of the legal and economic ideas at issue is incidental to this discussion, and we have not, for obvious practical reasons, attempted a comprehensive survey of the economic ideas relevant to antitrust decisionmaking.

A. Predatory Pricing

The subject of predatory pricing has generated more academic heat than any other antitrust issue of the last twenty years.²⁰¹ Economists have debated the circumstances in which price-cutting may lead to inefficient results and have proposed a myriad of tests by which the courts should identify predatory pricing.²⁰² From this spectrum, the Supreme Court has chosen a Chicago School analysis of predation, including both theoretical models and broad empirical estimates of the significance of the practice.²⁰³ Earlier courts had assumed that a dominant firm could use retained earnings or profits from other markets to finance a campaign of low pricing to eliminate existing rivals and deter new entrants. The Chicago critique, however, suggested that certainty of present losses to the dominant firm in such a campaign, combined with the uncertainty of future profits, made the conventional story of predatory pricing dubious.²⁰⁴ Under this analysis, predation is an implausible explanation for a dominant firm's behavior in a price war because only in rare circumstances would predation be rational, profit-maximizing behavior. Thus, most instances of aggressive price-cutting are beneficial to consumers both initially and in the long run. The policy implication was either that price-cutting should be per se lawful²⁰⁵ or that the test for its existence should be stringently drawn to avoid overdeterrence. The Court has opted for the latter course, making the claim of predatory pricing difficult—but not impossible—to sustain.²⁰⁶ The adoption of this view of predatory pricing as economic authority has drastically narrowed the scope of expert testimony in predatory pricing cases.

²⁰¹ For a survey of the early literature, see Joseph F. Brodley & George A. Hay, *Predatory Pricing: Competing Economic Theories and the Evolution of Legal Standards*, 66 CORNELL L. REV. 738 (1981). For more recent treatments, see Aaron S. Edlin, *Stopping Above-Cost Predatory Pricing*, 111 YALE L.J. 941 (2002) and Einer Elhauge, *Why Above-Cost Price Cuts to Drive Out Entrants Are Not Predatory—and the Implications for Defining Costs and Market Power*, 112 YALE L.J. 681 (2003).

²⁰² See, e.g., John S. McGee, *Predatory Pricing Revisited*, 23 J.L. & ECON. 289, 304–26 (1980).

²⁰³ See Page, *supra* note 9, at 1287–90 (discussing the Court's analysis in *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 547 (1986), and the extension of that analysis in *Ind. Grocery, Inc. v. Super Valu Stores, Inc.*, 864 F.2d 1409, 1415–16 (7th Cir. 1989)).

²⁰⁴ See ROBERT H. BORK, *THE ANTITRUST PARADOX* 149–54 (1978); McGee, *supra* note 202, at 294–300. But see Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 939–44 (1979) (criticizing McGee's and Bork's orthodox Chicago theory that predatory pricing is irrational, and in the long run improbable, merely because of the ill effects on the predator's short run profits).

²⁰⁵ See generally BORK, *supra* note 204, at 144–54 (discussing and critiquing the theory and techniques of predation).

²⁰⁶ See, e.g., *Beech Nut Nutrition Corp. v. Gerber Prods. Co.*, 69 Fed. Appx. 350, 352–53 (9th Cir. 2003) (upholding the sufficiency of plaintiff's predatory pricing claim).

In *Matsushita*,²⁰⁷ the Court made perhaps its most explicit use of the Chicago models to affirm a summary judgment. The case alleged a twenty-year conspiracy by Japanese firms to charge predatory prices on sales of electronic products in the United States.²⁰⁸ The Court discerned a "consensus among commentators that predatory pricing schemes," even by a single firm, "are rarely tried, and even more rarely successful."²⁰⁹ In *Matsushita* itself, the alleged predation was even less plausible because the defendants would have had to organize and maintain a cartel over many years to put the scheme into effect. Thus, the improbability of either a stable cartel or a successful campaign of predatory pricing combined to make the claim especially implausible. To make matters worse, an erroneous finding of liability would "chill the very conduct the antitrust laws are designed to protect"—in this case price-cutting, which "is the very essence of competition."²¹⁰

The *Matsushita* Court did not, however, adopt a standard of *per se* legality, as some Chicagoans had proposed. Instead, the Court relied on the theoretical critique to alter the standard for summary judgment: if the defendants "had no rational economic motive to conspire . . . , and if [defendants'] conduct is consistent with other, equally plausible explanations, the conduct does not give rise to an inference of conspiracy."²¹¹ Where the claim alleges a type of conduct, such as predatory pricing, that is intrinsically implausible *in light of the relevant economic authority*, the plaintiff must offer more concrete evidence that the conduct is monopolistic. The higher burden on the plaintiff carries with it a higher standard of sufficiency of evidence to create a jury question. In *Matsushita*, the combination of implausibilities justified summary judgment.²¹²

The Court dismissed as insignificant the plaintiffs' expert testimony "that petitioners had sold their products in the American market at substantial losses."²¹³ The district court originally excluded the testimony on the grounds that it was based on assumptions about the defendants' costs that were implausible and inconsistent with the evidence.²¹⁴ The court of appeals, however, reversed the district court on this issue.²¹⁵ The Supreme Court did not disagree, but nevertheless relied on the substance of the district court's ruling to discount

²⁰⁷ *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986).

²⁰⁸ *Id.* at 574–78.

²⁰⁹ *Id.* at 588.

²¹⁰ *Id.* at 594.

²¹¹ *Id.* at 596–97.

²¹² *Id.* at 579, 580, 598.

²¹³ *Id.* at 594 n.19.

²¹⁴ *Zenith Radio Corp. v. Matsushita Electric Indus. Co.*, 505 F. Supp. 1313, 1356–63 (E.D. Pa. 1980).

²¹⁵ Unlike the district court, the court of appeals thought the expert's testimony was helpful to the jury:

the probative value of the testimony. The Court held that "the expert opinion evidence of below-cost pricing has little probative value in comparison with the economic factors . . . that suggest that such conduct is irrational."²¹⁶ The Court thus explicitly subordinated expert testimony on an issue of fact to the Court's own inferences from models it had adopted as economic authority. The theoretical critique of the predatory pricing doctrine was sufficiently powerful to reduce to insubstantiality admissible expert testimony that the pricing was below cost.

The expert's report, discussed at greater length in Justice White's dissent, portrayed the defendants as participating in a cartel whose aim was to raise prices in the Japanese market but to lower them in the United States.²¹⁷ Thus, in Justice White's view, the American manufacturers were injured not only by predatory pricing, but also by the larger illegal cartel agreement, of which predation was only a part. The report "alone creates a genuine factual issue regarding the harm to respondents caused by Japanese cartelization and by agreements restricting competition among petitioners in this country."²¹⁸ Justice White caustically observed, "No doubt the Court prefers its own economic theorizing to Dr. DePodwin's, but that is not a reason to deny the factfinder an opportunity to consider Dr. DePodwin's views on how petitioners' alleged collusion harmed respondents."²¹⁹ Moreover, Justice White challenged the majority's insistence that the plausibility of the defendants' scheme depends upon a measure of profit maximization rather than growth maximization, which, he said, should have been given to the jury as an issue of fact.²²⁰

What the court in effect did was to eliminate all parts of the report in which the expert economist, after describing the conditions in the respective markets, the opportunities for collusion, the evidence pointing to collusion, the terms of certain undisputed agreements, and the market behavior, expressed the opinion that there was concert of action consistent with plaintiffs' conspiracy theory. Considering the complexity of the economic issues involved, it simply cannot be said that such an opinion would not help the trier of fact to understand the evidence or determine that fact in issue.

In re Japanese Elec. Prods. Antitrust Litig., 723 F.2d 238, 280 (3d Cir. 1983), *rev'g*, *Matsushita*, 505 F. Supp. at 1342-46.

²¹⁶ *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 594 n.19 (1986).

²¹⁷ *Id.* at 602 n.2 (White, J., dissenting).

²¹⁸ *Id.* at 603 (White, J., dissenting).

²¹⁹ *Id.* (White, J., dissenting).

²²⁰ *Id.* at 604 (White, J., dissenting) (

The Court, in discussing the unlikelihood of a predatory conspiracy, also consistently assumes that petitioners valued profit-maximization over growth. . . . In light of the evidence that petitioners sold their goods in this country at substantial losses over a long period of time, . . . I believe that this is an assumption that should be argued to the factfinder, not decided by the Court.

).

The majority rejected the substance of Justice White's argument by characterizing the higher prices in Japan as irrelevant to the predation claim in the United States.²²¹ Even if the cartel prices in Japan provided the means to sustain long-term losses, that fact did not supply a motive, without which the alleged scheme remained implausible.²²² The majority did not respond directly to Justice White's argument for the primacy of expert testimony, but it evidently believed that economic authority (what Justice White called the Court's "own economic theorizing") could set limits on the range of acceptable expert opinion.

In *Brooke Group*,²²³ the Court refined the standard for predatory pricing into a two-part test. First, the plaintiff must show that defendant's prices are below an appropriate measure of cost.²²⁴ Second, the plaintiff must prove that the defendant "had a reasonable prospect . . . of recouping its investment in below-cost prices."²²⁵ Both of these requirements have imposed significant constraints on experts. The first requirement excludes all expert opinion that even above-cost pricing may be predatory, regardless whether that proposition is respected among economists.²²⁶ Then-Judge (now Justice) Breyer had reasoned in an earlier case that, even if above-cost price cutting by dominant firms could be theoretically inefficient, the law should not recognize claims on this basis for institutional reasons associated with the legal process:

[A] price cut that ends up with a price exceeding total cost—in all likelihood a cut made by a firm with market power—is almost certainly moving price in the "right" direction (towards the level that would be set in a competitive marketplace). The antitrust laws very rarely reject such beneficial "birds in hand" for the sake of more speculative (future low-price) "birds in the bush."²²⁷

²²¹ *Id.* at 593 ("[T]here is nothing to suggest any relationship between petitioners' profits in Japan and the amount petitioners could expect to gain from a conspiracy to monopolize the American market.").

²²² *See id.*

²²³ *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993).

²²⁴ *Id.* at 223.

²²⁵ *Id.* at 224.

²²⁶ *See, e.g.*, Edlin, *supra* note 201, at 941 (arguing that "there is no compelling reason to restrict predation cases to below-cost pricing, as above-cost pricing can also hurt consumers by limiting competition"); *see also* Hovenkamp, *supra* note 1, at 138 (suggesting that the requirement of below-cost predatory pricing "has little to do with economic theories of limit pricing" and everything to do with "perceived limitations in the fact finding process").

²²⁷ *Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 233–34 (1st Cir. 1983); *see also Matsushita*, 475 U.S. at 594 (placing a special evidentiary burden on predatory pricing claims because outlawing a practice that brings lower prices to consumers is "especially costly" since "cutting prices in order to increase business often is the very essence of competition").

The Supreme Court in *Brooke Group* likewise suggested that “it would be illogical to condemn” an above-cost price cut because to do so would deter price cutting that might undermine a noncompetitive price structure, and, in any event, such a policy would “depriv[e] consumers of the benefits of lower prices in the interim.”²²⁸ In effect, above-cost pricing, no matter how destructive to competitors, falls within a “safe harbor”²²⁹—a form of per se legality.²³⁰

Thus, the Court acknowledged that above-cost price-cutting might impose social costs, but for institutional reasons rejected any rule imposing liability. In these situations, the immediate and obvious benefit to consumers outweighs as a matter of law the potential social cost, even though the latter may predominate in theory. Thus, even if a plaintiff’s expert proposed to testify that prices above average total cost were predatory, the testimony would be insufficient as a matter of law.²³¹ Even if the testimony were admitted and the expert testified that the defendant’s price-cutting drove the plaintiff from the market, and, as a result, prices in the market increased, the plaintiff would still lose as a matter of law.²³²

Brooke Group’s definition of a predatory price went still further. The Court referred to “incremental cost” in its adoption of the requirement that prices be below cost.²³³ Because the parties had agreed “that the relevant measure of cost is average variable cost,” the Court explicitly “declin[ed] to resolve the conflict among the lower courts over the appropriate measure of cost.”²³⁴ Nevertheless, *Brooke Group* appears to point toward some measure of incremental cost

²²⁸ *Brooke Group*, 509 U.S. at 223–24; see also *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1060–63 (8th Cir. 2000) (holding that Brunswick’s market share discounts were simply price cutting and, therefore, protected by *Brooke Group*). But cf. *LePage’s, Inc. v. 3M*, 324 F.3d 141, 162–63 (3d Cir. 2003) (holding that bundled rebates covering multiple product lines, combined with exclusive dealing arrangements, were illegally exclusionary even if above cost).

²²⁹ 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW*, ¶ 735, at 318 (rev. ed. 1996).

²³⁰ The Court also noted that “[a]lthough unsuccessful predatory pricing may encourage some inefficient substitution toward the product being sold at less than its cost, unsuccessful predation is in general a boon to consumers.” *Brooke Group*, 509 U.S. at 224.

²³¹ See *Virgin Atl. Airways Ltd. v. British Airways PLC*, 257 F.3d 256, 268–69 (2d Cir. 2001) (affirming summary judgment where the plaintiff, despite its expert’s testimony, “failed in its burden to show below cost pricing”).

²³² See *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1444 (9th Cir. 1995). Consequently, the losses suffered by competitors during this period “are not the stuff of antitrust injury. It would be incongruous to award damages to plaintiffs for actions that in general benefit consumer welfare.” *Id.*

²³³ *Brooke Group*, 509 U.S. at 223 (observing that, although earlier cases had reserved the question of whether a predatory price could be “above some measure of incremental cost,” those cases’ reasoning implied that “only below-cost prices should suffice” (citations omitted)).

²³⁴ *Id.* at 222 n.1.

rather than average total cost as the relevant standard. This refinement of the rule imposes still more onerous restrictions on experts who propose to testify that price cuts are predatory.²³⁵

In *American Airlines*,²³⁶ for example, the government alleged that American strategically added capacity on four core routes from its Dallas hub in order to drive out low-cost carriers and garner monopoly profits, both on those routes and on others where it had established a reputation for predation.²³⁷ Characterizing the charge as predatory pricing,²³⁸ the courts held that the alleged pricing behavior was non-predatory as a matter of law, even though, as the court of appeals acknowledged, recent post-Chicago theories of predatory pricing justified greater receptiveness to claims of predation.²³⁹ The court scrutinized the government experts' testimony, which purported to show that American priced below the various measures of cost that American itself used in making business decisions.²⁴⁰ The court concluded that the testimony was insufficient to create a jury issue, holding that marginal cost is the appropriate theoretical standard for judging whether prices are predatory, that any proxy for marginal cost "must be accurate and reliable in the specific circumstances of the case at bar," and that average variable cost is such a proxy.²⁴¹ The government's proposed cost tests, however, were not proxies for marginal cost, or its close relative incremental cost. Consequently, those tests were "implicitly ruled out by *Brooke Group's* mention of incremental

²³⁵ Cf. *Stearns Airport Equip. Co. v. FMC Corp.*, 170 F.3d 518, 533 n.14 (5th Cir. 1999) (affirming summary judgment where the expert erroneously assumed that the law "allowed a finding of predation when prices are above a firm's variable costs but below a 'short-run profit maximizing price'"); *Rebel Oil Co. v. Atl. Richfield Co.*, 146 F.3d 1088, 1095 (9th Cir. 1998) (finding the expert's use of opportunity cost in predatory-pricing scheme as the measure of defendant's cost was improper as a matter of law).

²³⁶ *United States v. AMR Corp.*, 335 F.3d 1109 (10th Cir. 2003), *aff'g* 140 F. Supp. 2d 1141 (D. Kan. 2001).

²³⁷ *Id.* at 1111.

²³⁸ *AMR*, 140 F. Supp. 2d at 1193 ("The anti-competitive conduct alleged . . . is predatory pricing: that American, in the face of low fare carrier competition, shifted from its traditional strategy and adopted competitive tools which combined price reductions and capacity increases, and that the cost of these tools was greater than the revenue obtained."), *aff'd*, 335 F.3d 1109, 1115 n.6 ("While the specific behavior complained of in the instant case is an increase in output or frequency, these actions must be analyzed in terms of their effect on price and cost.").

For a criticism of the court's characterization of American's practices as predatory pricing, see Gregory J. Werden, *The American Airlines Decision: Not with a Bang but a Whimper*, ANTITRUST, Fall 2003, at 32, 33 (arguing that the government was essentially challenging American Airline's strategy of flying empty seats in excess of those needed for available passengers as a means of drawing passengers away from low-cost entrant).

²³⁹ See *AMR*, 335 F.3d at 1115 ("Although this court approaches the matter with caution, we do not do so with the incredulity that once prevailed.").

²⁴⁰ See *id.*

²⁴¹ See *id.* at 1116.

costs only.”²⁴² The court identified elements of the government expert’s proposed measure of cost that “do not vary proportionately with the level of flight activity” but “are allocated arbitrarily to a flight or route.”²⁴³ For the court, these elements of cost rendered the government expert’s proposed measure non-incremental, and therefore irrelevant.²⁴⁴

The second prong of the *Brooke Group* test requires that plaintiffs prove the defendant has a reasonable prospect of recouping its investment in the predatory campaign.²⁴⁵ This requirement also affects expert testimony because it typically involves proof that the defendant will be able to exercise market power.²⁴⁶ In *Cargill*,²⁴⁷ for example, the Court examined market share and other factors bearing on market power to evaluate the plausibility of a claim that a firm was capable of predation.²⁴⁸ Also, the Court’s adoption in *Brooke Group* of an express requirement of recoupment has led lower courts to scrutinize expert testimony regarding the likelihood of recoupment, largely on the grounds of market definition and market power.²⁴⁹ The skepticism implicit in the governing models of the practice, combined with the fear of overdeterrence, diminishes the deference afforded to expert opinions.

In *Brooke Group* itself, the plaintiff offered a complex argument that recoupment would occur as a result of the restoration of oligopoly pricing after the victims of predation were sufficiently chas-

²⁴² *Id.* at 1117.

²⁴³ *Id.* at 1119; *see also* Werden, *supra* note 238, at 34 (suggesting that the court “must have spent months combing the record for even the slightest indication that the Department’s experts had overstated true incremental cost”).

²⁴⁴ *AMR*, 335 F.3d at 1120. Werden observes that:

The court did not even mention the Department’s proffered expert opinion that avoidable cost had been estimated conservatively. Assuming the court did not just fail to notice this critical testimony, it must have implicitly held that the testimony lacked a sufficient factual basis, or improperly decided a disputed issue of material fact.

Werden, *supra* note 238, at 35; *see also* Aaron S. Edlin & Joseph Farrell, *The American Airlines Case: A Chance to Clarify Predation Policy (2001)*, in *THE ANTITRUST REVOLUTION*, *supra* note 1, at 502 (describing the various measures of cost advanced as the standard of “sacrifice” necessary to establish predation).

²⁴⁵ *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993).

²⁴⁶ *See id.* at 225.

²⁴⁷ *Cargill, Inc. v. Monfort of Colo., Inc.*, 479 U.S. 104 (1986).

²⁴⁸ *Id.* at 119 n.15.

