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Understanding Behavioral Antitrust

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Understanding Behavioral Antitrust

Avishalom Tor*

Behavioral antitrust—the application to antitrust analysis of empirical evidence of robust behavioral deviations from strict rationality—is increasingly popular and hotly debated by legal scholars and the enforcement agencies alike. This Article shows, however, that both proponents and opponents of behavioral antitrust frequently and fundamentally misconstrue its methodology, treating concrete empirical phenomena as if they were broad hypothetical assumptions. Because of this fundamental methodological error, scholars often make three classes of mistakes in behavioral antitrust analyses: first, they fail to appreciate the variability and heterogeneity of behavioral phenomena; second, they disregard the concrete ways in which markets, firms, and other institutions both facilitate and inhibit rational behavior by antitrust actors; and, third, they erroneously equate all deviations from standard rationality with harm to competition. After establishing the central role of rationality assumptions in present-day antitrust and reviewing illustrative behavioral analyses across the field—from horizontal and vertical restraints, through monopolization, to merger enforcement practices—this Article examines the three classes of mistakes, their manifestation, and their consequences in antitrust scholarship. Besides providing guidance to future behavioral antitrust scholarship, this Article concludes by discussing two sets of essential lessons that the behavioral approach already can offer to advance antitrust law and policy: one concerning the value of case-specific evidence in antitrust adjudication and enforcement, the other showing how antitrust law can and should account for systematic and predictable boundedly rational behavior that is neither constant nor uniform.

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* Professor of Law and Director, Research Program on Law and Market Behavior, Notre Dame Law School. Earlier versions of this Article benefited from comments and criticisms of Louis Kaplow, Bruce Kobayashi, Steve Salop, Daniel Sokol, Josh Wright, and participants at the 2012 Annual Conference of the American Association of Law Schools (AALS), the 2012 ABA/NYU Law School Next Generation of Antitrust Scholarship Conference, the 60th Annual Meeting of the ABA Section of Antitrust Law, the 29th Annual Meeting of the European Law and Economics Association (EALE), the 2013 Annual Meeting of the American Law and Economics Association (ALEA), and the 2013 Annual Meeting of the International Society for New Institutional Economics (ISNIE), as well as seminar participants at the Copenhagen Business School Law Department, the Max Planck Institute for Research on Collective Goods, the Hebrew University of Jerusalem Faculty of Law, and the Harvard Law School Law and Economics Workshop. Christopher Kieser, John Lindermuth, Geoffrey Miller, Lauren Riley, and Jessica Williams provided excellent research assistance at different stages of this project.

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Introduction

The behavioral approach¹ to antitrust law draws on a large body of empirical behavioral evidence to inform antitrust doctrine and policymaking.² In particular, behavioral antitrust focuses on findings that

1. For general reviews of the behavioral approach to law, see Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CALIF. L. REV. 1051 (2000); and Avishalom Tor, *The Methodology of the Behavioral Analysis of Law*, 4 HAIFA L. REV. 237 (2008) [hereinafter Tor, *Behavioral Methodology*].

2. See, e.g., Amitai Aviram & Avishalom Tor, *Overcoming Impediments to Information Sharing*, 55 ALA. L. REV. 231 (2004); Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 IND. L.J. 1527 (2011); Maurice E. Stucke, *Behavioral Economists at the Gate: Antitrust in the Twenty-First Century*, 38 LOY. U. CHI. L.J. 513 (2007) [hereinafter Stucke, *At the Gate*]; Avishalom Tor, *A Behavioural Approach to Antitrust Law and Economics*, 14 CONSUMER POL'Y REV. 18, 18–19 (2004) [hereinafter Tor, *Behavioural Approach*] (noting that this approach

reveal how the judgment and decision behaviors of actual antitrust actors are likely to systematically and predictably deviate from the strict rationality that antitrust law currently assumes.³

Perhaps due to the dominance in antitrust of rationality-based law and economics⁴—from the field’s jurisprudence and enforcement policies to its legal and economic scholarship—behavioral findings took far longer to garner broad attention in antitrust law than in many other legal fields.⁵ In fact, until a few years ago, antitrust discourse largely neglected those behaviorally informed analyses offered by a small number of legal scholars.⁶

is “grounded in empirical observations of human behaviour” and “based on scientific findings regarding actual human behaviour, which can often provide better descriptions of market dynamics and thus more effective prescriptions for competition policy”); Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy*, 101 MICH. L. REV. 482 (2002) [hereinafter Tor, *Entry*]; Avishalom Tor, *Illustrating a Behaviorally Informed Approach to Antitrust Law: The Case of Predatory Pricing*, ANTITRUST, Fall 2003, at 52 [hereinafter Tor, *Predatory Pricing*].