²⁴⁹ The district court in *American Airlines* granted summary judgment on the recoupment issue, because “the uncontroverted evidence establishe[d] that DFW routes are not structurally susceptible to the supra-competitive prices which is a prerequisite to a successful predatory pricing scheme.” *AMR*, 140 F. Supp. 2d at 1209. The court of appeals did not reach the recoupment issue because it concluded that the government had failed to establish below-cost pricing. *AMR*, 335 F.3d at 1120–21.

tened.²⁵⁰ The Court, however, relied on economic authority to reject the plaintiff's evidence, including its expert testimony. The Court pointed out that, although there was evidence prices were increasing, output was increasing as well—a fact inconsistent with the economic principle that “[s]upracompetitive pricing entails a restriction in output.”²⁵¹ Moreover, the evidence concerning price increases was questionable because it focused on list prices rather than transaction prices.²⁵² Given the difficulty of tacitly coordinating prices, the Court found insufficient evidence that the strategy was likely to allow recoupment.²⁵³

Expert testimony did not change this assessment.²⁵⁴ According to the Court, “[e]xpert testimony is useful as a guide to interpreting market facts, but it is not a substitute for them.”²⁵⁵ Moreover, “[w]hen an expert opinion is not supported by sufficient facts to validate it in the eyes of the law, or when indisputable record facts contradict or otherwise render the opinion unreasonable, it cannot support a jury's verdict.”²⁵⁶ For example, the expert in *Brooke Group* relied on the defendant's internal documents expressing a desire to slow the growth of the generic cigarette market.²⁵⁷ Yet the Court found the documents insufficient because the defendant had engaged in a marketing effort to increase demand for generic cigarettes²⁵⁸—behavior consistent with the Court's economic authority.²⁵⁹ The critical point to note here is that economic authority—the theoretical models and related assumptions that the Court adopted—defined the facts and evidence for which the Court searched. Whatever the legitimacy of the expert's testimony as a matter of economics, it did not trump the Court's own economic assumptions.

²⁵⁰ *Brook Group*, 509 U.S. at 233.

²⁵¹ *Id.* at 233–34; see also *id.* at 237 (“Where, as here, output is expanding at the same time prices are increasing, rising prices are equally consistent with growing product demand.”).

²⁵² *Id.* at 235–36. (“[I]n an oligopoly setting, in which price competition is most likely to take place through less observable and less regulable means than list prices, it would be unreasonable to draw conclusions about the existence of tacit coordination or supracompetitive pricing from data that reflect only list prices.”).

²⁵³ *Id.* at 238–39.

²⁵⁴ *Id.* at 242.

²⁵⁵ *Id.*

²⁵⁶ *Id.* But cf. *Metronet Servs. Corp. v. U.S. West Communications*, 329 F.3d 986, 1004–05 (9th Cir. 2003) (reversing the district court's disregard of experts' testimony in the absence of a “reasoned analysis of how their opinions” were inconsistent with the record).

²⁵⁷ *Brooke Group*, 509 U.S. at 241.

²⁵⁸ *Id.* at 241–42.

²⁵⁹ *Id.* at 241–43.

B. Markets and Market Power

Some form of monopoly power is necessary for any restriction of competition. Historically, however, antitrust's reliance on per se rules often bypassed the requirement that plaintiffs prove that defendants possessed market power.²⁶⁰ If it appeared that a form of conduct was unlikely to occur in the absence of monopoly power, and if the conduct did not appear to have any redeeming qualities, the courts believed they could safely find a violation based on proof of conduct alone.²⁶¹ Where market power was an issue, as in merger cases, market definition was sometimes conducted formalistically in an effort to generate high or low market shares, which were then viewed as all but conclusive proof of market power.²⁶² Ad hoc notions like "submarkets" contributed to this sort of gerrymandering.²⁶³

The growing economic sophistication of the courts has changed this pattern radically. First, as we have seen, the Court has abandoned or limited traditional per se rules, recognizing that the practices the rules covered were not inevitably monopolistic. Under the new rules, if anticompetitive effects are proven directly or can be inferred from an accepted theory, and if there is no contrary and plausible explanation for these effects, courts must find that market power exists because market power is a prerequisite for competitive harm. Courts have also become more aware, through the unstructured acquisition of economic authority, of the factors that bear on market definition and their relevance to market power.²⁶⁴ Courts now recognize that market definition requires the sophisticated use of data and theory—a

²⁶⁰ See, e.g., *Fortner Enters., Inc. v. U.S. Steel Corp.*, 394 U.S. 495, 502 (1969) ("The standard of 'sufficient economic power' does not . . . require that the defendant have a monopoly or even a dominant position throughout the market for the tying product."); *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 224 n.59 (1940) ("[A] conspiracy to fix prices violates § 1 of the [Sherman] Act . . . [,] though it is not established that the conspirators had the means available for accomplishment of their objective . . .").

²⁶¹ See *N. Pac. Ry. v. United States*, 356 U.S. 1, 5 (1958) ("[T]here are certain agreements or practices which because of their pernicious effect on competition and lack of any redeeming virtue are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use.").

²⁶² See, e.g., Robert Pitofsky, *New Definitions of Relevant Market and the Assault on Antitrust*, 90 *COLUM. L. REV.* 1805, 1808 (1990) (observing that early approaches to market definition produced "excessively, and sometimes ludicrously, narrow market definitions").

²⁶³ See Jonathan B. Baker, *Stepping Out In An Old Brown Shoe: In Qualified Praise Of Submarkets*, 68 *ANTITRUST L.J.* 203, 206 (2000) ("Blind application [of the submarket concept] allowed courts to define inappropriately narrow submarkets within the outer bounds of markets properly defined with reference to substitution possibilities.").

²⁶⁴ Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 *MARQ. L. REV.* 123, 125 (1992) ("Much of the intellectual development of the concepts relating to antitrust market delineation took place in classrooms and seminar halls at law schools and economics departments, in judges' chambers, and in the offices of enforcement agencies, law firms, and economic consultants." (citations omitted)).

process that typically requires expert testimony.²⁶⁵ At the same time, however, the law's incorporation of the economic criteria of market definition now constrains how experts can address the issues. Courts insist on adherence to economic authority in market definition and the inference of market power.

1. *Market Definition*

In recent years, the views of professional economists and the lower federal courts on the criteria for market definition have converged:²⁶⁶ "[T]he issues of principle that plagued market definition in the early years have receded, and the cases now involve questions of fact within a settled framework of economic theory."²⁶⁷ Under this new consensus, courts insist on the consideration of all sources of substitution, both in demand and supply, that may affect consumer welfare and thus influence the definition of product or geographic markets.²⁶⁸ Some courts require experts to perform standard statistical tests before testimony on market definition will be admitted.²⁶⁹ In effect, widely recognized economic criteria for market definition have become elements of antitrust law. Consequently, many of the same issues arise whether the court considers the admissibility of the evidence on the grounds of reliability or relevance.²⁷⁰ And the same is

²⁶⁵ See, e.g., *Am. Key Corp. v. Cole Nat'l Corp.*, 762 F.2d 1569, 1579 (11th Cir. 1985) (holding that "[c]onstruction of a relevant economic market or a showing of monopoly power in that market cannot . . . be based upon lay opinion testimony"); *Va. Vermiculite, Ltd. v. W.R. Grace & Co.*, 108 F. Supp. 2d 549, 576 n.16 (W.D. Va. 2000) (holding expert testimony practically necessary for market definition); *Dr. Steuer & Latham, P.A. v. Nat'l Med. Enters., Inc.*, 672 F. Supp. 1489, 1512 n.25 (D.S.C. 1987) ("Failure to adduce expert testimony on competitive issues such as market definition augurs strongly in favor of granting summary judgment against an antitrust plaintiff."), *aff'd*, 846 F.2d 70 (4th Cir. 1988) (Table). Although the court in *Anti-Monopoly, Inc. v. Hasbro, Inc.*, 958 F. Supp. 895 (S.D.N.Y.), *aff'd*, 130 F.3d 1101 (2d Cir. 1997), stated that "experts are not always essential to defining the relevant market," *id.* at 904, it cited for this proposition *United States v. Pabst Brewing Co.*, 384 U.S. 546, 549 (1966), which dates from an era in which market definition was not conducted on economic grounds.

²⁶⁶ See POSNER, *supra* note 55, at 156 (arguing that the Supreme Court has left development of the law of market definition to the lower courts, which have, in turn, followed the enforcement agencies' Merger Guidelines in developing a new consensus).

²⁶⁷ *Id.*

²⁶⁸ See, e.g., *United States v. VISA U.S.A., Inc.*, 344 F.3d 229, 239 (2d Cir. 2003) (affirming the definition of a market for "general purpose credit cards" based on expert testimony concerning consumer preferences in forms of payment).

²⁶⁹ See, e.g., *Berlyn, Inc. v. Gazette Newspapers, Inc.*, 214 F. Supp. 2d 530, 539 (D. Md. 2002) (excluding an expert's opinion because his methods were not shown to be "of the type that other experts would use to determine the relevant markets in an antitrust case"); *Vermiculite*, 108 F. Supp. 2d at 736 (excluding expert testimony for, among other things, failure to test alternative hypotheses or to use an Elzinga-Hogarty test).

²⁷⁰ See, e.g., *Bailey v. Allgas, Inc.*, 284 F.3d 1237, 1246-47 (11th Cir. 2002) (granting summary judgment where the plaintiff's expert ignored Eleventh Circuit precedent on market definition); *City of Tuscaloosa v. Harcos Chem., Inc.*, 158 F.3d 548, 567 n.27 (11th Cir. 1998) (stating in dicta that expert's assertion that the relevant market is the "largest

sues may arise in evaluating the probative value of evidence on a motion for summary judgment or judgment as a matter of law.²⁷¹

Courts thus routinely exclude expert testimony or find it insufficient on the basis of economic authority. For example, Judge Easterbrook recently affirmed summary judgment for the defendant on a claim that the defendant's exclusive contracts for placement of at-shelf coupon dispensers in retail stores unreasonably restrained trade.²⁷² The plaintiff had submitted expert testimony that at-shelf coupons constitute a market distinct from other forms of promotional devices.²⁷³ Judge Easterbrook, however, found the evidence insufficient to raise a jury issue.²⁷⁴ According to Judge Easterbrook's reading of the economic authority, products are in the same market if statistical evidence shows that the price or output of one varies with the price of the other. The plaintiff's experts, however, had offered only "a potpourri of survey research and armchair economics."²⁷⁵ A survey purporting to show that consumers prefer at-shelf coupons to other kinds of coupons was indeed properly excluded under Rule 702 as "unscientific,"²⁷⁶ but was "economically irrelevant anyway"²⁷⁷ because substitution in supply or substitution by consumers with no preference among kinds of coupons could still prevent the exercise of market power by producers of at-shelf coupons. Similarly, evidence that the output of at-shelf coupon dispensers rose and that the price paid retailers to accept placement increased during a period of competition was not evidence that the product constituted a market; the evidence failed to show whether the increase was the result of substitution away from other promotional devices. Evidence of a shift toward at-shelf dispensers in response to an effective reduction in price would tend to show that all promotional devices are in the same market.²⁷⁸ Finally, because the economists had used both list prices instead of transaction prices and an incorrect measure of cost, Judge Easterbrook discounted a study purporting to demonstrate that price/cost

market for which data are available" was contrary to law); *FTC v. Swedish Match*, 131 F. Supp. 2d 151, 160 (D.D.C. 2000) (finding plaintiff's expert's estimate was not credible because it was based on untested assumptions that carried only an eighty-five percent confidence level); *City of Chanute v. Williams Natural Gas Co.*, 743 F. Supp. 1437, 1457 (D. Kan. 1990) (excluding relevant evidence on market definition because it ignored precedent requiring focus on products consumers view as reasonably interchangeable).

²⁷¹ See *Bailey*, 284 F.3d at 1246-47.

²⁷² *Menasha Corp. v. News Am. Mktg. In-Store, Inc.*, 354 F.3d 661 (7th Cir. 2004).

²⁷³ *Id.* at 665.

²⁷⁴ *Id.*

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ *Id.*

²⁷⁸ *Id.*

margins for at-shelf dispensers had increased as market share increased.²⁷⁹

The plaintiff's economists maintain that Judge Easterbrook failed to address tests they did perform, placed too much weight on the absence of a covariance analysis, and erred in his assessment of their price/cost analysis.²⁸⁰ The crucial point for our purposes, however, is that Judge Easterbrook resolved these questions as a matter of the law of market definition, based on his own interpretation of economic authority. This approach, while more economically assured than that of most judges, is fairly typical.²⁸¹

Despite these strictures, courts recognize that economists must be pragmatic in the process of market definition. Courts do not prevent

²⁷⁹ *Id.* at 666.

²⁸⁰ In a recent communication, one of the plaintiff's economists wrote:

Judge Easterbrook's decision did not address many of the analyses done by the experts engaged by Menasha. For example, Dr. Langenfeld (who the judge characterized as a "marketing" expert) performed a crucial loss analysis to determine if at-shelf coupon dispensers was a relevant product market. Dr. Langenfeld's analysis adjusted for cellophane fallacy issues, and supported his approach with several refereed articles. The judge faulted Dr. Warren-Boulton for not performing a statistical covariance analysis similar to that suggested by Stigler and Sherwin in their 1985 article. Although such analyses can be useful in offering support for market definition, the substantial literature since that article has explained the limits of such analyses and, under any condition, the defendant in this case did not provide sufficient information in discovery to perform the detailed statistical analysis of prices over time that Judge Easterbrook favored. Instead, among other analyses, both Dr. Warren-Boulton and Dr. Langenfeld offered evidence (including statistical regression analysis by Dr. Warren-Boulton) of a "natural experiment" that would shed light on the relevant market. NAMIS purchased its main competitor, ActMedia, a few years before the case, and both experts found NAMIS's margins increased as a result of that merger. There was a factual dispute over whether this increase was due to reduced competition, but the evidence was consistent with an at-shelf coupon dispensing market and NAMIS having a dominant position in that market.

E-mail from James Langenfeld to William H. Page (Oct. 18, 2004) (on file with authors).

²⁸¹ A Ninth Circuit panel, echoing *Brooke Group*, 509 U.S. 209 (1993), wrote that "if there are undisputed facts about the structure of the market that render the inference economically unreasonable, the expert opinion is insufficient to support a jury verdict." *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1435-36 (9th Cir. 1995). The court found insufficient an expert's testimony that full service and self-service gasoline distribution were in different markets, because the expert had failed to consider supply substitution—i.e., that full service pumps can be converted into self-service pumps at virtually no cost. *Id.* at 1436-37.

Another court found insufficient expert testimony that the product market was limited to natural gas sold for residential use, where the record showed that gas sold for other uses was identical, and that other energy sources for home heat were available. *Bailey v. Allgas, Inc.*, 284 F.3d 1237, 1246-47 (11th Cir. 2002). The court also rejected the expert's testimony that the geographic market was limited to a twenty-mile radius around the plaintiffs' distributorship, where the expert failed to consider prices and locations of other distributors or consumer customer preferences. *Id.* at 1248; see also *FTC v. Tenet Healthcare Corp.*, 186 F.3d 1045 (8th Cir. 1999) (holding that the district court erred in defining a geographic market for hospitals in which, expert testimony showed, twenty-two percent of residents use services at hospitals outside of the putative market).

experts from making simplifying assumptions in the data they collect and analyze, so long as the experts have legitimate grounds for their choices and the choices are consistent with sound econometric practice.²⁸² For example, one court upheld under *Daubert* an expert's decision to exclude from the market for air travel those cities less than 150 miles from each other because ground travel was assumed to be a viable substitute at those distances.²⁸³

2. Market Power

While legal standards for market definition closely track economic standards, the legal definition of market power differs significantly from its economic counterpart.²⁸⁴ In economic theory, a firm has market power if it faces a downward-sloping demand curve. A competitive firm faces a horizontal demand curve; it takes the market price as given and sets its output at the point at which the marginal cost of production equals the price. If the firm faces a downward-sloping demand curve, it will recognize that its output decisions affect the price—the definition of market power.²⁸⁵ The law, however, has long recognized that this definition is far too inclusive to be of any practical legal use.²⁸⁶

Consequently, antitrust law has fallen back on a variety of proxies for market power, especially market share.²⁸⁷ To determine market share, the court must first define the relevant market. At one time,

²⁸² See *In re Polypropylene Carpet Antitrust Litig.*, 93 F. Supp. 2d 1348, 1366–67 (N.D. Ga. 2000) (finding that the “[e]xclusion of outliers is a common practice in statistical analysis” and that the expert’s use of data filters did not alter his analysis).

²⁸³ *In re Northwest Airlines Corp. Antitrust Litig.*, 197 F. Supp. 2d 908, 916, 919 (E.D. Mich. 2002). The court also found the expert’s testimony admissible even though it excluded city-pairs in which the defendants held fifty percent or less of the market. The court rejected defense arguments that the expert was assuming market power wherever Northwest had more than a fifty percent market share, noting that the expert made the exclusion not to define the market, but to “streamline” the analysis by identifying markets with characteristics that were consistent with market power. *Id.*

²⁸⁴ Paul L. Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J.L. ECON. & ORG. 95, 100 (2002).

²⁸⁵ Where demand is horizontal, the price (average revenue) is equal to marginal revenue because the firm captures the full revenue from the sale of each additional unit. If demand is downward-sloping, marginal revenue falls below average revenue because the sale of each additional unit drives down the market price, and this applies to all of the intramarginal units. Thus, the firm maximizes profit by setting its marginal cost equal to marginal revenue, not price.

²⁸⁶ See POSNER, *supra* note 55, at 22 (arguing that “to infer that every seller who faces a downward-sloping demand curve has monopoly power in a sense interesting to antitrust law would be a profound mistake”); cf. Benjamin Klein, *Market Power in Antitrust: Economic Analysis after Kodak*, 3 SUP. CT. ECON. REV. 43, 72–74 (1993) (observing that most economists distinguish among degrees of market power for policy purposes, but advocating instead a distinction between a firm’s individual pricing discretion and market power).

²⁸⁷ 2 JOSEPH P. BAUER & WILLIAM H. PAGE, *KINTNER’S FEDERAL ANTITRUST LAW* 332 (2002).

market share figures were all but decisive in determining market power—a phenomenon closely related to the practice of gerrymandering in market definition.²⁸⁸ Courts now recognize that other factors, especially the absence of barriers to entry, may undermine an inference of market power even from very high market shares.²⁸⁹

Nevertheless, it remains a matter of economic authority that market share is relevant to the existence of market power.²⁹⁰ First, high concentration still creates an inference of market power. In merger cases, for example, the presence of a high Herfindahl-Hirshmann Index (HHI)²⁹¹ combined with a significant increase in concentration creates a prima facie case that the merger will lead to anticompetitive effects.²⁹² Very “high market concentration levels . . . require, in rebuttal, proof of extraordinary efficiencies.”²⁹³ An expert opposing such figures is at a disadvantage. In *Heinz*, for example, the court of appeals reversed the district court’s finding that a merger in a market with very high HHI figures and high entry barriers would not increase the risk of tacit collusion, despite expert testimony.²⁹⁴ Economic authority embodied in scholarly literature and the enforcement agencies’ Merger Guidelines made the district court’s reliance on expert testimony erroneous as a matter of law. On the other hand, low market shares virtually foreclose the existence of market power. Yet the law continues to impose market share thresholds on findings of market power, and thus forecloses any expert opinion to the contrary.²⁹⁵ Expert opinions that firms with market shares of under fifty percent have monopoly power have been found insufficient as a matter of

²⁸⁸ See Thomas C. Arthur, *The Costly Quest for Perfect Competition: Kodak and Nonstructural Market Power*, 69 N.Y.U. L. REV. 1, 22 n.90 (1994) (arguing that the Warren Court erred in “setting its market power criteria too low and relying exclusively on market shares, especially in gerrymandered markets . . . to determine power”); George J. Stigler, *The Economists and the Problem of Monopoly*, 72 AM. ECON. REV. 1, 9 (1982) (“The typical antitrust case is an almost impudent exercise in economic gerrymandering.”).

²⁸⁹ See BAUER & PAGE, *supra* note 287, at 333.

²⁹⁰ See *id.* at 334.

²⁹¹ The HHI is a measure of market concentration and is defined as the sum of the squares of the market shares of all of the firms in the market.

²⁹² See, e.g., *FTC v. H.J. Heinz Co.*, 246 F.3d 708, 716 (D.C. Cir. 2001) (“Sufficiently large HHI figures establish the FTC’s prima facie case that a merger is anti-competitive.”).

²⁹³ *Id.* at 720.

²⁹⁴ *Id.* at 724 (“[T]he district court made no finding that any of these ‘cartel problems’ are so much greater in the baby food industry than in other industries that they rebut the normal presumption [arising from a high HHI].”). For a discussion of *Heinz* by the defense expert, see Jonathan B. Baker, *Efficiencies and High Concentration: Heinz Proposes to Acquire Beech-Nut (2001)*, in *THE ANTITRUST REVOLUTION*, *supra* note 1, at 150.

²⁹⁵ BAUER & PAGE, *supra* note 287, at 335–37.

law.²⁹⁶ Likewise, courts frequently reject expert testimony resting on unorthodox proxies for market power.²⁹⁷

In some instances, courts have allowed plaintiffs to bypass the market share inquiry (and therefore the market definition inquiry) by permitting "direct" proof of market power—for instance, by showing that the defendant in fact exercised market power by reducing output and increasing price.²⁹⁸ The FTC has successfully argued, for example, that a merger of close competitors in a broader market of differentiated products may result in unilateral anticompetitive effects.²⁹⁹ Traditionally, antitrust law evaluates mergers by estimating the risk that the increased concentration will facilitate price coordination. This "unilateral effects" approach attempts to identify mergers in which the surviving firm, even if lacking a large share of a conventionally defined market, may be able to increase the price of an item without diverting sufficient sales to competitors to make the increase unprofitable.³⁰⁰ Economists using price data from a range of geographic markets are able to provide a firm basis for predicting the effects of a merger by showing the effects of competition between close competitors.

²⁹⁶ See, e.g., *Bailey v. Allgas, Inc.*, 284 F.3d 1237, 1250, 1253 (11th Cir. 2002) (holding that market share of fifty percent or less is inadequate as a matter of law to establish market power and that expert's use of return on investment to measure market power had not been accepted by any other circuit).

²⁹⁷ See, e.g., *Bailey v. Allgas, Inc.*, 148 F. Supp. 2d 1222, 1245 (N.D. Ala. 2000) (finding that expert's opinion that the "true test of market power is concentration ratios or other indices, not market share" and use of return on investment to show market power was contrary to law (internal quotation marks omitted)); *Va. Vermiculite, Ltd. v. W.R. Grace & Co.*, 98 F. Supp. 2d 729, 739 (W.D. Va. 2000) (finding that expert's contention that monopolist is a seller that increases prices without reducing output was wrong as a matter of law because monopolists decrease output while increasing price).

²⁹⁸ In *NCAA*, the collegiate athletic association argued that it had no market power in the sale of rights to televise football games. *NCAA v. Bd. of Regents of Univ. of Okla.*, 468 U.S. 85, 109 (1984). The Court rejected the argument on both legal and factual grounds. *Id.* As to the factual refutation, the Court relied on lower court findings that no good substitutes existed for televised college football games. *Id.* at 111. But it might have simply repeated its earlier conclusion that "[t]he anticompetitive consequences of this arrangement are apparent. . . . Price is higher and output is lower than they otherwise would be." *Id.* at 106–07. Even though the Court's conclusion may have been wrong, its logic compelled the further conclusion that the NCAA had market power.

²⁹⁹ The court in *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1082–83 (D.D.C. 1997) issued a preliminary injunction against the merger of two office superstores based in part on the FTC's econometric studies showing that markets with a single superstore had significantly higher prices than those in which there were competing superstores. For a discussion of the economic data in the case, see Serdar Dalkir & Frederick R. Warren-Boulton, *Prices, Market Definition, and the Effects of Merger: Staples-Office Depot (1997)*, in *THE ANTITRUST REVOLUTION*, *supra* note 1, at 52; see also POSNER, *supra* note 55, at 157–58.

³⁰⁰ See generally Carl Shapiro, *Mergers with Differentiated Products*, *ANTITRUST*, Spring 1996, at 23 (discussing the unilateral competitive effects test used in policing horizontal mergers).

3. Aftermarkets

The Supreme Court's decision in *Eastman Kodak*,³⁰¹ and its aftermath in the lower federal courts, illustrates the interaction of economic authority and expertise in resolving a critical issue of market definition and market power. The Supreme Court in *Kodak* rejected an argument that economic theory foreclosed any inquiry, by expert testimony or otherwise, into the existence of monopoly power in so-called aftermarkets—the “markets” for a single firm's parts and repair services.³⁰² The decision predictably led to a flood of lawsuits by the rivals of large firms in their downstream parts and service markets. The lower courts stemmed the tide, however, by identifying in the facts of *Kodak* conditions for liability that firms could avoid in structuring their aftermarket programs.³⁰³

In *Kodak*, independent service organizations that provided parts and maintenance for Kodak copiers and micrographic equipment³⁰⁴ were driven from the market by Kodak's sale of replacement parts only to purchasers of Kodak equipment who either used Kodak's repair service or who repaired their own equipment.³⁰⁵ The Court held that there was sufficient evidence to create a jury issue that Kodak had economic power in the tying (parts) market to restrain trade in the tied (service) market.³⁰⁶ Kodak argued that if it attempted to charge supracompetitive prices in the aftermarkets for parts and services, consumers would simply switch to competitors' equipment in their initial purchases.³⁰⁷ Consumers would include the price of parts and service over the useful life of the equipment as part of the real price.³⁰⁸ Consequently, as a matter of economic authority, the sort of market power a firm has over aftermarkets in parts and service did not permit the firm to restrain trade; “basic economic reality” dictates that when a defendant lacks market power in the primary market for equipment, it lacks power in aftermarkets to charge supracompetitive prices.³⁰⁹ If consumers were injured, it would not be because of the

³⁰¹ *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992).

³⁰² *Id.* at 486.

³⁰³ See David A.J. Goldfine & Kenneth M. Vorasi, *The Fall of the Kodak Aftermarket Doctrine: Dying a Slow Death in the Lower Courts*, 72 ANTITRUST L.J. 209 (2004).

³⁰⁴ *Eastman Kodak*, 504 U.S. at 454.

³⁰⁵ *Id.* at 458–60.

³⁰⁶ *Id.* at 462–64.

³⁰⁷ *Id.* at 465.

³⁰⁸ *Id.* at 495 (Scalia, J., dissenting) (“[A] rational consumer considering the purchase of Kodak equipment will inevitably factor into his purchasing decision the expected cost of aftermarket support.”).

³⁰⁹ *Id.* at 465–71 (Scalia, J., dissenting); see also Petitioners' Brief on the Merits at 26, *Eastman Kodak* (No. 90-1029) (“Overcharging for service is an especially implausible strategy for Kodak, since demand for Kodak service is itself ultimately dependent on new equipment sales.”).

exercise of market power, but because of an opportunistic exploitation of a long-term commitment. As Justice Scalia argued in his dissent:

Leverage, in the form of *circumstantial* power, plays a role in each of these relationships; but in none of them is the leverage attributable to the dominant party's *market* power in any relevant sense. Though that power can plainly work to the injury of certain consumers, it produces only "a brief perturbation in competitive conditions—not the sort of thing the antitrust laws do or should worry about."³¹⁰

In a result widely viewed as a rebuff to the Chicago School,³¹¹ the Court rejected this argument, noting that under Kodak's new policy prices to its customers rose, but sales of equipment did not decline.³¹² Instead of the Chicago argument, the Court accepted plaintiffs' economic argument that significant information and switching costs could prevent customers from protecting themselves from rising prices in the aftermarkets.³¹³ In an unorthodox move, Image Technical's brief informed the Court that its argument had "been developed with the assistance of Professor Steven C. Salop, Professor of Economics and Law at Georgetown University Law School. Professor Salop is a recognized expert in the fields of industrial organization, competition, and antitrust. He is cited with approval by Kodak."³¹⁴ Apparently impressed, the Court cited three articles by Professor Salop to support its rejection of Kodak's theory.³¹⁵ The Court reasoned that consumers required a substantial amount of data and a "sophisticated analysis" to calculate their expected parts and service costs over the life of the Kodak equipment.³¹⁶ Indeed, according to the Court, some consumers were unable to take lifecycle prices into account at the time of initial purchase.³¹⁷ Further, consumers who had already purchased Kodak equipment would tolerate some increase in aftermarket

³¹⁰ *Eastman Kodak*, 504 U.S. at 498 (quoting *Parts & Elec. Motors, Inc. v. Sterling Elec., Inc.*, 866 F.2d 228, 236 (7th Cir. 1988) (Posner, J., dissenting)).

³¹¹ See, e.g., Robert H. Lande, *Chicago Takes It on the Chin: Imperfect Information Could Play a Crucial Role in the Post-Kodak World*, 62 ANTITRUST L.J. 193 (1993). Even Chicagoan Robert Bork lamented in 1993 that the "*Kodak* decision may suggest that forward movement [toward a new economic sophistication for antitrust] has stopped or is about to go into reverse." ROBERT H. BORK, *THE ANTITRUST PARADOX* 436 (rev. ed. 1993).

³¹² *Eastman Kodak*, 504 U.S. at 472.

³¹³ *Id.* at 472.

³¹⁴ Brief for Respondent at 20 n.13, *Eastman Kodak* (No. 90-1029) (quoted in Stephen Calkins, *Supreme Court Antitrust 1991-92: The Revenge of the Amici*, 61 ANTITRUST L.J. 269, 306 (1993)); see also Lisa Meckfessel Judson, Note, *Kodak v. Image Technical Services: The Taming of Matsushita and the Chicago School*, 1993 WIS. L. REV. 1633, 1671 n.230 (1993) (observing that "the parties' briefs can be seen as pitting one school of thought against another").

³¹⁵ *Eastman Kodak*, 504 U.S. at 473 n.19, 476 n.22.

³¹⁶ *Id.* at 473.

³¹⁷ *Id.* at 473, 475.

prices because once “locked in” customers faced prohibitively high costs in switching to a competitors’ equipment.³¹⁸

Unlike the alleged predatory pricing in *Matsushita*, “[t]he alleged conduct—higher service prices and market foreclosure—is *facially* anticompetitive and exactly the harm that antitrust laws aim to prevent.”³¹⁹ This passage echoed the argument of an amicus curiae that *Kodak* was “precisely the opposite [of *Matsushita*]: conduct that produces direct and immediate harm to consumers—higher (service) prices, which antitrust law generally aims to prevent—is being defended on the speculative theory that such conduct is from a broader perspective, actually beneficial to consumers.”³²⁰ Thus, Kodak’s assertion of economic authority was insufficient to establish as a matter of law that, “despite evidence of increased prices and excluded competition, an inference of market power is unreasonable.”³²¹ In circumstances where there is immediate, facial harm to consumers, “[I]egal presumptions that rest on formalistic distinctions rather than actual market realities are generally disfavored in antitrust law. This Court has preferred to resolve antitrust claims on a case-by-case basis, focusing on the ‘particular facts disclosed by the record.’”³²² In this context, “formalistic distinctions” meant theoretical predictions of necessary effects enshrined as economic authority; “actual market realities” and the “particular facts disclosed by the record” implied the prospect of expert testimony. In the litigation on remand, the case predictably turned on factual questions raised by expert testimony.³²³

Interestingly, however, *Kodak* has not markedly expanded the influence of expert testimony in litigation. Instead, it has refocused the application of economic authority in the terms of the *Kodak* majority’s reasoning. In one ensuing decision, the district court admitted expert testimony for both sides³²⁴ but ultimately granted judgment as a matter of law to the defendant.³²⁵ A manufacturer of merchandise security tags alleged that its competitor had attempted to monopolize the market. The plaintiff’s expert testified that the market was limited to

³¹⁸ *Id.* at 476.

³¹⁹ *Id.* at 478 (emphasis added).

³²⁰ Brief of Bell Atlantic in Support of Respondent at 14, *Eastman Kodak* (No. 90-1029) (quoted in Ronald S. Katz, *The Kodak Case: Setting the Antitrust Agenda for the Nineties*, C695 ALL-ABA 15, 28-29 (Dec. 12, 1991)).

³²¹ *Eastman Kodak*, 504 U.S. at 469.

³²² *Id.* at 466.

³²³ See *Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195 (9th Cir. 1997). For a discussion of the plaintiffs’ theories by one of their experts in the case on remand, see Jeffrey K. MacKie-Mason & John Metzler, *Links between Markets and Aftermarkets: Kodak (1997)*, in *THE ANTITRUST REVOLUTION*, *supra* note 1, at 428.

³²⁴ *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 198 F. Supp. 2d 598, 628 (E.D. Pa. 2002).

³²⁵ *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 249 F. Supp. 2d 622, 698 (E.D. Pa. 2003).

the type of tag manufactured by the parties because, as in *Kodak*, it was costly for their customers to switch to other types.³²⁶ Unlike in *Kodak*, however, information costs were trivial: the defendant provided its “sophisticated” customers with detailed projections of future tag costs,³²⁷ which customers could readily use to negotiate reduced prices.³²⁸ The plaintiff’s expert’s testimony that the relevant market was limited to one type of tag thus could not support a jury’s verdict.³²⁹ The *Kodak* rationale for rejection of a rule of per se legality became the basis for close scrutiny of the record, ultimately rendering the expert’s testimony insufficient on the undisputed facts.

C. Cartels

Although the Chicago School’s influence has diminished the scope of rules of per se illegality, the per se rule prohibiting naked cartels remains in place. Chicago scholars generally have supported the rule, arguing that it should be the primary, if not exclusive, focus of antitrust.³³⁰ Economic theory predicts that cartels will restrict output and increase prices. Some have argued that a legal prohibition is unnecessary because entry of competitors and cheating among the cartel participants will eventually destroy any cartel,³³¹ and others have argued that cartels may in some instances be efficient.³³² Nevertheless, the Supreme Court has from the earliest years of the Sherman Act foreclosed any testimony that cartels are necessary to prevent “ruinous competition” or that they are justified by some other social pol-

³²⁶ *Id.* at 643.

³²⁷ *Id.* 643–44.

³²⁸ *Id.*

³²⁹ *Id.* at 694.

³³⁰ See BORK, *supra* note 311, at 263; Richard A. Posner, *A Program for the Antitrust Division*, 38 U. CHI. L. REV. 500, 528–29 (1971); see also John E. Lopatka & William H. Page, *Posner’s Program for the Antitrust Division: A Twenty-Five Year Perspective*, 48 SMU L. REV. 1713 (1995) (reviewing Posner’s statement that consensus among economists and efficiency concerns was reason enough for a strong anti-cartel enforcement program).

³³¹ See, e.g., Posner, *supra* note 330, at 529. For discussion of strategies cartels use to foster stability, see Christopher R. Leslie, *Trust, Distrust, and Antitrust*, 82 TEX. L. REV. 515 (2004).

³³² See, e.g., LESTER G. TELSER, *THE THEORY OF EFFICIENT COOPERATION AND COMPETITION* (1987); Donald Dewey, *Information, Entry, and Welfare: The Case for Collusion*, 69 AM. ECON. REV. 587 (1979); cf. George Bittlingmayer, *Price-Fixing and the Addyston Pipe Case*, in 5 RES. IN L. & ECON. 57 (1983) (discussing the near impossibility of reaching competitive equilibrium in many market scenarios).

icy.³³³ Courts continue to enforce the per se rule against naked cartels.³³⁴

The per se illegality of price fixing does not mean expert testimony is unnecessary in price-fixing cases. The prosecution in a criminal case might prove the offense using only the direct testimony of participants in a naked cartel.³³⁵ But if the existence of a cartel agreement must be inferred from circumstantial evidence, an expert is almost always necessary.³³⁶ Still, the peculiar nature of the law's definition of "agreement" may preclude expert testimony on some issues and limit the probative value of the testimony on others. Before turning to the proof of agreement, however, we examine an issue that is perhaps more basic: what sorts of admitted agreements are per se unlawful cartels? Expert testimony may be appropriate—or even necessary—in answering this question as well.

1. *Characterization*

Historically, antitrust law has divided practices into those governed by a per se rule and those judged under an open-ended rule of reason.³³⁷ More recently, however, the Court has suggested that there is no bright line distinction between practices "that give rise to an in-

³³³ One could argue that the ban on competitive bidding in *National Society of Professional Engineers v. United States*, 435 U.S. 679 (1978), was efficient because it reduced search costs, so that consumers who wanted high-quality services were able to find them. That is, the price paid might have been higher, but the quality was better. Absent a low-cost method of identifying high-quality suppliers, the "lemon effect" could result in high-quality suppliers being squeezed out of the market, which would injure consumers who wanted high-quality service. See George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 495-96 (1970); John E. Lopatka, *Antitrust and Professional Rules: A Framework for Analysis*, 28 SAN DIEGO L. REV. 301, 365-70 (1991). Nevertheless, the Court was unwilling to trade lower prices for possibly higher quality, concluding that the antitrust laws rested on the premise that "ultimately competition will produce not only lower prices, but also better goods and services." *Prof'l Eng'rs*, 435 U.S. at 695.

³³⁴ See, e.g., *FTC v. Ind. Fed'n of Dentists*, 476 U.S. 447 (1986); *Catalano, Inc. v. Target Sales, Inc.*, 446 U.S. 643 (1980); cf. *Cal. Dental Ass'n v. FTC*, 526 U.S. 756, 778 (1999) (refusing to apply a truncated rule of liability to a dental association's rules limiting advertising, even though the rule prevented members from engaging in certain forms of price advertising and making claims of quality—information generally valuable to consumers). The association rule was not a garden-variety cartel because it did not prevent full and detailed price advertising. See *Cal. Dental Ass'n v. FTC*, 224 F.3d 942, 952 (9th Cir. 2000).

³³⁵ See, e.g., *United States v. MMR Corp.*, 907 F.2d 489, 495 (5th Cir. 1990) (affirming a conviction for bid rigging where the evidence showed "a deal was struck . . . in the men's room that MMR, in exchange for a lucrative subcontract, would become part of the conspiracy").

³³⁶ See *infra* Part III.C.

³³⁷ See *Bd. of Trade of Chicago v. United States*, 246 U.S. 231, 238 (1918). In such cases, the Court has preferred to govern by "standard," allowing "consideration of all or at least most facts that are relevant to the standard's rationale," rather than by "rule." See *MindGames, Inc. v. W. Publ'g Co.*, 218 F.3d 652, 657 (7th Cir. 2000).

tuitively obvious inference of anticompetitive effect and those that call for more detailed treatment.”³³⁸ The Court must make

an enquiry meet for the case, looking to the circumstances, details, and logic of a restraint. The object is to see whether the experience of the market has been so clear, or necessarily will be, that a confident conclusion about the principal tendency of a restriction will follow from a quick (or at least quicker) look, in place of a more sedulous one.³³⁹

The Court thus mandates first a facial examination of the practice, and then an appropriately detailed “empirical” evaluation. The more obvious the harm to consumers, the more circumscribed will be the evidence necessary to establish liability—and by necessary implication, the narrower the scope for expert testimony.

The facial evaluation of practices occurs primarily at the level of economic authority. In *Broadcast Music*,³⁴⁰ for example, the Court refused to apply a rule of per se illegality to a blanket licensing arrangement by which organizations with market power fixed the prices of performance rights for copyrighted musical works.³⁴¹ The question, according to the Court, was whether the practice facially appears to restrict output or to enhance efficiency.³⁴² Because the activities of performing rights societies evidently reduce transaction costs and make some desirable transactions possible without foreclosing others, they should be judged under the rule of reason.³⁴³ Similarly, in *Sharp*,³⁴⁴ the Court relied on the Chicago School models of resale price maintenance and cartels to exclude from the per se category those vertical agreements that merely limit price-cutting.³⁴⁵ Accepting the view that resale price maintenance was per se illegal only because it might facilitate cartelization,³⁴⁶ the Court reasoned that only verti-

³³⁸ *Cal. Dental*, 526 U.S. at 780–81; see also *id.* at 779 (“[O]ur categories of analysis of anticompetitive effect are less fixed than terms like ‘per se,’ ‘quick look,’ and ‘rule of reason’ tend to make them appear.”).

³³⁹ *Id.* at 781. For the sorts of advertising restrictions at issue in the case, the Court concluded, “[t]he obvious anticompetitive effect that triggers abbreviated analysis has not been shown.” *Id.* at 778; see also William J. Kolasky, California Dental Association: *The New Antitrust Empiricism*, 14 ANTITRUST L.J. 68, 70 (1999) (concluding that “courts must apply a sliding scale, in which the amount of proof demanded of the plaintiff depends both on how obvious the anticompetitive effects are and how strong or weak the proffered justifications are”).