3. For discussion of the centrality of the rationality assumption in antitrust, see PHILLIP E. AREEDA & HERBERT HOVENKAMP, 1 ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶113 (4th ed. 2013); HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION 134–36 (2005) [hereinafter HOVENKAMP, ANTITRUST ENTERPRISE]; KEITH N. HYLTON, ANTITRUST LAW 226 (2003); RICHARD A. POSNER, ANTITRUST LAW vii–x (2d ed. 2001); and also see Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. PA. L. REV. 261 (2010), in which Professor Leslie challenges the judicial use of rationality theory in antitrust cases and argues that judges often employ an overly narrow conception of rationality.

4. See, e.g., AREEDA & HOVENKAMP, *supra* note 3 (“As a general proposition business firms are (or must be assumed to be) profit maximizers, which means that they constructively ‘intend’ to take the course of action that maximizes their returns, given the physical and legal environment in which they find themselves . . .”); Stucke, *At the Gate*, *supra* note 2, at 536–44 (discussing the Chicago School’s continuing influence on antitrust policy); Tor, *Behavioural Approach*, *supra* note 2, at 18 (discussing the impact of the Chicago School on antitrust law and economics); Tor, *Predatory Pricing*, *supra* note 2, at 52 (“One of the core assumptions of the traditional economic approach to antitrust law is that competitors are perfectly rational, profit-maximizing, decision makers.”).

5. Compare, for instance, the statements offered already more than a decade ago with respect to behavioral–legal applications more generally, such as Donald C. Langevoort, *Behavioral Theories of Judgment and Decision Making in Legal Scholarship: A Literature Review*, 51 VAND. L. REV. 1499 (1998), in which Professor Langevoort described, fifteen years ago, the many applications of behavioral analysis to legal fields other than antitrust, and Cass R. Sunstein, *Behavioral Law and Economics: A Progress Report*, 1 AM. L. & ECON. REV. 115, 115 (1999), in which Professor Sunstein described a “flood” of behaviorally oriented legal research already in 1999, with recent statements about behavioral antitrust, such as Stucke, *At the Gate*, *supra* note 2, at 514, where Professor Stucke notes, quite colorfully, that “[w]hile tossed against the rocks elsewhere, within the quiet waters of antitrust these rational choice theories stand largely unchallenged,” and Luca Arnaudo, *The Quest for Behavioural Antitrust: Beyond the Label Battle, Towards a Cognitive Approach*, DOVENSCHMIDT Q., June 2013, at 77, 79 where Professor Arnaudo states that “when considering the growing fortunes of [behavioral economics], the process towards a [behavioral antitrust] could have been expected to occur much faster . . .” (footnote omitted).

6. See, e.g., Arnaudo, *supra* note 5 (noting that attempts by pioneering scholars in the ’80s and ’90s to interject behavioral insights into the antitrust field “basically fell into the void” and

Yet now behavioral antitrust clearly is in vogue: Numerous recent articles by lawyers and economists debate the merits and demerits of behavioral antitrust generally and its specific application to issues spanning horizontal and vertical restraints, monopolization, mergers, and more.⁷

that “it is only in the last few years that a massive behavioural takeover of antitrust studies has been experienced”); Max Huffman, *Neo-Behavioralism?* 3 (Dec. 23, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1730365> (“Behavioral Antitrust has the feel of being something quite new. The earliest article explicitly proposing a behavioral approach to antitrust was written in 2002.” (citing Tor, *Entry*, *supra* note 2)). Early antitrust scholarship making use of behavioral evidence includes Aviram & Tor, *supra* note 2; Albert A. Foer, *The Third Leg of the Antitrust Stool: What the Business Schools Have to Offer to Antitrust*, 47 N.Y.L. SCH. L. REV. 21 (2003); Harry S. Gerla, *A Micro-Microeconomic Approach to Antitrust Law: Games Managers Play*, 86 MICH. L. REV. 892 (1988); Harry S. Gerla, *The Psychology of Predatory Pricing: Why Predatory Pricing Pays*, 39 SW. L.J. 755 (1985); Tor, *Behavioural Approach*, *supra* note 2; Tor, *Entry*, *supra* note 2; and Tor, *Predatory Pricing*, *supra* note 2. For an early discussion among prominent antitrust economists that briefly touches on the potential of behavioral economics to inform antitrust law, see also Philip Nelson et al., *Economists’ Roundtable*, ANTITRUST, Spring 2003, at 8, 15–16.