³⁴⁰ *Broad. Music, Inc. v. CBS*, 441 U.S. 1 (1979).

³⁴¹ *Id.* at 24.

³⁴² *Id.* at 19–20.

³⁴³ *Id.* at 14–16.

³⁴⁴ *Bus. Elecs. Corp. v. Sharp Elecs. Corp.*, 485 U.S. 717 (1988).

³⁴⁵ Page, *supra* note 9, at 1262.

³⁴⁶ *Sharp*, 485 U.S. at 724–25.

cal agreements setting a price or price level could be effective to police retail or manufacturing cartels.³⁴⁷

In some instances, expert testimony—or the lack of it—may influence the court's characterization decision. In *California Dental*,³⁴⁸ the Court examined a dental association's ban on certain price and quality advertising and concluded that the association's suggested justifications were plausible enough to warrant more exacting scrutiny than a "quick look."³⁴⁹ The FTC had rested its case in part on published studies of the effect of advertising restrictions on consumer welfare in markets other than dental services³⁵⁰—in effect a claim that economic authority was sufficiently conclusive to justify a truncated rule of reason inquiry. The Supreme Court, however, credited a different body of economic authority, one that identifies a form of market failure known as "the lemon effect":³⁵¹

In a market for professional services, in which advertising is relatively rare and the comparability of service packages not easily established, the difficulty for customers or potential competitors to get and verify information about the price and availability of services magnifies the dangers to competition associated with misleading advertising.³⁵²

The Court quoted the seminal article by George Akerlof for the proposition that in a market characterized by informational asymmetries, "dishonest dealings tend to drive honest dealings out of the market."³⁵³

³⁴⁷ *Id.* at 726–27.

³⁴⁸ *Cal. Dental Ass'n v. FTC*, 526 U.S. 759 (1999).

³⁴⁹ *See id.* at 778 ("[T]he plausibility of competing claims about the effects of the professional advertising restrictions rules out the indulgently abbreviated review to which the Commission's order was treated. The obvious anticompetitive effect that triggers abbreviated analysis has not been shown.")

³⁵⁰ *See Cal. Dental Ass'n v. FTC*, 224 F.3d 942, 950 (9th Cir. 2000) (noting that the FTC relied on CAROLYN COX & SUSAN FOSTER, BUREAU OF ECONOMICS, FEDERAL TRADE COMMISSION, *THE COSTS AND BENEFITS OF OCCUPATIONAL REGULATION* (1990)); Lee Benham, *The Effect of Advertising on the Price of Eyeglasses*, 15 J.L. & ECON. 337 (1972); James A. Langenfeld & John R. Morris, *Analyzing Agreements Among Competitors: What Does the Future Hold?*, 36 ANTITRUST BULL. 651 (1991); Phillip Nelson, *Advertising as Information*, 82 J. POL. ECON. 729 (1974); and John R. Schroeter et al., *Advertising and Competition in Routine Legal Service Markets: An Empirical Investigation*, 36 J. INDUS. ECON. 49 (1987)). Though Cox and Foster do discuss dental advertising, the study "cites no empirical evidence concerning dental advertising restrictions substantially similar to those enacted by CDA." *Cal. Dental*, 224 F.3d at 951.

³⁵¹ *See supra* note 333.

³⁵² *Cal. Dental*, 526 U.S. at 772; *see id.* at 771–73 (citing also Jack Carr & Frank Mathewson, *The Economics of Law Firms: A Study in the Legal Organization of the Firm*, 33 J. LAW & ECON. 307, 309 (1990); Robert G. Evans, *Professionals and the Production Function: Can Competition Policy Improve Efficiency in the Licensed Professions?*, in OCCUPATIONAL LICENSURE & REGULATION 225 (Simon Rottenberg ed., 1980); Hayne E. Leland, *Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards*, 87 J. POL. ECON. 1328, 1330 (1979)).

³⁵³ *Id.* at 775 (quoting Akerlof, *supra* note 333, at 495).

On remand, the Ninth Circuit read the Supreme Court's decision to require that the record contain "some relevant data from the precise market at issue in the litigation."³⁵⁴ The FTC's counsel had not thought it "necessary to supplement the existing economic literature cited by the FTC with the testimony of an expert economist witness."³⁵⁵ The Ninth Circuit concluded, however, that "the social science evidence cited by the FTC does not constitute substantial evidence of the anticompetitive nature of the California Dental Association's advertising restrictions."³⁵⁶ The California Dental Association, in contrast, offered an expert who testified that the restrictions in the dental services market prevent "buyers from getting mistaken impressions about information contained in advertisements, and therefore arms them with more accurate and verifiable information; makes them better able to search for their particular value."³⁵⁷ The court of appeals reasoned on this basis that, by standardizing the form of price advertising,

the restrictions create a kind of network externality by mandating a common language to be used by those CDA members who advertise discounts. As a result, a consumer's costs of searching for the less expensive service would be reduced. . . . We are therefore persuaded that CDA's restrictions do mitigate some of the informational asymmetries that exist in the market for dental services.³⁵⁸

The court found all of the factual claims of the association to be "well-supported by expert testimony and anecdotal evidence from individual dentists practicing in California."³⁵⁹ Thus, a remand to the agency was unnecessary.³⁶⁰ Whatever the merits of this assessment,³⁶¹ the decisions of the Supreme Court and the Ninth Circuit make clear that judicial choices on matters of economic authority dictate the role of expert testimony in the characterization inquiry.

2. "Contract, Combination . . . , or Conspiracy"

The concept of collusion in economics is related to, but distinct from, the concept of collusion in antitrust law. In evaluating market behavior, economists consider whether firms are cooperating. Game theory, for instance, distinguishes between cooperative games, which

³⁵⁴ *Cal. Dental*, 224 F.3d at 952.

³⁵⁵ *Id.* at 958.

³⁵⁶ *Id.* at 952.

³⁵⁷ *Id.*

³⁵⁸ *Id.* at 952–53.

³⁵⁹ *Id.* at 957.

³⁶⁰ *Id.*

³⁶¹ For the Federal Trade Commission's most recent attempt to embody the teaching of *California Dental* in an analytical paradigm, see *In re PolyGram Holdings, Inc.*, Dkt. No. 9298 (July 24, 2003) (Muris, Chairman), available at <http://www.ftc.gov/os/2003/07/polygramopinon.pdf> (last visited Jan. 1, 2005).

involve coalitions of players formed through communication and trustworthy promises, and noncooperative games, in which players act independently for their own welfare.³⁶² Similarly, the theory of cartel behavior assumes complete cooperation among the cartel members,³⁶³ and various models of oligopoly predict “noncompetitive” outcomes based on rivals’ mutual awareness of the circumstances of the market.³⁶⁴ Economics has also identified practices that might facilitate cooperation and thus foster some forms of interaction that lead to noncompetitive outcomes.³⁶⁵

Like the economist’s idea of cooperation, antitrust law’s concept of agreement is an effort to distinguish noncompetitive from competitive behavior. Because of the institutional characteristics of the legal system, however, antitrust must consider other factors in shaping the legal categories within which courts determine the existence of an agreement.³⁶⁶ The distinctive features of the law’s concept of agreement are not apparent in its abstract definitions. Section 1 of the Sherman Act condemns every “contract, combination . . . , or conspiracy, in restraint of trade.”³⁶⁷ The courts have said that an illegal agreement requires “a unity of purpose,” “a common design and understanding,” or “a meeting of the minds in an unlawful arrangement.”³⁶⁸ The general definitions pose little difficulty where the case involves evaluating direct evidence of an express, though clandestine, agreement to fix prices³⁶⁹ or the competitive effects of an explicit

³⁶² DAVID M. KREPS, *GAME THEORY AND ECONOMIC MODELLING* 9 (1990); MARTIN SHUBIK, *GAME THEORY IN THE SOCIAL SCIENCES* 217 (1982).

³⁶³ ROGER D. BLAIR & DAVID L. KASERMAN, *ANTITRUST ECONOMICS* 136 n.3 (1985).

³⁶⁴ *Id.* at 192–201.

³⁶⁵ DENNIS W. CARLTON & JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION*, 126–36 (3d ed. 2000).

³⁶⁶ As one court has noted:

[T]he Supreme Court has applied a gloss to the term “concerted action” when using it in the antitrust context. And, accordingly, courts must treat this phrase as a term of art in the context of the Sherman Act; it cannot be understood as it might be in ordinary parlance, to reach any and all forms of joint activity by two or more persons. It must be defined consonant with its role in the antitrust analysis, as the basis for determining the unlawfulness of conduct prohibited by section 1.

Va. Vermiculite, Ltd. v. Historic Green Springs, Inc., 307 F.3d 277, 281–82 (4th Cir. 2002), *cert. denied*, 598 U.S. 998 (2003).

³⁶⁷ Courts have not distinguished among the three statutory terms, treating all three as denoting the same concept of concerted action. *See, e.g., In re Baby Food Antitrust Litig.*, 166 F.3d 112, 117 n.3 (3d Cir. 1999); POSNER, *supra* note 55, at 262 (“[T]he courts sensibly have not worried about whether the terms ‘contract,’ ‘combination,’ and ‘conspiracy,’ in section 1, have nonoverlapping meanings.”).

³⁶⁸ *Am. Tobacco Co. v. United States*, 328 U.S. 781, 810 (1946).

³⁶⁹ *See, e.g., United States v. MMR Corp.*, 907 F.2d 489, 495 (5th Cir. 1990) (affirming a conviction for bid rigging where the evidence showed an express agreement to participate in return for a subcontract).

agreement to engage in practices that almost certainly facilitate non-competitive outcomes.³⁷⁰

The issue becomes crucial, however, when the case requires the inference of an agreement from circumstantial evidence of parallel conduct by rivals. Game theory suggests that competitors may be able to raise prices to supra-competitive levels without overt communication or explicit agreement simply by taking each other's anticipated reactions into account in setting their own prices.³⁷¹ This phenomenon is variously labeled interdependent pricing, oligopolistic interdependence, tacit collusion, and conscious parallelism.³⁷² Economists also have identified a variety of practices that might facilitate the coordination of prices or the detection of cheating among cartel participants.³⁷³ An economist might characterize firms' behavior in an oligopoly as noncompetitive or even collusive, particularly in the presence of these facilitating practices.

The courts, however, have been unwilling to allow juries to infer the existence of unlawful agreements solely on the basis of parallel behavior.³⁷⁴ The legal challenge of applying Section 1 to consciously

³⁷⁰ See, e.g., *In re Brand Name Prescription Drugs Antitrust Litig.*, 288 F.3d 1028, 1033 (7th Cir. 2002) ("There is authority for prohibiting as a violation of the Sherman Act or section 5 of the Federal Trade Commission Act an agreement that facilitates collusive activity. . . ."); *FTC v. Cement Inst.*, 333 U.S. 683, 696-700, 709-17 (1948) (condemning agreements among competitors to use a basing-point pricing system); see also POSNER, *supra* note 55, at 91-93; GEORGE J. STIGLER, *A Theory of Delivered Price Systems*, in *THE ORGANIZATION OF INDUSTRY* 147, 148-51 (1968) (discussing various kinds of delivered price systems); Dennis Carlton, *A Reexamination of Delivered Pricing Systems*, 23 J.L. & ECON. 51 (1983); David D. Haddock, *Basing-Point Pricing: Competitive vs. Collusive Theories*, 72 AM. ECON. REV. 289 (1982) (discussing basing-point pricing systems and the legal reaction to the practice).

Explicit agreements to engage in practices that may not facilitate collusion, however, cannot be condemned summarily. See, e.g., *United States v. U.S. Gypsum Co.*, 438 U.S. 422, 441 n.16 (1978) ("[E]xchanges of [price data and other] information do not constitute a *per se* violation of the Sherman Act."); *Todd v. Exxon Corp.*, 275 F.3d 191, 198 (2d Cir. 2001) (stating that an agreement to exchange price information "is not illegal *per se*, but can be found unlawful under a rule of reason analysis" (citations omitted)); see also Dennis W. Carlton et al., *Communication Among Competitors: Game Theory and Antitrust*, 5 GEO. MASON L. REV. 423, 424 (1997) (arguing that "in the absence of direct evidence to form a 'naked' cartel to restrict output or to raise price, the appropriate standard to judge the flow of information among competitors is the rule of reason").

³⁷¹ See CARLTON & PERLOFF, *supra* note 365, ch. 6 (presenting game theoretic models of noncooperative oligopoly); Blair & Herndon, *supra* note 3, at 818-20 (summarizing theories of shared monopoly).

³⁷² Conscious parallelism is the "process, not itself unlawful, by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests and their interdependence with respect to price and output decisions." *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993).

³⁷³ See, e.g., CARLTON & PERLOFF, *supra* note 365, at 139-41.

³⁷⁴ See *In re Citric Acid Litig.*, 191 F.3d 1090, 1102 (9th Cir. 1999); *City of Tuscaloosa v. Harcos Chems., Inc.*, 158 F.3d 548, 570 (11th Cir. 1998); *Wallace v. Bank of Bartlett*, 55 F.3d 1166, 1168 (6th Cir. 1995); *Holiday Wholesale Grocery Co. v. Philip Morris, Inc.*, 231 F. Supp. 2d 1253, 1269 (N.D. Ga. 2002), *aff'd sub nom. Williamson Oil Co. v. Philip Morris*

parallel behavior was the focus of a debate between Donald Turner and Richard Posner.³⁷⁵ Both scholars sought to formulate a rule that embodied the economic theory of oligopoly in a way that took account of the institutional strictures of the legal system. Turner argued that when oligopolists simply take into account the probable reactions of competitors in setting their basic prices, there is either no agreement at all or, at most, no *unlawful* agreement.³⁷⁶ He reasoned that an oligopolist acts rationally, just as a competitive firm does, except that the oligopolist “takes one more factor into account—the reactions of his competitors to any price change he makes.”³⁷⁷ Turner thus implicitly suggests that it would be unjust to punish firms for acting rationally.³⁷⁸ More importantly, he noted that there is no practical remedy against such interdependent behavior; an injunction would be “hopelessly vague,”³⁷⁹ demand “irrational behavior,”³⁸⁰ or result in something akin to undesirable “public-utility regulation.”³⁸¹ Turner did, however, willingly condemn parallel adoption of certain facilitating practices, such as basing-point price systems,³⁸² because in those cases an injunction would effectively promote price competition.³⁸³

Posner first responded to Turner thirty-five years ago, but has recently updated his arguments. He agrees with Turner that “tacit collusion” is “a form of concerted action,” but he argues that it may be

USA, 346 F.3d 1287 (11th Cir. 2003). One court summarized the state of the law as follows:

Courts . . . have almost uniformly held, at least in the pricing area, that such individual pricing decisions (even when each firm rests its decision upon its belief that competitors will do the same) do *not* constitute an unlawful agreement under section 1 of the Sherman Act. . . . That is not because such pricing is desirable (it is not), but because it is close to impossible to devise a judicially enforceable remedy for “interdependent” pricing.

Clamp-All Corp. v. Cast Iron Soil Pipe Inst., 851 F.2d 478, 484 (1st Cir. 1988).

³⁷⁵ See generally John E. Lopatka, *Solving the Oligopoly Problem: Turner's Try*, 41 ANTITRUST BULL. 843 (1996) (describing both Turner's approach to the problem of oligopoly pricing and Posner's critique of that approach).

³⁷⁶ Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 HARV. L. REV. 655, 671 (1962).

³⁷⁷ *Id.* at 665.

³⁷⁸ See *id.* This interpretation is bolstered by Turner's further argument that the oligopolists are much like the lawful monopolist that merely charges a monopoly price. *Id.* at 667–68.

³⁷⁹ *Id.* at 669.

³⁸⁰ *Id.*

³⁸¹ *Id.* at 670.

³⁸² *Id.* at 675–76.

³⁸³ *Id.* at 676 (“Finally, in sharp contrast to the basic-price case, here a perfectly understandable, plausible, and readily enforceable injunction can be written which would have excellent prospects, in most cases, of making price behavior substantially more competitive.”).

unlawful as well.³⁸⁴ Because “[t]acit collusion is not an unconscious state,” an injunction against it would not “tell[] oligopolists to behave irrationally.”³⁸⁵ Courts might infer the existence of unlawful collusion from certain types of parallel facilitating conduct, such as the use of a basing-point system,³⁸⁶ then award damages³⁸⁷ and an injunction against the facilitating practices.³⁸⁸ Thus, the practical difference between Turner and Posner is that, in the case of pure pricing interdependence—a case both believe will be unusual³⁸⁹—Turner would find no unlawful agreement, whereas Posner would impose damages.

The Turner-Posner debate is echoed in the judicial evaluation of parallel conduct. Posner’s analysis has influenced what is recognized as economic circumstantial evidence of agreement. This influence first appeared in enforcement agencies’ efforts in the 1970s and early 1980s to challenge “shared monopolies” by using economic evidence of market structure, predisposing characteristics, and facilitating practices.³⁹⁰ Litigants and courts continue to classify and discuss evidence of “tacit collusion” in Posner’s terms. Nevertheless, courts have maintained barriers to the inference of agreement from this kind of evidence.³⁹¹ Courts have required evidence of certain “plus factors,”³⁹²

³⁸⁴ POSNER, *supra* note 55, at 94. Posner’s original reply to Turner was in Richard A. Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 STAN. L. REV. 1562 (1969) [hereinafter Posner, *Oligopoly*]. His position was refined slightly in the first edition of his book on antitrust law. See RICHARD A. POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* 42–77 (1976).

³⁸⁵ POSNER, *supra* note 55, at 97, 98.

³⁸⁶ *Id.* at 92 (arguing that evidence that the sellers agreed to establish a basing-point system should be “unnecessary to establish a violation of the Sherman Act”).

³⁸⁷ Posner would prefer an action for damages brought by the Justice Department on behalf of the victims of antitrust violations—a form of suit that would require a statutory change—to a private treble-damages action. *Id.* at 99. But he is apparently willing to accept the private damages suit as a second-best alternative.

³⁸⁸ *Id.* at 98–99. This conception of an appropriate Section 1 remedy marks a slight change in thinking. Posner earlier advocated “a relatively simple and general injunction against express or tacit price-fixing,” together with a damages sanction. Posner, *Oligopoly*, *supra* note 384, at 1591 n.76.

³⁸⁹ See POSNER, *supra* note 55, at 97 (“[T]here probably are few cases of purely tacit collusion.”); Turner, *supra* note 376, at 662 (“It may well be that in reality a stable and firm pattern of noncompetitive prices is rarely achieved without some kind of agreement.”).

³⁹⁰ See generally Lopatka & Page, *supra* note 330, at 1717–20 (discussing the Antitrust Department’s adoption of the Chicago School theory of “tacit collusion”).

³⁹¹ One court recently emphasized that “[t]he most important evidence will generally be non-economic evidence ‘that there was an actual, manifest agreement not to compete.’” *In re Flat Glass Antitrust Litig.*, 385 F.3d 350, 361 (3d Cir. 2004) (citations omitted).

³⁹² See, e.g., *Todd v. Exxon Corp.*, 275 F.3d 191, 198 (2d Cir. 2001) (noting that a price fixing agreement “may be inferred on the basis of conscious parallelism, when such interdependent conduct is accompanied by circumstantial evidence and plus factors such as defendants’ use of facilitating practices”); *Blomkest Fertilizer, Inc. v. Potash Corp. of Sask.*, 203 F.3d 1028, 1033–34 (8th Cir. 2000) (finding insufficient evidence of “plus factors” to support an inference of agreement in a case based on a theory of conscious parallelism); *In re Baby Food Antitrust Litig.*, 166 F.3d 112, 122 (3d Cir. 1999) (noting that courts “require that evidence of a defendant’s parallel pricing be supplemented with ‘plus factors’” in

defined tautologically³⁹³ as activity that “tend[s] to exclude the possibility that the defendants merely were engaged in lawful conscious parallelism.”³⁹⁴ Courts have suggested that “plus factors may include evidence demonstrating that the defendants: (1) acted contrary to their [individual] economic interests, and (2) were motivated to enter into a price fixing conspiracy,”³⁹⁵ though neither of these conditions alone is sufficient.³⁹⁶ Courts thus require evidence that justifies the inference of an actual agreement, rather than simply noncompetitive market behavior.³⁹⁷

Consequently, the focus is on whether the defendant’s actions are rational choices for a firm acting in its individual self-interest. In other words, the court will ask whether the action would make sense for a firm acting independently but taking account of the past and anticipated actions of its rivals. If the evidence shows only the sort of action supporting an affirmative answer, then no jury question of collusion is created.³⁹⁸ Moreover, if the plaintiff introduces evidence tending to show a plus factor, the defendant must have the opportunity to offer an independent business justification for the practice.³⁹⁹ If the competing justifications are equally plausible, then, again, no jury question is created.⁴⁰⁰ One implication of this approach is that a plus factor must involve *behavior* that increases the probability of supra-competitive pricing. Predisposing market *conditions*, such as

order for a court to infer a conspiracy from circumstantial evidence); PHILIP AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 1434a (2d ed. 2002).

³⁹³ To say that plus factors “tend to exclude the possibility that the defendants acted independently” merely restates the issue. *Petruzzi’s IGA Supermarkets, Inc. v. Darling-Delaware Co.*, 998 F.2d 1224, 1232–33 (3d Cir. 1993). Similarly unhelpful is the explanation that “[t]he simple term ‘plus factors’ refers to ‘the additional facts or factors required to be proved as a prerequisite to finding that parallel action amounts to conspiracy.’” *Baby Food*, 166 F.3d at 122 (quoting AREEDA, *ANTITRUST LAW* § 1433(e) (1986)).

³⁹⁴ *City of Tuscaloosa v. Harcros Chems., Inc.*, 158 F.3d 548, 572 (11th Cir. 1998); see also *Laurel Sand & Gravel, Inc. v. CSX Transp., Inc.*, 924 F.2d 539, 543 (4th Cir. 1991) (holding that to avoid summary judgment, plaintiffs must show that defendants “had a conscious commitment to a common scheme designed to achieve an unlawful objective” and offer “evidence that excludes the possibility that the alleged coconspirators acted independently or based upon a legitimate business purpose” (internal quotation marks and citations omitted)).

³⁹⁵ *Baby Food*, 166 F.3d at 122; see also *Flat Glass*, 385 F.3d at 360 (using the same test); *Petruzzi’s IGA*, 998 F.2d at 1242 (same); *Wallace v. Bank of Bartlett*, 55 F.3d 1166, 1168 (“Examples of these ‘plus factors’ include actions contrary to a defendant’s economic self-interest, product uniformity, exchange of price information and opportunity to meet, and a common motive to conspire or a large number of communications.” (citations omitted)).

³⁹⁶ See, e.g., *Baby Food*, 166 F.3d at 122; *Coleman v. Cannon Oil Co.*, 849 F. Supp. 1458, 1467 (N.D. Ala. 1993).

³⁹⁷ *Flat Glass*, 385 F.3d at 360 (“[Plus] factors serve as proxies for direct evidence of an agreement.”).

³⁹⁸ See BAUER & PAGE, *supra* note 287, at 66–67 (“[E]quipose is not enough to take the case to the jury.”).

³⁹⁹ See *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1301 (11th Cir. 2003).

⁴⁰⁰ See *id.* at 1310.

high concentration, hospitable to interdependent pricing are insufficient because the presence of such conditions cannot exclude the possibility of independent action.⁴⁰¹ Courts justify this approach—in ways reminiscent of Turner—by pointing to the dangers of overdeterrence. If it were rational for oligopolists to act interdependently, then penalizing them for doing so would deter socially beneficial conduct. This consideration is magnified when the alleged practices involve price-cutting, which the Supreme Court has accorded special protection from erroneous findings of liability.

The Posner-Turner debate frames the role of economic experts. Experts are typically necessary to identify and analyze practices and conditions conducive to tacit understandings.⁴⁰² But to be admissible under *Daubert*, their testimony must be reliable, relevant to the existence of an agreement, and helpful to the jury; moreover, to avoid summary judgment, the evidence must be sufficient to create a jury issue.⁴⁰³ Reliability depends largely on the empirical and theoretical standards of the economics profession. Courts occasionally exclude portions of expert testimony on this ground in cases alleging the inference of price fixing. The Eleventh Circuit, for example, relied on *Daubert* to exclude testimony based in part on sales data from a state outside of the area of the alleged conspiracy.⁴⁰⁴ The inclusion of the data “skew[ed] any cumulative measurements, such as percentages and frequencies, that depend upon the size and characteristics of the database as a whole and that are intended to describe the alleged conspiracy.”⁴⁰⁵ Consequently, where the expert could not easily segregate

⁴⁰¹ See *id.* at 1317–18; see also *E.I. Du Pont de Nemours & Co. v. FTC*, 729 F.2d 128, 139 (2d Cir. 1984) (holding that the “mere existence of an oligopolistic market structure in which a small group of manufacturers engage in consciously parallel pricing of an identical product” is lawful because it is merely “a condition, not a ‘method;’ indeed it could be consistent with intense competition”).

⁴⁰² See Robert H. Porter & J. Douglas Zona, *Bidding, Bid Rigging, and School Milk Prices: Ohio v. Trauth* (1994), in *THE ANTITRUST REVOLUTION*, *supra* note 1, at 211, 216–17 (listing eleven “factors facilitating collusion” in Ohio milk markets identified by economists retained by the state).

⁴⁰³ For an illustration of the relationship among these devices, see *Hall v. United Air Lines, Inc.*, 296 F. Supp. 2d 652 (E.D.N.C. 2003). The court granted summary judgment on the ground that plaintiffs’ evidence of plus factors, particularly various forms of “signaling,” in an alleged conspiracy by airlines to depress ticket agent commission rates, did not exclude the possibility of independent action. The court rejected a set of asserted “structural plus factors” as “unfounded under antitrust law.” *Id.* at 674. These included concentration on the airlines’ side of the market, fragmentation on the ticket agencies’ side, entry barriers, “an upward sloping supply curve,” and a fungible service. *Id.* The court held that mere participation in an oligopoly is not unlawful, and that price uniformity was to be expected for homogeneous products. *Id.* It denied as moot the defendant’s motions to exclude the reports and testimony of the plaintiffs’ experts. *Id.* at 681.

⁴⁰⁴ See *City of Tuscaloosa v. Harcros Chems., Inc.*, 158 F.3d 548, 566 (11th Cir. 1998).

⁴⁰⁵ *Id.* at 567.

the extraneous data, his testimony based on those data was inadmissible.⁴⁰⁶

Courts also occasionally exclude as irrelevant expert testimony on the issue of collusion. Facilitating practices, for example, are not necessarily plus factors.⁴⁰⁷ To incur liability, the facilitating practices, viewed in light of the market structure and their competitive effects, must tend to exclude the possibility of independent action by making it more plausible that the defendants' conduct emanated from collusion than from unilateral conduct in the defendant's own self-interest.⁴⁰⁸ Expert testimony that the defendant's conduct is collusive in some sense other than the one the law defines is irrelevant.⁴⁰⁹

Some courts go further and exclude expert testimony that the defendant's conduct is collusive within the law's definition.⁴¹⁰ Identifying unlawful collusion is outside the domain of economic expertise because the legal definition of collusion differs from the related economic concept.⁴¹¹ Thus, the expert should testify only to the nature

⁴⁰⁶ *Id.* The court did allow the analysis of Florida data to be used for corroborative purposes. *Id.* at 566-67.

⁴⁰⁷ See *Holiday Wholesale Grocery Co. v. Philip Morris, Inc.*, 231 F. Supp. 2d 1253, 1274-75 (N.D. Ga. 2002), *aff'd sub nom. Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003).

⁴⁰⁸ As one court explained, a plaintiff relying on circumstantial economic evidence to prove an agreement must "present economic evidence that would show that the hypothesis of collusive action was more plausible than that of individual action." *In re Brand Name Prescription Drugs Antitrust Litig.*, 186 F.3d 781, 787 (7th Cir. 1999) (citations omitted). The court pointed out that the plaintiffs did not, "as the defendant manufacturers rather absurdly argue, have to exclude all possibility" that the defendants' parallel conduct "was unilateral rather than collusive." *Id.* And the plaintiffs were "equally wide of the mark . . . when they argue[d] that proof" of parallel conduct that is equally consistent with individual and collusive behavior "shifts to the defendants the burden of proving that the [conduct] was unilateral rather than collusive." *Id.*

⁴⁰⁹ *Williamson Oil*, 346 F.3d at 1322-23.

⁴¹⁰ See Robert A. Milne & Jack E. Pace III, *Conspiratologists at the Gate: The Scope of Expert Testimony on the Subject of Conspiracy in a Sherman Act Case*, ANTITRUST, Spring 2003, at 36, 39-40 (summarizing cases disallowing expert testimony on the existence of a "conspiracy" under Section 1 of the Sherman Act).

⁴¹¹ See George J. Stigler, *What Does an Economist Know?*, 33 J. LEGAL EDUC. 311, 312 (1983) ("There is no established economic content to words such as 'collusion', 'conspiracy', or 'concerted action'."); see also Jonathan B. Baker, *Two Sherman Act Section 1 Dilemmas: Parallel Pricing, the Oligopoly Problem, and Contemporary Economic Theory*, 38 ANTITRUST BULL. 143 (1993) (discussing the difficulties of and the strategies for proving collusive behavior from circumstantial evidence of collusion conducive business environments); Malcolm B. Coate & Jeffrey H. Fischer, *Can Post-Chicago Economics Survive Daubert?*, 34 AKRON L. REV. 795, 828 n.131 (2001) (

While performance evidence can show an anticompetitive effect, neither a Chicago nor a PCE [Post-Chicago Economics] economist should expect to survive a *Daubert* hearing in an oligopolistic industry because the poor performance may be caused by unilateral pricing behavior, and not by a price-fixing agreement. The problem is particularly acute for the PCE economist as the formal model of unilateral oligopoly pricing may match the cartel outcome.

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of the practice and its likely motivations.⁴¹² For example, an expert might testify that a particular course of action was contrary to the self-interest of the defendants.⁴¹³

Two decisions of the Eleventh Circuit illustrate these points. In *City of Tuscaloosa v. Harcross Chemicals, Inc.*,⁴¹⁴ the district court had excluded expert testimony that the circumstantial evidence in the case justified a finding of price-fixing. The lower court reasoned that, because the expert failed to distinguish between an illegal agreement and consciously parallel behavior, his testimony failed *Daubert's* criteria for reliability.⁴¹⁵ Based on the evidentiary ruling, the court granted summary judgment for the defendants.⁴¹⁶ The Eleventh Circuit held, however, that the district court erred in requiring the expert, as a condition of admissibility under *Daubert*, to "show a successful conspiracy."⁴¹⁷ Experts' opinions "need not prove the plaintiffs' case by themselves; they must merely constitute one piece of

⁴¹² See Milne & Pace, *supra* note 410, at 42 (concluding that expert testimony should be limited to "such relatively objective factors as whether there is an economic motive to conspire, whether the market structure is conducive to collusion, whether defendants' conduct is consistent with their non-interdependent business interests and the like"). Some commentators have suggested that experts should be permitted to testify that the defendant's conduct is collusive in economic terms, leaving the ultimate issue of the legality of the conduct to the jury. See, e.g., Hovenkamp, *supra* note 1, at 141 (stating that an expert should be permitted to testify that "a fact inference of agreement is warranted" by the economic evidence); Robert F. Lanzillotti & James T. McClave, *Comment: Meeting the "Ambiguity" Test Under Daubert*, ANTITRUST, Spring 2003, at 44, 45 (stating that an expert should be permitted to testify to the Bayesian "likelihood ratio" of collusion because they can tell "whether the evidence was more likely to have been generated in a collusive than in a non-collusive market"); Stigler, *supra* note 411, at 311-12. These scholars are all quoted and criticized in Milne & Pace, *supra* note 410, at 37-39. All of these assertions assume that an economist's definition of the "fact" of a "cartel," an "agreement," or "collusion" has a well-understood relationship to the legal definition of a Sherman Act agreement and, thus, that hearing the economist's opinion on the issue would assist the jury. But the jury's almost-certain assumption would be that the two definitions are the same. For this reason, the court in *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003), discussed *infra*, held that this sort of testimony is irrelevant. *But cf. In re Brand Name Prescription Drugs Antitrust Litig.*, No. 94 C 897, MDL 997, 1999 WL 33889 (N.D. Ill. Jan. 19, 1999), *aff'd in part, vacated in part*, 186 F.3d 781 (7th Cir. 1999). The trial court, having "instructed the jury that there is . . . a qualitative difference between the word 'collusion' as he has used it in the conspiracy charge in this case and what the jury has to find" allowed the expert to testify to collusion so long as his opinion did not "equat[e] collusion in an economic sense and conspiracy in a legal sense." Milne & Pace, *supra* note 410, at 41. Milne and Pace observe that "it is difficult to see how the testimony that was allowed did not convey to the jury that [the expert] believed an explicit conspiracy existed." *Id.*

⁴¹³ *But cf. Cleveland v. Viacom, Inc.*, 73 Fed. Appx. 736 (5th Cir. 2003) (affirming the exclusion of conclusory testimony of plaintiffs' expert that the defendant movie studios' parallel refusals to deal with the plaintiffs on the same terms as with the plaintiffs' dominant rival was contrary to the studios' self interest).

⁴¹⁴ 158 F.3d 548, 564 (11th Cir. 1998).

⁴¹⁵ See *id.* at 564-65.

⁴¹⁶ AREEDA & HOVENKAMP, *supra* note 392, ¶ 322.1 (citing *City of Tuscaloosa v. Harcross Chem., Inc.*, 877 F. Supp. 1504 (N.D. Ala. 1995), *rev'd*, 158 F.3d 548 (11th Cir. 1998)).

⁴¹⁷ *City of Tuscaloosa*, 158 F.3d at 564.

the puzzle that the plaintiffs endeavor to assemble before the jury."⁴¹⁸ Summary judgment was inappropriate because the expert's evidence of parallel behavior tended to show a plus factor sufficient to distinguish conscious parallelism from unlawful collusion.⁴¹⁹ The court of appeals did agree with the exclusion of the expert's opinion concerning the ultimate issue of whether a conspiracy existed, however, because a jury is "entirely capable of determining whether or not to draw such conclusions without any technical assistance from [experts]."⁴²⁰ The rules of evidence permit experts to testify to an ultimate issue, but only if the testimony would assist the jury. Because the legal definition of agreement differed from economic concepts of collusion or cooperation, the issue was outside of the expert's domain.

The distinction between economic and legal concepts of agreement was also crucial in *Philip Morris*,⁴²¹ where the plaintiffs tried to prove by circumstantial evidence⁴²² that cigarette manufacturers had fixed prices.⁴²³ The district court granted summary judgment in an extended opinion stressing the failure of the plaintiffs' expert to distinguish between facilitating practices and plus factors.⁴²⁴ The plaintiffs identified, for example, "signaling" of intended price changes in press conferences and analyst reports, monitoring of competitive behavior by reports to a central organization, reducing the number of tiers in defendants' price structure, and engaging in prior conspiracies to limit health-based marketing of cigarettes and to fix prices.⁴²⁵

⁴¹⁸ *Id.* at 565 (citations omitted).

⁴¹⁹ *Id.* at 570-73. The necessary plus factor was evidence of incumbency rates that measured the percentage of times the incumbent bidder won subsequent bids on the same account. *Id.* at 572-73. This was evidence that defendants had agreed not to compete on each other's existing accounts. *Id.*

⁴²⁰ *Id.* at 565; see also *Ohio ex rel. Montgomery v. Louis Trauth Dairy, Inc.*, 925 F. Supp. 1247, 1254 (S.D. Ohio 1996) ("[E]xperts may not express an opinion in the form of a legal conclusion regarding the existence of an illegal conspiracy."). *But cf. Petruzzi's IGA Supermarkets, Inc. v. Darling-Delaware Co.*, 998 F.2d 1224, 1240-41 (3d Cir. 1993) (holding that the trial court erred in excluding at the pretrial stage expert testimony that the defendants' conduct was collusive).

⁴²¹ *Holiday Wholesale Grocery Co. v. Philip Morris Co.*, 231 F. Supp. 2d 1253, 1321 (N.D. Ga. 2002), *aff'd sub nom. Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003).

⁴²² *Id.* at 1274.

⁴²³ *Id.* at 1263.

⁴²⁴ *Id.* at 1274-75. Significantly, the court correctly implied that facilitating practices *can* constitute plus factors; it said simply that they do not *necessarily* do so. *Id.* Thus, the court observed that "'facilitating devices' are not necessarily sufficient under the law to constitute a 'plus factor.'" *Id.* In *Todd v. Exxon Corp.*, 275 F.3d 191 (2d Cir. 2001), the court seemed to imply that facilitating practices *always* constitute plus factors: "[A] horizontal price-fixing agreement may be inferred on the basis of conscious parallelism, when such interdependent conduct is accompanied by circumstantial evidence and plus factors such as defendants' use of facilitating practices." *Id.* at 198 (alteration in original). The suggestion that *any* facilitating practice is a plus factor was likely inadvertent.

⁴²⁵ *Holiday Wholesale*, 231 F. Supp. 2d at 1274-1310.

The court examined each of these practices and found that they either had legal justifications or did not tend to exclude the possibility of independent action, even though they may have facilitated collusion.⁴²⁶

Plaintiffs' expert submitted an affidavit stating:

I characterize the behavior that I have observed in the cigarette industry during the relevant period as a "collusive oligopoly" or a "loose cartel." I believe that the cigarette companies have engaged in activities beyond mere conscious parallelism, and indeed have participated in various facilitating practices that are anticompetitive in purpose and effect.⁴²⁷

According to the court, the expert was "positing a new theory where certain aspects of conscious parallelism should be found to be anticompetitive."⁴²⁸ The court continued: "The failure of Plaintiff's expert to distinguish conscious parallelism from cartel behavior makes his subsequent opinion inadmissible as he finds inferences of collusion where the law finds none."⁴²⁹ The expert failed to explain how the facilitating practices excluded the possibility of independent action, and his "allegations of 'anticompetitive' conduct [were] broad and could be read to include lawful activity."⁴³⁰ Consequently, "his flawed view of the law" rendered his testimony inadmissible.⁴³¹ The court of appeals agreed that because the witness

defined collusion to include conscious parallelism . . . he did not differentiate between legal and illegal pricing behavior, and instead simply grouped both of these phenomena under the umbrella of illegal, collusive price fixing. This testimony could not have aided a finder of fact to determine whether appellees' behavior was or was not legal, and the district court properly excluded it.⁴³²

D. Damages

This Article has shown that the process of formulating antitrust law requires the adoption of economic authority and the integration of its insights with institutional considerations. This process is equally evident in the rules governing the proof of antitrust damages. Section 4 of the Clayton Act⁴³³ authorizes those injured by antitrust violations

⁴²⁶ *Id.* at 1274–1314 (noting that expert's testimony focused on "how certain practices in the cigarette industry would have facilitated an agreement . . . [, but did] not tend to exclude the possibility that defendants were engaged in lawful competitive conduct").

⁴²⁷ *Id.* at 1322.

⁴²⁸ *Id.* at 1321.

⁴²⁹ *Id.*

⁴³⁰ *Id.* at 1322.

⁴³¹ *Id.*

⁴³² *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1323 (11th Cir. 2003).

⁴³³ 15 U.S.C. § 15 (2000).

to recover treble damages, but courts qualified this right by formulating a system of rules linking damages to the purposes of the antitrust laws in ways the courts can administer. Courts rely on economic authority to structure the process of proof so that damages reflect not only the net harm to the plaintiff, but also the net social harm.⁴³⁴ First, using the doctrines of antitrust injury and standing, courts define the measure of compensable harms to reflect the social harm flowing from the unlawful practice so that damage awards will not deter efficient conduct. As this Article shows below, courts must look to economic authority to identify the inefficiencies to which each practice is directed. Second, rules governing proof of harm assure that actual damages are measured by the difference between the plaintiff's actual condition as a result of the offense and its hypothetical condition but for the offense. Proof of this amount requires the construction of a theoretically sound damage model that accurately projects the "but for" world. Expert testimony is almost always essential to this process. Because the process depends largely on statistical methods that transcend the antitrust context, courts typically evaluate those methods using *Daubert's* reliability inquiry, incorporating the standards of the economics profession.

1. *Antitrust Injury and Standing*

Despite the general language of Section 4 of the Clayton Act, the law does not permit all those who suffer injury from an antitrust violation to recover. The Supreme Court has limited recovery to prevent antitrust law from deterring efficient conduct and to assure that the appropriate deterrent penalty be imposed efficiently.⁴³⁵ The Court's vehicles in this task have been the antitrust injury and standing doctrines, both of which are shaped by economic authority and, in turn, determine the appropriate role of expert testimony. The antitrust injury doctrine requires a plaintiff to have suffered a harm caused by the anticompetitive aspect of a practice.⁴³⁶ It is not enough for the plaintiff to prove that a violation inflicted harm; the harm must be one causally connected to the inefficiency for which the practice is prohibited. Proper application of the doctrine requires a court to determine, in light of the relevant economic authority, whether the alleged harm bears the requisite causal relationship to the inefficiency associ-

⁴³⁴ See Roger D. Blair & William H. Page, "Speculative" Antitrust Damages, 70 WASH. L. REV. 423, 428-35 (1995).

⁴³⁵ See generally William H. Page, *The Scope of Liability for Antitrust Violations*, 37 STAN. L. REV. 1445 (1985) (discussing the relationship between standing and antitrust injury in determining optimal deterrence).

⁴³⁶ *Atl. Richfield Co. v. USA Petroleum Co.*, 495 U.S. 328, 334 (1990).

ated with the practice.⁴³⁷ The effect of such an inquiry on expert testimony is apparent in *Brunswick*,⁴³⁸ which first articulated the antitrust injury doctrine.⁴³⁹

Brunswick, a manufacturer of bowling equipment, acquired and began operating some of its customers' bowling centers in financial difficulty. The competitors of those centers sued, alleging that the acquisitions violated Section 7 of the Clayton Act and that the plaintiffs were injured by the preservation of the failing centers.⁴⁴⁰ The plaintiffs offered the testimony of qualified experts concerning the "profits which the plaintiff bowling centers would have made but for defendant's violations of law."⁴⁴¹ The Court's adoption of the requirement of antitrust injury,⁴⁴² however, rendered the testimony irrelevant. Even if the acquisitions were unlawful, the plaintiffs' lost profits should not have been allowed as a measure of damages because they were unrelated to the reason for the prohibition of the merger.⁴⁴³ This requirement imposes important constraints on experts. Instead of showing simply that the defendant's conduct injured the plaintiff, an expert must show that the harm stems from the inefficient aspect of the practice.⁴⁴⁴ Thus, the measures of cost that determine whether

⁴³⁷ See generally Roger D. Blair & William H. Page, *The Role of Economics in the Definition of Antitrust Injury*, 17 *MANAGERIAL AND DECISION ECON.* 127 (1996) (discussing the economic analysis used by courts in determining standing and antitrust injury).

⁴³⁸ *Brunswick Corp. v. Pueblo Bowl-O-Mat*, 523 U.S. 477, 488–89 (1977).

⁴³⁹ See generally John E. Lopatka & William H. Page, *Brunswick at 25: Antitrust Injury and the Evolution of Antitrust Law*, *ANTITRUST*, Fall 2002, at 20 (discussing the *Brunswick* case and the effect that that case had on substantive antitrust law).

⁴⁴⁰ See *Brunswick*, 449 U.S. at 486–88.

⁴⁴¹ *NBO Indus. Treadway Cos. v. Brunswick Corp.*, 523 F.2d 262, 276 (3d Cir. 1975), *vacated sub nom. Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 449 U.S. 477 (1977).

⁴⁴² *Brunswick*, 449 U.S. at 489.

⁴⁴³ *Id.* at 488 (holding that it "is inimical to the purposes of these laws to award damages" measured by the "profits [plaintiffs] would have realized had competition been reduced").

⁴⁴⁴ There are limits to this principle, which are illustrated by *State Oil v. Khan*. See 522 U.S. 3 (1997). Under a strictly economic interpretation, a dealer who suffers lost profits as a result of vertical maximum price fixing does not suffer antitrust injury because the practice itself creates no inefficiency. See Page, *supra* note 435, at 1469–70; Blair & Lopatka, *supra* note 153, at 139–46. Under such an interpretation, any expert testimony showing that the dealer had suffered lost profits would be irrelevant. In the court of appeals decision in *Khan*, however, Judge Posner rejected this conclusion, reasoning that the interpretation voided *Albrecht's* per se rule: *someone* must be able to suffer antitrust injury from a per se illegal practice for the rule to have "some domain of application." *Khan v. State Oil Co.*, 93 F.3d 1358, 1364 (7th Cir. 1996), *vacated on other grounds*, 522 U.S. 3 (1997). The rule could only be based on a non-economic rationale, such as protecting trader freedom. Even if there is no inefficiency from vertical maximum price fixing, Judge Posner wrote, the Supreme Court "may also think that interfering with the freedom of a dealer to raise prices may cause antitrust injury." *Id.* Thus, it was possible that "the injury to a dealer like *Khan* from not being able to raise his price because of a restriction imposed by his supplier is antitrust injury." *Id.* The expert's report was sufficiently probative to show injury in fact under such a measure. *Id.* at 1366. The Supreme Court reversed, overruling *Albrecht's* per se rule. *Khan*, 522 U.S. at 22. Thus, the antitrust injury inquiry forced the Court to con-

the defendant's price-cutting is predatory also determine whether the harm to its rival from the price-cutting constitutes antitrust injury.⁴⁴⁵

In addition to the requirement of antitrust injury, the Supreme Court has imposed antitrust standing restrictions limiting the right to sue to the classes of actors who would be the most efficient plaintiffs.⁴⁴⁶ One example of these restrictions is the rule of *Illinois Brick*.⁴⁴⁷ A decade earlier, the Supreme Court had already held that those who purchase directly from antitrust offenders may sue for the entire overcharge, even if they passed on a portion of it to others in the chain of distribution.⁴⁴⁸ In *Illinois Brick*, the Court extended the logic of that holding by denying the right to sue for damages to indirect purchasers who pay an overcharge as a result of an antitrust violation.⁴⁴⁹ Explaining the rule, the Court emphasized the limitations of expert testimony in resolving factual issues in complex markets. It noted the

serious problem of measuring the relevant elasticities—the percentage change in the quantities of the passer's product demanded and supplied in response to a one percent change in price. In view of the difficulties that have been encountered, even in informal adversary proceedings, with the statistical techniques used to estimate these concepts . . . it is unrealistic to think that elasticity studies introduced by expert witnesses will resolve the pass-on issue.⁴⁵⁰

The Court observed that the "economist's hypothetical model"⁴⁵¹ of the incidence of an overcharge among actors in a chain of distribution cannot reliably capture the real-world complexities of identifying the degree of passing on. The "sound laws of economics" actually "heighten[ed] the awareness of the difficulties and uncertainties involved in determining how the relevant market variables would have behaved had there been no overcharge."⁴⁵² The *Illinois Brick* rule means that expert testimony concerning the overcharge to indirect purchasers, which is routinely offered in state court indirect purchaser

front directly the economic absurdity of *Albrecht*, and this led directly to the demise of the per se rule. See Lopatka & Page, *supra* note 439, at 23.

⁴⁴⁵ *Pool Water Prods. v. Olin Corp.*, 258 F.3d 1024, 1036 (9th Cir. 2001) (holding that where the plaintiff failed to allege pricing below the appropriate measure of cost, its "reduced profits attributable to defendants' decrease in prices [was] not an antitrust injury").

⁴⁴⁶ See Page, *supra* note 435, at 1483–98. Antitrust standing, of course, is distinct from standing in the constitutional sense, "which requires only injury in fact plus redressability." *U.S. Gypsum Co. v. Ind. Gas Co.*, 350 F.3d 623, 627 (7th Cir. 2003).

⁴⁴⁷ *Ill. Brick Co. v. Illinois*, 431 U.S. 720 (1977).

⁴⁴⁸ *Hanover Shoe, Inc. v. United Shoe Mach. Corp.*, 392 U.S. 481, 89–94 (1968).

⁴⁴⁹ *Ill. Brick*, 431 U.S. at 744.

⁴⁵⁰ *Id.* at 742.

⁴⁵¹ *Id.* In using this phrase, the Court echoed its observation in *Hanover Shoe*, 392 U.S. at 493, that it is "difficult to determine, in the real economic world rather than an economist's hypothetical model . . . what effect a change in a company's price will have on its total sales." *Id.* at 726 n.3.

⁴⁵² *Ill. Brick*, 431 U.S. at 743 (citation omitted).

class actions,⁴⁵³ is categorically inadmissible in federal court because the Supreme Court has determined, as a matter of economic authority, that it would be unduly costly or unreliable.⁴⁵⁴

2. *Proof of Damages*

The antitrust injury and standing doctrines identify which measures of harm are consistent with the public goals of the antitrust laws. The plaintiffs must then prove that the defined harm occurred—typically with an expert’s model that compares the plaintiffs’ actual condition, measured by the appropriate index, with their but-for condition.⁴⁵⁵ Again, economic authority controls the process; the law of damages, much like the law of market definition, has grown to embody accepted economic criteria for assessing the net harm attributable to a practice. The models courts use to determine the existence of the practice and its likely effects on competition also guide any inquiry into the effects of the practice on the plaintiff.⁴⁵⁶ The antitrust injury inquiry assures that the alleged harm bears the necessary causal link to the inefficiency associated with the practice. That causal link forms the basis for any damage model.

Ideally, the damage model would isolate the antitrust offense as the single causal factor accounting for the difference between its actual condition and the but-for condition.⁴⁵⁷ Thus, the model must account for other major causal factors that may have affected the index during the relevant period.⁴⁵⁸ To do this, an expert typically must

⁴⁵³ See generally John E. Lopatka & William H. Page, *Indirect Purchaser Suits and the Consumer Interest*, 48 ANTITRUST BULL. 531 (2003) (summarizing the *Illinois Brick* rule and discussing the failure of state indirect purchaser suits to properly redress harm to consumers).

⁴⁵⁴ See *Drug Mart Pharmacy Corp. v. Am. Home Prods. Corp.*, NO. 93-CV-5148 (ILG), 2002 WL 31528625, at *10 (E.D.N.Y. Aug 21, 2002) (excluding evidence of lost profits damages on the ground that they were barred by *Illinois Brick*).

⁴⁵⁵ Blair & Page, *supra* note 434, 436–38; see 2 PHILLIP E. AREEDA ET AL., ANTITRUST LAW ¶¶ 390–97 (2d ed. 2000).

⁴⁵⁶ Blair & Page, *supra* note 434, at 438 (arguing that “the plaintiff must rely on a theoretical model of the illegal practice” and that “[t]he model’s assumptions and causal implications will provide the basis for both the measure of damages and the projection of the plaintiff’s but-for experience”).

⁴⁵⁷ See *U.S. Tobacco Co. v. Conwood Co.*, 537 U.S. 1148 (2003) (denying certiorari); Brief of Washington Legal Foundation, Stephen E. Fienberg, Franklin M. Fisher, Daniel L. McFadden, and Daniel L. Rubinfeld as Amici Curiae in Support of Petitioners at 10, *U.S. Tobacco* (No. 02-603) (“An appropriate economic analysis of damages would identify the wrongful acts and devise a scientific test to measure their impact as opposed to those of lawful competitive actions.”); D.H. Kaye, *Adversarial Econometrics in United States Tobacco Co. v. Conwood Co.*, 43 JURIMETRICS J. 343, 347 (2003) (“If one could quantify the effects of all the possibly confounding variables, then one could ascertain whether there is any ‘left over’ effect that should be attributed to the illegal conduct.”).

⁴⁵⁸ See, e.g., *In re Brand Name Prescription Drugs Antitrust Litig.*, 186 F.3d 781, 786 (7th Cir. 1999) (noting that “to obtain damages the plaintiffs would have to separate the price effects of collusion from the price effects of the defendants’ lawful market power”); *Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1224 (9th Cir. 1997)

(1) gather the necessary data; (2) identify a benchmark, or normative, period that was free from illegal conduct, but was otherwise comparable to the damage period; and (3) project the but-for world using an appropriate theoretical model of firm behavior⁴⁵⁹ and appropriate statistical methods, usually multiple regression analysis. Courts should scrutinize each of these steps to assure that the expert's model is reliable and consistent with economic authority.⁴⁶⁰

In addition, the expert first must ensure that the data used in the model are accurate. For example, an expert attempting to show that the defendant's actions delayed the production of the plaintiff's product, thus reducing the plaintiff's profits, may not simply accept without verification the plaintiff's projections of its likely production volumes and sales.⁴⁶¹ The expert must verify the accuracy of the data.⁴⁶² Although errors in an expert's selection of a sample from a verified data set generally "bear on the weight of the testimony, not its admissibility,"⁴⁶³ in some instances, errors may reduce the weight of

(holding that the plaintiffs were required to "segregate damages attributable to lawful competition from damages attributable to [defendant's] monopolizing conduct").

⁴⁵⁹ See, e.g., *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1055 (8th Cir. 2000), *rev'g* 21 F. Supp. 2d 923 (W.D. Ark. 2000). The expert in *Concord Boat* relied on a Cournot model of oligopoly, which predicts that in a two-firm market, equally efficient firms producing identical products would have equal market shares. *Concord Boat*, 21 F. Supp. 2d at 926. Based on this model, the expert testified that Brunswick's seventy percent market share must be attributable to exclusionary conduct. *Id.* The district court accepted the testimony because the Cournot model "is an appropriate method for predicting equilibrium price formation in oligopolistic markets." *Id.* at 934. But, as Herbert Hovenkamp has noted, the Cournot model was inapplicable to a market with differentiated products, in which the principal rival had been forced to recall all of its engines. See Hovenkamp, *supra* note 1, at 126–29; see also *Heary Bros. Lightning Prot. Co. v. Lightning Prot. Inst.*, 287 F. Supp. 2d 1038, 1066–68 (D. Ariz. 2003) (excluding expert testimony basing damages on Cournot duopoly model, where the expert's assumptions contradicted the Cournot model's implications concerning the relationship of a firm's marginal cost to its market share).

⁴⁶⁰ See, e.g., *Am. Booksellers Ass'n v. Barnes & Noble, Inc.*, 135 F. Supp. 2d 1031, 1041 (N.D. Cal. 2001) ("The Fisher model contains entirely too many assumptions and simplifications that are not supported by real-world evidence.").

⁴⁶¹ *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 249 F. Supp. 2d 622, 696 (E.D. Pa. 2003) (

Given Dr. Kursh's reliance on [plaintiff's] projections against the background of only generalized research into the EAS systems market . . . , the court concludes that Dr. Kursh's testimony as to future lost Laserfuse profits should not have been admitted at the *Daubert* stage of these proceedings, nor should it have been placed before the jury at trial, even if the arithmetic model used accurately predicts future lost profits in the typical case.

).

⁴⁶² *Heary Bros.*, 287 F. Supp. 2d at 1065–66 (excluding expert testimony on damages based on the assumption that there were only two sellers of lightning protection equipment before the alleged offense, where the evidence showed that there were other rivals).

⁴⁶³ *Ohio v. Louis Trauth Dairy, Inc.*, 925 F. Supp. 1247, 1253 (S.D. Ohio 1996).

the evidence sufficiently to warrant summary judgment.⁴⁶⁴ Courts also scrutinize the normative period on which the expert bases the projection of the but-for world. The normative period should be a reasonable proxy for the market as it would have been absent the illegal conduct. Selection of a period in which the plaintiff's fortunes were unusually good is improper, because it would exaggerate the difference between the plaintiff's normal condition and its condition during the damage period.⁴⁶⁵ Courts now require experts to conduct standard statistical tests to reinforce the reliability of their selection of a normative period.⁴⁶⁶

Courts also insist that experts use appropriate statistical techniques in projecting the but-for world. In some instances, this has led to a requirement that the expert conduct a multiple regression analysis, by which the expert can calculate the effect that a change in an independent or explanatory variable has on the dependent variable, the variable that the model seeks to "explain."⁴⁶⁷ In antitrust actions,

⁴⁶⁴ In *Petruzzi's IGA Supermarkets, Inc. v. Darling-Delaware Co.*, 998 F.2d 1224, 1241 (3d Cir. 1993), plaintiff's data sample contained only one year of information concerning a particular defendant. The court wrote:

While this data problem is not enough to exclude the price study generally, it does serve to limit the inferences that can be drawn from it as it relates to [the defendant]. Therefore, because this is the only evidence implicating [the defendant], this evidence standing alone is not sufficient to defeat summary judgment.

Id.

⁴⁶⁵ In *re Aluminum Phosphide Antitrust Litig.*, 893 F. Supp. 1497, 1504 (D. Kan. 1995). In *Aluminum Phosphide*, the plaintiffs' expert selected the ten-month period after the alleged conspiracy had ended as the normative period, ignoring data from the period before the alleged conspiracy, when prices were higher. *Id.* at 1501-02. The court concluded that the expert's "analysis is driven by a desire to enhance the measure of plaintiffs' damages, even at the expense of well-accepted scientific principles and methodology." *Id.* at 1506-07.

⁴⁶⁶ *Id.* at 1503 (holding expert should have performed a regression analysis on pricing patterns in the proposed normative period, using a dummy variable for the effect of the conspiracy in order to assure that the conspiracy was not still affecting the market during that time); see also *Blue Dane Simmental Corp. v. Am. Simmental Ass'n*, 178 F.3d 1035, 1040-41 (8th Cir. 1999) (affirming the district court's exclusion of expert because expert had not identified and examined independent variables as other economists would have and finding that "before and after" tests are "not typically used to make statements regarding causation without considering all independent variables that could affect the conclusion"); *Sanner v. Bd. of Trade of Chicago*, No. 89 C 8467, 2001 WL 1155277, at *7 (N.D. Ill. Sept. 28, 2001) (excluding expert testimony because expert failed to conduct tests to substantiate his opinion and failed to gather scientific evidence according to accepted methods); *In re Brand Name Prescription Drugs Antitrust Litig.*, No. 94 C 897, MDL 997, 1999 WL 33889, at *12 (N.D. Ill. Jan. 19, 1999) (excluding expert for failure to conduct study of demand elasticities), *rev'd on other grounds*, 186 F.3d 781 (7th Cir. 1999); *Law v. NCAA*, No. 94-2053-KHV, 1998 U.S. Dist. LEXIS 6640, at *12-35 (D. Kan. Apr. 23, 1998) (admitting expert over challenges for failure to perform regression analysis and other standard methodology).

⁴⁶⁷ See ABA SECTION OF ANTITRUST LAW, PROVING ANTITRUST DAMAGES: LEGAL AND ECONOMIC ISSUES 145 (William H. Page ed., 1996) [hereinafter PROVING ANTITRUST DAMAGES].

the dependent variables are some critical elements of a damage model, such as profit, sales, or price. A simple weighted average of the critical variable during a normative period does not provide a basis for projecting what the competitive price would have been but for the violation because it assumes that the only difference between the normative and damage periods is the violation.⁴⁶⁸ Consequently, a regression analysis is necessary to isolate the effects of other variables.⁴⁶⁹

Of course, regression analyses themselves are subject to challenge. It is not enough that regression is a legitimate technique for estimating damages; the expert's use of it must be reliable and consistent with economic authority.⁴⁷⁰ The considerations of the profession and those of the legal system in evaluating regressions are similar, but not necessarily identical.⁴⁷¹ One common ground for challenge is the failure to include appropriate variables in the regression model.⁴⁷² This issue is as much a matter of economic authority as one of reliability. Independent variables must have a theoretical influence on the dependent variable,⁴⁷³ and the relevant theoretical models of challenged practices are inevitably elements of economic authority.⁴⁷⁴ Cost theoretically affects price, so if price is the dependent variable, cost must normally be included as an independent variable. Failure to include an important independent variable may lead to biased re-

⁴⁶⁸ *Id.* at 149.

⁴⁶⁹ *Aluminum Phosphide*, 893 F. Supp. at 1503–04.

⁴⁷⁰ See Kaye, *supra* note 457, at 346 (noting that to say a study employed regression analysis “is a bit like saying that it used arithmetic or algebra”).

⁴⁷¹ See Posner, *supra* note 6, at 94–95 (arguing that courts should not necessarily adopt statisticians' standards of statistical significance).

⁴⁷² See *Conwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 794 (6th Cir. 2002). For criticism of *Conwood's* analysis of regressions, see Kaye, *supra* note 457, at 350 and D.H. Kaye, *The Dynamics of Daubert: Methodology, Conclusions, and Fit in Statistical and Econometric Studies*, 87 VA. L. REV. 1933, 1988–2010 (2001) (discussing the expert testimony in *Conwood*). For other cases on the issue, see *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1056–58 (8th Cir. 2000); *Blomkest Fertilizer, Inc. v. Potash Corp. of Sask.*, 203 F.3d 1028, 1038 (8th Cir. 2000), *cert. denied*, 531 U.S. 815 (2000); *Blue Dune Simmental Corp. v. Am. Simmental Ass'n*, 178 F.3d 1035, 1040–41 (8th Cir. 1999); *In re Polypropylene Carpet Antitrust Litig.*, 93 F. Supp. 2d 1348, 1358 (N.D. Ga. 2000); *In re Indus. Silicon Antitrust Litig.*, No. 95-2104, 1998 WL 1031507, at *3 (W.D. Pa. Oct. 13, 1998); *Law v. NCAA*, No. 94-2053-KHV, 1998 U.S. Dist. LEXIS 6640, at *26 (D. Kan. Apr. 23, 1998); *In re Aluminum Phosphide Antitrust Litig.*, 893 F. Supp. 1497, 1504 (D. Kan. 1995).

⁴⁷³ Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 181 (2d ed. 2000); PROVING ANTITRUST DAMAGES, *supra* note 467, at 146; see also Kaye, *supra* note 457, at 347 (“Deciding which variables might affect sales and how they could be related requires substantive economic theory.”).

⁴⁷⁴ See Kevin A. Kordana & Terrance O'Reilly, *Daubert and Litigation-Driven Econometrics*, 87 VA L. REV. 2019, 2022 (2001) (suggesting that it may be “unnecessary to worry about finding the right statistical technique to test [the *Conwood* expert's] theory, since the underlying model itself does not seem to be drawn from an established theory of market behavior”).

sults⁴⁷⁵ or reduce the explanatory power of the model.⁴⁷⁶ Similarly, including too many independent variables may lead to spurious results.⁴⁷⁷ Adding variables that are correlated with each other can diminish the effect of individual variables.⁴⁷⁸

Challenges on these grounds have had mixed results,⁴⁷⁹ however, in part because of the Supreme Court's decision in *Bazemore v. Friday*,⁴⁸⁰ which predates *Daubert*. In *Bazemore*, the lower courts in an employment discrimination case had excluded a regression analysis on the ground that it failed to include "'all measurable variables thought to have an effect on salary level.'"⁴⁸¹ The Supreme Court reversed, stating:

While the omission of variables from a regression analysis may render the analysis less probative than it otherwise might be, it can hardly be said, absent some other infirmity, that an analysis which accounts for the major factors must be considered unacceptable as

⁴⁷⁵ PROVING ANTITRUST DAMAGES, *supra* note 467, at 162–63; Daniel L. Rubinfeld, *Econometrics in the Courtroom*, 85 COLUM. L. REV. 1048, 1072 (1985); Daniel L. Rubinfeld & Peter O. Steiner, *Quantitative Methods in Antitrust Litigation*, 46 LAW & CONTEMP. PROBS., Autumn 1983, at 69, 90.

⁴⁷⁶ See Rubinfeld & Steiner, *supra* note 475, at 90–91. The R^2 figure provides a measurement of the explanatory power of the model. If important variables are omitted, their effect falls into the error term, and the R^2 is lower. Rubinfeld, *supra* note 473, at 215.

⁴⁷⁷ Franklin M. Fisher, *Multiple Regression in Legal Proceedings*, 80 COLUM. L. REV. 702, 715 (1980).

⁴⁷⁸ See, e.g., *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 660 (7th Cir. 2002) (discussing the problem of multicollinearity).

⁴⁷⁹ See *Conwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 793 (6th Cir. 2002) (finding that expert ruled out other factors); *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1047, 1056–57 (8th Cir. 2000) (concluding that Cournot model using only market share as variable failed to account for other events in the market affecting price and should have been excluded); *Blomkest Fertilizer, Inc. v. Potash Corp. of Sask.*, 203 F.3d 1028, 1038 (8th Cir. 2000) (finding expert's econometric model unreliable—although not striking it under *Daubert*—for failure to consider events that would have increased prices absent a conspiracy); *Callahan v. A.E.V., Inc.*, 182 F.3d 237, 254–60 (3d Cir. 1999) (finding expert's "but for" model sufficient to create factual question despite alleged failure to consider other variables); *Blue Dane Simmental Corp. v. Am. Simmental Ass'n*, 178 F.3d 1035, 1040–41 (8th Cir. 1999) (finding expert's "before and after" model was unreliable because it failed to take into account other independent variables); *Rossi v. Standard Roofing, Inc.*, 156 F.3d 452, 483–87 (3d Cir. 1998) (same); *In re Indus. Silicon Antitrust Litig.*, No. 95-2104, 1998 WL 1031507, at *3 (W.D. Pa. Oct. 13, 1998) (observing that defendants cannot simply point to excluded variables but must support contention that the variables should have been included); *Law v. NCAA*, No. 94-2053-KHV, 1998 U.S. Dist. LEXIS 6640, at *13–16 (D. Kan. Apr. 23, 1998) (refusing to exclude, on a motion in limine, statistical estimates of the amount of damages from an NCAA salary cap); *In re Aluminum Phosphide Antitrust Litig.*, 893 F. Supp. 1497, 1503–05 (D. Kan. 1995) (finding expert's "before and after" model unreliable for failure to account for several factors); *Colorado v. Goodell Bros.*, Civ. A. No. 84-A-803, 1987 WL 6771, at *4 (D. Colo. Feb. 17, 1987) (concluding that expert's failure to take into account an engineer's estimate of construction project cost indicated that expert's method was unreliable).

⁴⁸⁰ 478 U.S. 385 (1986).

⁴⁸¹ *Id.* at 399–400 (quoting Court of Appeals).

evidence of discrimination. Normally the failure to include variables will affect the analysis' probativeness, not its admissibility.⁴⁸²

Although this language suggests that failure to include all relevant variables affects only the weight to be accorded a regression analysis,⁴⁸³ the Court did note that "[t]here may, of course, be some regressions so incomplete as to be inadmissible as irrelevant."⁴⁸⁴

In some instances, the relative lenience of *Bazemore* has led to a kind of burden shifting. Some courts have required a party to support with evidence any contention that the omission of particular variables renders a regression unreliable,⁴⁸⁵ and the party offering the regression may then be required to rebut.⁴⁸⁶ One basis for evaluation is a high R^2 figure for the regression. This may suggest that the independent variables in the model are good at accounting for the factors affecting the dependent variable and that the addition of more independent variables would not significantly alter the model's predictive power.⁴⁸⁷

The *Polypropylene Carpet* litigation illustrates the complexities confronting courts in analyzing experts' use of regression in antitrust cases.⁴⁸⁸ The plaintiffs' damages expert used a multiple regression

⁴⁸² *Id.* at 400 (internal quotation marks and citations omitted); see also *Conwood*, 290 F.3d at 794 (relying on *Bazemore* to uphold regression evidence).

⁴⁸³ See, e.g., *Sanner v. Bd. of Trade of Chicago*, No. 89 C 8467, 2001 WL 1155277, at *5 (N.D. Ill. Sept. 28, 2001) (holding that objection to "power" of model is better left for jury to decide); *Law v. NCAA*, No. 94-2053-KHV, 1998 U.S. Dist. LEXIS 6640, at *29 (D. Kan. Apr. 23, 1998) (holding that expert's treatment of "other factors" had a logical basis and "any weakness in the underpinnings of his analysis go to the weight and not the admissibility of his testimony").

⁴⁸⁴ *Bazemore*, 478 U.S. at 400 n.10; see also *Kaye*, *supra* note 457, at 347 ("*Daubert* requires the expert to take reasonable steps to eliminate [confounding unmeasured variables] and thus confine the estimated damages to the result of the allegedly illegal conduct.").

⁴⁸⁵ See, e.g., *In re Polypropylene Carpet Antitrust Litig.*, 93 F. Supp. 2d 1348, 1365 (N.D. Ga. 2000) (observing that "defendants do not offer a statistical analysis of demand and price of polypropylene carpet to explain why exclusion of a variable for demand establishes the unreliability of [the expert's] model"); *In re Indus. Silicon Antitrust Litig.*, No. 95-2104, 1998 WL 1031507, at *3 (W.D. Pa. Oct. 13, 1998) ("[A] party cannot successfully challenge the admissibility of a regression analysis by simply pointing to a laundry list of possible independent variables that were not included in the study."); *In re Domestic Air Transp. Antitrust Litig.*, 137 F.R.D. 677, 690 (N.D. Ga. 1991) (class certification stage) (holding that "it is incumbent upon defendants to substantiate" challenges to statistical models).

⁴⁸⁶ See *Polypropylene Carpet*, 93 F. Supp. 2d at 1366 (accepting expert's justification for omitting a demand variable because of lack of data and risk of extrapolation error); *Law v. NCAA*, No. 94-2053-KHV, 1998 U.S. Dist. LEXIS 6640, at *29 (D. Kan. Apr. 23, 1998) (finding that expert's treatment of "other factors" had a logical basis and "any weakness in the underpinnings of his analysis go to the weight and not the admissibility of his testimony").

⁴⁸⁷ See *In re Polypropylene Carpet Antitrust Litig.*, No. 1075, 2000 WL 863456, at *3 n.1 (N.D. Ga. Apr. 27, 2000) (noting that the expert's model had an R^2 between eighty-six and ninety-six percent and, thus, including a variable for demand would not have increased the model's predictive power).

⁴⁸⁸ *Polypropylene Carpet*, 93 F. Supp. 2d at 1366.

analysis to estimate what the prices would have been during the damage period but for the alleged conspiracy⁴⁸⁹ by using manufacturing style, selling style, shipping point, and order quantity as the independent variables.⁴⁹⁰ The expert did not use total manufacturing cost as an independent variable,⁴⁹¹ instead using the ratio of the price of carpet to fiber costs as the dependent variable.⁴⁹² Defendants challenged the expert's treatment of the cost variable⁴⁹³ and asserted that his failure to consider variables for demand, changes in income, interest rates, business cycle characteristics, capacity utilization, the entry of competition, and growing buying power rendered the expert's model unreliable.⁴⁹⁴

The plaintiff's expert explained the decision not to use manufacturing cost as a variable by arguing that sufficient data to estimate properly the effect cost had on price in the benchmark period were unavailable;⁴⁹⁵ that differences in the measures of fiber costs between the benchmark and conspiracy period may cause extrapolation error⁴⁹⁶ from the use of an unrepresentative sample;⁴⁹⁷ and that the price of carpet might affect cost, thus raising problems of endogeneity or simultaneity.⁴⁹⁸ The defendants did not challenge the expert's extrapolation error and endogeneity concerns, but argued instead that there were sufficient data to measure the coefficient of cost to price.⁴⁹⁹ The defendants observed that the expert had run a Chow test⁵⁰⁰ to determine if the coefficients of the independent variables remained constant in the benchmark and damage periods.⁵⁰¹ The court, however, concluded that the sufficiency of the data in performing a Chow test did not mean that the data were sufficient to estimate

489 *Id.* at 1359.

490 *Id.* at 1360.

491 *Id.*

492 *Id.*

493 *Id.* at 1360–63.

494 *Id.* at 1364–66.

495 *Id.* at 1361.

496 *Id.*

497 The court provided the somewhat less useful example of “a model that attempts to predict the growth rate in the height of a seventy-year old person by looking at data from when the person was thirteen years old.” *Id.* at 1361 n.10.

498 *Id.* at 1361. Simultaneity occurs when the dependent and independent variables affect each other. See Rubinfeld, *supra* note 473, at 195 n.44. If simultaneity exists, then spurious correlation may result. *Id.* at 195. Rubinfeld warns that simultaneity may result in price-fixing cases because if price-fixing occurred, the defendant may have affected the values of the independent variables and biased the results. *Id.* at 195 n.45.

499 *Polypropylene Carpet*, 93 F. Supp. 2d at 1361.

500 The Chow test is a “test of the equality of two independent sets of regression coefficients under the assumption of normally distributed errors.” B.S. EVERITT, *THE CAMBRIDGE DICTIONARY OF STATISTICS* 61 (2002).

501 *Polypropylene Carpet*, 93 F. Supp. 2d at 1361.

a coefficient.⁵⁰² Thus, the expert's justifications for not using cost as a variable stood unrebutted.⁵⁰³

IV

EVALUATING THE PRIMACY OF ECONOMIC AUTHORITY OVER EXPERTISE

So far this Article has argued that economic authority, which appellate courts—especially the Supreme Court—adopt from the legal and economic literature, dictates the role of expert testimony in antitrust cases. This Part considers the possible justifications for such an arrangement and how the legitimacy of this process might be reinforced. First, it examines the institutional characteristics of the two mechanisms for gathering economic knowledge. Although both have shortcomings, the informal process of economic authority has decisive advantages within the antitrust system. Nevertheless, it is subject to abuses that appellate courts should acknowledge and address. Second, as an illustration, this Part examines the proper treatment of post-Chicago economics. Even though some have argued that post-Chicago methodologies, when used by experts, fail *Daubert's* criteria for admissibility,⁵⁰⁴ this Article argues that such a categorical approach is inappropriate. Instead, the confrontation between Chicago School and post-Chicago School economics should occur at both the level of economic authority and the level of expert testimony, using criteria appropriate to each.

A. Comparing Institutional Characteristics

As we have seen, economic authority can render expert testimony irrelevant or unreliable. Even if expert testimony clears these obstacles to admission, courts may still dismiss the testimony as insufficient to create a jury issue. Is such an arrangement defensible? One might argue that it conflicts with *Daubert's* admonition that courts should avoid taking on the role of super-experts and instead limit themselves to a neutral gatekeeping function that preserves the fact-finding role

⁵⁰² *Id.*

⁵⁰³ Defendants also argued that the expert's failure to include an independent variable for demand in his model rendered the model unreliable by failing to account for the effects of changes in the popularity of carpet and substitute products. *Id.* at 1364–65. The expert again cited a lack of data and the risk of extrapolation error as justifications for his choice, and added that when he had tested the relationship between price and the available measures of demand he had found that the results were contrary to the basic economic theory that increases in demand result in increases in price. *Id.* at 1365. The court accepted the expert's justifications, noting that excluding the demand variable was actually beneficial to defendants since the available data suggested that demand was increasing. *Id.*

⁵⁰⁴ See Coate & Fischer, *supra* note 411; Bruce H. Kobayashi, *Game Theory and Antitrust: A Post-Mortem*, 5 GEO. MASON L. REV. 411, 413 n.18 (1997).

of the jury.⁵⁰⁵ All would concede that economics is necessary for anti-trust decisionmaking. At first glance, though, it may not be obvious that the economics appellate courts learn by examining the merits of competing economic ideas should take precedence over expert testimony in the particular case. If courts' only concern is how to gain the economic knowledge necessary to decide a particular case, a presentation of the competing views of retained experts to the trier of fact might seem preferable.

This approach has some superficial appeal. Expert testimony occurs in a structured pretrial and trial process that assures that the credentials, sources, data, and reasoning of the opposing experts are laid bare for comparison. A jury endorses one expert's opinion only after a full opportunity for argument and rebuttal on both sides. In contrast, appellate courts absorb economic teaching and adopt economic authority by reading the briefs of the parties and amici curiae and by conducting an ad hoc, non-adversarial search of the legal and economic literature. These latter techniques are clear and flexible,⁵⁰⁶ but they also ignore *Daubert's* list of criteria for the reliability of expert testimony. Nevertheless, the priority of economic authority is a necessary product of the institutional characteristics of the antitrust process. First, and most obviously, antitrust must be a body of law that integrates economics into its rules over time so that the rules can provide an efficient system of incentives for businesses. Unlike areas of law that look to expertise to resolve occasional issues of fact, antitrust must incorporate economics into every substantive and evidentiary rule and standard, while remaining open to incremental change. A series of choices made by various juries between competing experts is unlikely to create a coherent system of law, embodying both economic and institutional considerations, to guide business conduct and future cases.

Although no formal rules traditionally constrain the judicial notice of legislative, as opposed to adjudicative, facts,⁵⁰⁷ courts do not have unbounded discretion. The legitimacy of the process of adopt-

⁵⁰⁵ See *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993) ("Vigorous cross-examination, presentation of contradictory evidence, and careful instruction on the burden of proof are the traditional means of attacking shaky but admissible evidence.").

⁵⁰⁶ See Monoban & Walker, *supra* note 5, at 499-500.

⁵⁰⁷ Kenneth Culp Davis argued:

[J]udge-made law would stop growing if judges, in thinking about questions of law and policy, were forbidden to take into account the facts they believe, as distinguished from facts which are "clearly . . . within the domain of the indisputable." Facts most needed in thinking about difficult problems of law and policy have a way of being outside the domain of the clearly indisputable.

Kenneth Culp Davis, *A System of Judicial Notice Based on Fairness and Convenience*, in PERSPECTIVES OF LAW 82 (1964).

ing of social science research rests on the same basis as any common law process: courts must draw upon the record and external sources of knowledge while deciding cases according to law, and they must articulate the reasons for their decisions. In enacting the antitrust laws, Congress fully anticipated that courts would give meaning to the general language of the antitrust laws using this common law process.⁵⁰⁸

The selection of theories in formulating rules to govern practices at the most general level is part and parcel of the process of legal change, which always requires courts to generalize about economic behavior. Whatever method by which courts adopt theories—be it from an independent review of the literature, from briefs, or from expert testimony—their choice is subject to evaluation on the same grounds as their adoption of available precedent. In each case, the criteria include applicability, plausibility, and generality of acceptance. Such an approach acknowledges not only objective factors, like coherence, but also subjective factors like ideology, because some propositions of economic theory are more likely to gain wide acceptance in favorable ideological climates. This dependence on social visions is unavoidable because antitrust embodies a compromise between competing conceptions of the proper roles of the state and the market. The courts' receptivity to theories necessary to the resolution of antitrust issues has predictably followed the fortunes of the competing ideologies in the larger culture.

Though appellate adoption of economic authority is necessary and legitimate, it does involve risks of abuse by courts and litigants. To curb any potential for abuse, courts should take steps to help ensure the legitimacy of their decisions. First, the reliance on economic authority should be as transparent as possible. Where a court has surveyed the literature in a contentious area, it should acknowledge the controversy and justify its reliance on one viewpoint.⁵⁰⁹ Where a court formulates a rule or standard, it should identify not only the economic theory on which it relies, but also the institutional considerations that affect its decision. The Supreme Court has recognized "the necessity, particularly great in the quasi-common-law realm of antitrust, that courts explain the logic of their conclusions" in order to allow scholarly criticism.⁵¹⁰ This observation has particular force be-

⁵⁰⁸ See Page, *supra* note 9, at 1302–03. See generally Andrew N. Kleit, *Common Law, Statute Law, and the Theory of Legislative Choice: An Inquiry Into the Goal of the Sherman Act*, 31 *ECON. INQUIRY* 647 (1993) (arguing that the Sherman Act and the common law have similar goals of maximizing efficiency).

⁵⁰⁹ Herbert Hovenkamp has argued that, until the ascendancy of the Chicago School, courts routinely relied on economics, but without citing authority. See Hovenkamp, *Reckoning*, *supra* note 8, at 2–3.

⁵¹⁰ *Cal. Dental Ass'n v. FTC*, 526 U.S. 756, 780 (1999) (citing *PHILIP AREEDA, ANTI-TRUST LAW* ¶ 1500, at 364 (1986)).

cause Congress has so rarely interfered with the “quasi-common-law” evolution of the field.⁵¹¹ Second, courts should be alert to the strategic use of scholarship to influence the creation of economic authority. Both government and private litigants may produce scholarly literature in briefs in order to reinforce the positions they wish to take.⁵¹² Although funded scholarship may be of high quality, courts should be conscious of its partisan origins and view it with some degree of skepticism, just as they take note of hired-gun expert testimony.

The most conclusive uses of theory—rules of per se legality or illegality—require the most justification. For example, courts have not used Chicago School models systematically to replace rules of per se illegality with explicit rules of per se legality. Instead, they have acknowledged the contingency of theory by using the models to limit the application of rules by imposing substantive and remedial preconditions. This method is consistent with congressional intent that the Sherman Act be “experimental,”⁵¹³ with the testing to occur in litigation. The Supreme Court has often claimed that judicial experience in evaluating a practice allows a surer basis for the formulation of rules to govern it.⁵¹⁴ Similarly, it has been suggested that experience

⁵¹¹ One federal appellate judge, although recognizing that the Chicago School’s “economic assumptions are being integrated throughout the courts,” has expressed the view that “rather than abdicating the decision of what the antitrust goals should be, Congress . . . should determine the goals of the antitrust laws and set forth the rules and standards by which the goals shall be obtained.” Carol Los Mansmann, *Impact of GTE Sylvania on Third Circuit Jurisprudence*, 60 ANTITRUST L.J. 83, 92 (1991). Congress, however, has shown no inclination to do so.

⁵¹² See, e.g., Theodore Eisenberg, *Damage Awards in Perspective: Behind the Headline-Grabbing Awards in Exxon Valdez and Engle*, 36 WAKE FOREST L. REV. 1129, 1147–48 (2001) (summarizing and criticizing studies Exxon funded to support its legal opposition to punitive damage awards in the litigation growing out of the Exxon Valdez oil spill); Richard Lempert, *Juries, Hindsight, and Punitive Damage Awards: Failures of a Social Science Case for Change*, 48 DEPAUL L. REV. 867 (1999) (discussing an Exxon-funded article by W. Kip Viscusi and Reid Hastie on jury bias); Richard Lippitt, Note, *Intellectual Honesty, Industry and Interest Sponsored Professorial Works, and Full Disclosure: Is the Viewpoint Earning the Money, or Is the Money Earning the Viewpoint?*, 47 WAYNE L. REV. 1075 (2001) (proposing greater disclosure for funded research); see also *United States v. Conn. Nat’l Bank*, 418 U.S. 656, 668–70 (1974) (arguing that Exxon-funded studies of punitive damages are legitimate, but should be scrutinized). In *United States v. Marine Bancorporation, Inc.*, 418 U.S. 602 (1974), the court rejected as without evidentiary support the government’s theory that bank mergers would reduce competition by creating a statewide linkage of oligopolies. *Id.* at 622. The theory rested primarily on an article written by an economist associated with the Antitrust Division. *Id.*

⁵¹³ WILLIAM LETWIN, *LAW AND ECONOMIC POLICY IN AMERICA: THE EVOLUTION OF THE SHERMAN ANTITRUST ACT* 95 (1965).

⁵¹⁴ See, e.g., *NCAA v. Bd. of Regents of Univ. of Okla.*, 468 U.S. 85, 100 n.21 (1984) (“[J]udicial inexperience with a particular arrangement counsels against extending the reach of per se rules.”); *Arizona v. Maricopa County Med. Soc’y*, 457 U.S. 332, 344 (1982) (suggesting that per se illegality is appropriate “[o]nce experience with a particular kind of restraint enables the Court to predict with confidence that the rule of reason will condemn it”); *White Motor Co. v. United States*, 372 U.S. 253, 261 (1963) (refusing to hold vertical territorial restraints per se illegal because of a dearth of experience). Of course, the Court

under a rule—and scholarly criticism of it—can expose the rule's flaws.⁵¹⁵ Exacting studies of the records of antitrust cases have been crucial to the development of the law.⁵¹⁶ As receptive as they have been to Chicago models, members of the modern Court have been influenced also by the Legal Process school of jurisprudence, which emphasizes the role of institutional competence, and the "allocation of institutional responsibilities."⁵¹⁷ Just as courts may be receptive to the viewpoint that markets have important advantages over courts in eroding monopolistic practices, they also recognize the institutional demands of precedent and the fact-finding process.

The preference for experimentation and the assumption that antitrust knowledge can grow in the process has guided courts' use of economic authority to both enhance and confine expert testimony. Where economic authority is most robust, it can foreclose factual inquiries and identify the preconditions for anticompetitive effects. Thus, economic authority can be used to formulate subsidiary rules that focus factual inquiry on indicia that the practice is efficient or inefficient. It may also be used to limit "the permissible inferences"⁵¹⁸ a jury may make from evidence of parallel conduct, or to increase the burden on a party seeking to establish an anticompetitive effect from

did not always follow this approach—as *Schwinn* illustrates. See *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967) (establishing a per se rule against vertical, non-price restraints).

⁵¹⁵ See, e.g., *State Oil Co. v. Khan*, 522 U.S. 3, 13–19 (1997) (reviewing decisions and scholarly criticisms that undermined the per se illegality of vertical maximum price fixing); see also Easterbrook, *Information and Antitrust*, *supra* note 138, at 16–17 (arguing that subsequent economic study of an antitrust case provides greater understanding of a practice); Lopatka & Page, *supra* note 439, at 20 (describing the role of the antitrust injury doctrine in focusing judicial attention on the inefficiencies of substantive rules).

⁵¹⁶ Perhaps the most influential study is John S. McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 J.L. & ECON. 137 (1958). Other such studies are F. Jay Cummings & Wayne E. Ruhter, *The Northern Pacific Case*, 22 J.L. & ECON. 329 (1979); Kenneth G. Elzinga & Thomas F. Hogarty, *Utah Pie and the Consequences of Robinson Patman*, 21 J.L. & ECON. 427 (1978); Elizabeth Granitz & Benjamin Klein, *Monopolization by "Raising Rivals' Costs"*: *The Standard Oil Case*, 39 J.L. & ECON. 1 (1996); John E. Lopatka & Paul E. Godek, *Another Look at Alcoa: Raising Rivals' Costs Does Not Improve the View*, 35 J.L. & ECON. 311 (1992); Scott E. Masten & Edward Snyder, *United States versus United Shoe Machinery Corporation: On the Merits*, 36 J.L. & ECON. 33 (1993); John L. Peterman, *The Brown Shoe Case*, 18 J.L. & ECON. 81 (1975); John L. Peterman, *The International Salt Case*, 22 J.L. & ECON. 351 (1979); David Reiffen & Andrew N. Kleit, *Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?*, 33 J.L. & ECON. 419, 437 (1990).

⁵¹⁷ See Howard Latin, *Legal and Economic Considerations in the Decisions of Judge Breyer*, 50 LAW & CONTEMP. PROBS. 57, 59–61 (1987). See generally ALBERT M. SACKS, JR. & HENRY M. HART, *THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW 4* (William N. Eskridge, Jr. & Philip P. Frickey eds., Foundation Press 1994) (1958) (arguing that "every modern society differentiates among social questions, accepting one mode of decision for one kind and other modes for others").

⁵¹⁸ See *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 588 (1986) ("[A]ntitrust law limits the range of permissible inferences from ambiguous evidence in a § 1 case.").

alleged predatory pricing. This approach acknowledges the role of the jury in resolving the empirical issues, and thus defines the domain for expert testimony. It also recognizes the role of these institutional actors in the process of accumulation of knowledge. Expert testimony is an essential but volatile ingredient in this process. Deference to experts without a proper policy framework would be a prescription for uncertainty. Properly confined, however, expert testimony can be central to the development of the law. As the courts' confidence in the economics profession's ability to resolve difficult factual issues grows, courts will be more likely to design legal tests dependent on economic evidence submitted in trial courts by expert witnesses.

B. Implications for the Confrontation Between Chicago and Post-Chicago Economics

This Article has used the example of the Supreme Court's adoption and use of Chicago School models to illustrate the role of economic authority in shaping antitrust analysis, particularly in expanding and refocusing the role of expert testimony. In each doctrinal context, the Court has crafted legal categories that foreclose certain economic inquiries and require others. Through restrictions on expert testimony, the Court thus gives economic content to rules *ex ante*, while preserving a domain for acquiring economic content *ex post*. In essence, where the theory is insufficiently determinate to justify a *per se* rule, the Court frames rules in such a way that subsequent cases provide the most reliable possible tests of the practice's competitive effects.

One continuing dimension of this process in recent years has been the role of Post-Chicago Economics (PCE). Some have argued that PCE is unsuited to the formulation of legal rules⁵¹⁹ or that it fails *Daubert's* standards of reliability. Our account suggests that the confrontation between the Chicago and post-Chicago schools cannot be resolved so categorically. Judicial choice of theory depends upon the relationship of the theory to a range of institutional factors. Just as there was no ratchet in antitrust law to prevent contraction of liability in response to Chicago analyses,⁵²⁰ there is none to prevent expansion of liability in response to post-Chicago analyses.

Nevertheless, the characteristics of PCE influence its suitability as economic authority or as expert testimony. Much of PCE is based on

⁵¹⁹ See, e.g., Timothy J. Brennan, *Do Easy Cases Make Bad Law? Antitrust Innovations or Missed Opportunities in United States v. Microsoft*, 69 GEO. WASH. L. REV. 1042 (2001); Franklin M. Fisher, *Games Economists Play: A Noncooperative View*, 20 RAND J. ECON. 113 (1989).

⁵²⁰ Frank H. Easterbrook, *Is There a Ratchet in Antitrust Law?*, 60 TEX. L. REV. 705 (1982).

game theoretic mathematical modeling of strategies firms might adopt to maximize their profits, taking into account the strategies of other players.⁵²¹ Given only a limited set of facts, this sort of model is likely to have multiple equilibria, or outcomes. While one of these outcomes may be anticompetitive, neither the model itself nor empirical testing can show its likelihood. If, on the other hand, the model incorporates more assumptions to make it more determinate, it becomes difficult to apply in litigation.

Because of these characteristics, critics have challenged game theory's usefulness to antitrust. Franklin Fisher argues, for example, that game theory offered too few determinate, robust predictions to form the basis for policy.⁵²² Bruce Kobayashi, writing before *Joiner* and *Kumho Tire*, argued that game theoretic models of industrial organization should be excluded under the reliability prong of *Daubert*.⁵²³ Specifically, he focused on the language in *Daubert* that, to be reliable, scientific testimony "must be derived by the scientific method."⁵²⁴ Because these almost purely theoretical economic models "have not been empirically verified in a meaningful sense,"⁵²⁵ and because conclusions drawn from them "tend to be very sensitive to the way problems are defined and the assumptions that follow,"⁵²⁶ testimony based on them is not "arrived at through the scientific method."⁵²⁷ Malcolm Coate and Jeffrey Fischer argue that PCE testimony should be excluded for failure to satisfy the helpfulness prong of *Daubert*.⁵²⁸ Their central argument is that, at best, PCE models demonstrate only what *could* happen, and an expert who cannot testify as to what *did* happen or even what *probably* happened does not assist the trier of fact in the dispute resolution process.⁵²⁹

These critiques, while telling, do not foreclose the use of PCE in antitrust. True, PCE models cannot support new rules of per se ille-

⁵²¹ As two authors explain, the PCE school of thought "generally focuses on the strategic behavior of firms. Instead of focusing on the basic competitive interactions of the market, these models show how firms can enhance or protect their market power by incorporating specific strategies—and the reactions of their rivals—into a complex equilibrium analysis." Coate & Fischer, *supra* note 411, at 812.

⁵²² Fisher, *supra* note 519, at 117–23 (distinguishing generalizing and exemplifying theories); see also Keith N. Hylton & Michael Salinger, *Tying Law And Policy: A Decision-Theoretic Approach*, 69 ANTITRUST L.J. 469, 497 (2001) ("The post-Chicago models indicate that tying can be anticompetitive, not that it must be anticompetitive or that it is likely to be anticompetitive.").

⁵²³ See Kobayashi, *supra* note 504, at 412, 413 n.18.

⁵²⁴ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 590 (1993); see Kobayashi, *supra* note 504, at 413 n.18.

⁵²⁵ Kobayashi, *supra* note 504, at 412.

⁵²⁶ *Id.*

⁵²⁷ *Id.* at 413 n.18.

⁵²⁸ Coate & Fischer, *supra* note 411, at 827–28.

⁵²⁹ See *id.*

gality, because they do not identify a limited set of observable facts that predictably imply anticompetitive harm.⁵³⁰ PCE models may, however, suggest avenues for empirical identification of anticompetitive effects in circumstances that established antitrust law might miss. One success in this regard has been the proof of unilateral anticompetitive effects in merger cases using sophisticated econometric methods.⁵³¹ Unilateral effects analysis goes beyond traditional conceptions of market definition and market power. Nevertheless, it rests on sound theoretical and empirical grounds and is viewed by some as a more secure basis for predicting the competitive effects of a merger than conventional coordinated effects analysis alone.⁵³²

PCE models may also be used to challenge rules of per se legality, as they were in *Kodak* to defeat the proposed rule that firms lacking market power in an equipment market can never exercise market power in aftermarkets for parts and service.⁵³³ Post-Chicago scholarship has also challenged the established rule that above-cost prices are never predatory⁵³⁴ and the Chicago argument that tying arrangements can never be anticompetitive.⁵³⁵ To be sure, these examples suggest the challenge facing those who propose the adoption of PCE as economic authority: the *Kodak* experiment has failed, and PCE challenges have had little effect on predatory pricing and tying doctrine thus far, evidently because of problems in estimating the costs of false positives.⁵³⁶ Nevertheless, these difficulties may be surmountable.

More importantly, the inconclusiveness and intractability that make PCE difficult to use in the formulation of rules do not pose as substantial an obstacle to its use in expert testimony. PCE does not categorically fail the reliability inquiry. Certainly, where PCE relies on sophisticated statistical methods, it will be admissible under accepted

⁵³⁰ See Hylton & Salinger, *supra* note 522, at 513 (concluding that “each of the four tied-market conditions . . . emphasized by the post-Chicago literature—entry barriers, complementary goods, network effects, and technologically advancing markets—would be insufficient to justify a per se prohibition even if coupled with the existing requirements for the per se rule”).

⁵³¹ See *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1082–83 (D.D.C. 1997).

⁵³² See POSNER, *supra* note 55, at 157–58 (arguing that “[e]conomic analysis of mergers [came] of age” in the FTC’s use of statistical methods in *Staples*); Hovenkamp, *Reckoning*, *supra* note 8, at 19–21.

⁵³³ See *supra* notes 301–23 (discussing the *Kodak* case).

⁵³⁴ See *supra* note 314 and accompanying text.

⁵³⁵ See generally Hylton & Salinger, *supra* note 522 (summarizing the post-Chicago challenges).

⁵³⁶ *Id.* at 526 (noting that for the courts to incorporate post-Chicago insights into legal rules “the courts need to make a judgment about the relative frequencies of harmful tying under a lax legal standard on the one hand and the beneficial tying that will not occur under a stricter standard,” all while recognizing “that tying is so pervasive even in competitive markets that there is ample evidence that procompetitive tying is a common occurrence”).

standards of reliability. In *Kumho Tire*, the Court extended the *Daubert* inquiry to testimony based on “technical” and “other specialized” knowledge, explaining that the purpose of the inquiry “is to make sure that an expert . . . employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.”⁵³⁷ Without question, reliance on game theoretic models is common in the economics profession, and an expert who bases his testimony on such models is employing the same level of rigor that characterizes the professional study of economics.⁵³⁸

As this Article has shown, the relevance, helpfulness, and sufficiency of economic testimony depend upon the substantive law and its attendant economic authority. When PCE testimony conflicts with a rule adopted by the Court through economic authority, it is irrelevant and therefore unhelpful. For some offenses, however, evidence that an anticompetitive outcome could have occurred satisfies the traditional test of relevance by making “the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.”⁵³⁹ For example, game theory may help a court understand pricing strategies in a predatory pricing case.⁵⁴⁰ And game theoretic demonstration that certain types of facilitating practices might make price coordination more likely is relevant in a price-fixing case.⁵⁴¹ Conversely, in one striking instance, expert testimony based on game theory showed that a pattern of bidding might not have been collusive by revealing that a key competitor had an independent justification for its actions.⁵⁴²

Thus, testimony based on PCE is not categorically inadmissible or insufficient. Instead, it should be measured against the requirements of economic authority to determine its relevance and against the requirements of Rule 403 to determine if its “probative value is substan-

⁵³⁷ *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999).

⁵³⁸ See Coate & Fischer, *supra* note 411, at 824 n.110 (“While Kobayashi’s scientific concerns are certainly reasonable, the Supreme Court’s algorithm for evaluating scientific testimony may allow a court to admit PCE models as science.”); *id.* at 827 (“While the PCE theorists certainly have problems with scientific verification of their theories, the *Daubert* standard itself is probably flexible enough to accept the characterization of the model as science.”).

⁵³⁹ FED. R. EVID. 401.

⁵⁴⁰ See *United States v. AMR Corp.*, 140 F. Supp. 2d 1141 (D. Kan. 2001) (observing that evidence showed that airlines used game theory in formulating entry strategies), *aff’d*, 335 F.3d 1109 (10th Cir. 2003).

⁵⁴¹ See *Re/Max Int’l, Inc. v. Realty One, Inc.*, 173 F.3d 995, 1009–11 (6th Cir. 1999) (holding that an expert’s “deposition and report establish a genuine issue of material fact whether unilateral imposition of adverse splits would have been economically rational for the defendants”).

⁵⁴² See *FTC v. Abbott Labs.*, 853 F. Supp. 526, 534–35 (D.D.C. 1994) (crediting testimony based on game theory that “it was in Abbott’s unilateral and independent self interest to submit the ‘no bid’ for the sole source on the second round” of a government bid letting for purchase of infant formula).

tially outweighed by the danger of . . . confusion.”⁵⁴³ If admissible, it can be tested by “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof.”⁵⁴⁴ Finally, a court could ultimately conclude that PCE testimony fails to create a jury issue.⁵⁴⁵

CONCLUSION

In interpreting and applying the antitrust laws, courts pragmatically gather economic knowledge that functions as authority in the formulation and application of antitrust rules. Their criteria for adoption include both those used by economists and those recognizing the institutional characteristics of the legal system. Thus, whether courts adopt an economic idea and in what legal context they employ that idea hinge in part on the courts’ sense of juries’ fact-finding capabilities. Economic expert testimony is a critical element in this analysis. Though courts can rely on economic authority to adopt per se rules foreclosing most significant factual issues, the availability of economic expertise allows courts to frame rules that allow the ex post acquisition of the information necessary to identify competitive effects. At the same time, however, relying on ex post expertise carries the danger of significant direct and indirect costs. Consequently, courts have shaped antitrust rules to raise factual issues they believe expert testimony can help resolve, but have maintained control over the specifics of expert testimony offered on the issues. Although these controls come under several headings—relevance, sufficiency, or reliability—they ultimately depend on economic authority.

⁵⁴³ FED. R. EVID. 403.

⁵⁴⁴ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993).

⁵⁴⁵ *See id.*