7. See, e.g., Matthew Bennett et al., *What Does Behavioral Economics Mean for Competition Policy?*, COMPETITION POL’Y INT’L, Spring 2010, at 111, 120–32; James C. Cooper & William E. Kovacic, *Behavioral Economics and Its Meaning for Antitrust Agency Decision Making*, 8 J.L. ECON. & POL’Y 779 (2012); Eliana Garcés, *The Impact of Behavioral Economics on Consumer and Competition Policies*, COMPETITION POL’Y INT’L, Spring 2010, at 145; Thomas J. Horton, *The Coming Extinction of Homo Economicus and the Eclipse of the Chicago School of Antitrust: Applying Evolutionary Biology to Structural and Behavioral Antitrust Analyses*, 42 LOY. U. CHI. L.J. 469 (2011); Max Huffman & Daniel Heidtke, *Behavioral Exploitation Antitrust in Consumer Subprime Mortgage Lending*, 4 WM. & MARY POL’Y REV. 77 (2012); Max Huffman, *Marrying Neo-Chicago with Behavioral Antitrust*, 78 ANTITRUST L.J. 105 (2012) [hereinafter Huffman, *Neo-Chicago with Behavioral Antitrust*]; Leslie, *supra* note 3; Amanda P. Reeves, *Behavioral Antitrust: Unanswered Questions on the Horizon*, ANTITRUST SOURCE, June 2010, art. 3, at 1, available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/Jun10_Reeves6_24f.authcheckdam.pdf; Stucke, *At the Gate*, *supra* note 2; Maurice E. Stucke, *Money, Is That What I Want?: Competition Policy and the Role of Behavioral Economics*, 50 SANTA CLARA L. REV. 893 (2010); Maurice E. Stucke, *Reconsidering Competition*, 81 MISS. L.J. 107 (2011) [hereinafter Stucke, *Reconsidering*]; Maurice E. Stucke, *New Antitrust Realism*, GCP MAG., Jan. 2009 [hereinafter Stucke, *New Antitrust Realism*]; Huffman, *supra* note 6; Nicolas Petit & Norman Neyrinck, *Behavioral Economics and Abuse of Dominance: A Fresh Look at the Article 102 TFEU Case-Law* (May 15, 2010) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1641431; see also Mark Armstrong & Steffen Huck, *Behavioral Economics as Applied to Firms: A Primer*, COMPETITION POL’Y INT’L, Spring 2010, at 3; Douglas H. Ginsburg & Derek W. Moore, *The Future of Behavioral Economics in Antitrust Jurisprudence*, COMPETITION POL’Y INT’L, Spring 2010, at 89; Alison Oldale, *Behavioral Economics and Merger Analysis*, COMPETITION POL’Y INT’L, Spring 2010, at 139; Vivien Rose, *The Role of Behavioral Economics in Competition Law: A Judicial Perspective*, COMPETITION POL’Y INT’L, Spring 2010, at 103; Michael A. Salinger, *Behavioral Economics, Consumer Protection, and Antitrust*, COMPETITION POL’Y INT’L, Spring 2010, at 65; Maurice E. Stucke, *Am I a Price-Fixer? A Behavioural Economics Analysis of Cartels*, in CRIMINALISING CARTELS: CRITICAL STUDIES OF AN INTERNATIONAL REGULATORY MOVEMENT 263, 289 (Caron Beaton-Wells & Ariel Ezrachi eds., 2011); Maurice E. Stucke, *Behavioral Antitrust and Monopolization*, 8 J. COMPETITION L. & ECON. 545 (2012) [hereinafter Stucke, *Monopolization*]; Maurice E. Stucke, *Greater International Convergence and the Behavioral Antitrust Gambit* [hereinafter Stucke, *Gambit*], in RESEARCH HANDBOOK ON INTERNATIONAL COMPETITION LAW 155 (Ariel Ezrachi ed., 2012); Maurice E. Stucke, *Is Intent Relevant?*, 8 J.L. ECON. & POL’Y 801 (2012); Avshalom Tor & William J. Rinner, *Behavioral Antitrust: A New Approach to the Rule of Reason*

Antitrust journals dedicate issues to behavioral antitrust,⁸ and the professional associations of practitioners and legal academics in the field devote panels at their meetings to discussing it.⁹ Perhaps most telling, even some enforcement agencies and officials now study and discuss the policy implications of this new approach.¹⁰

After Leegin, 2011 U. ILL. L. REV. 805; Avshalom Tor, *The Market, the Firm, and Behavioral Antitrust*, in THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW (Eyal Zamir & Doron Teichman eds., forthcoming 2014) [hereinafter Tor, *The Market*]; Gregory J. Werden et al., *Behavioral Antitrust and Merger Control*, 167 J. INSTITUTIONAL & THEORETICAL ECON. 126 (2011); Joshua D. Wright & Judd E. Stone II, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 CARDOZO L. REV. 1517 (2012).

8. See, e.g., ANTITRUST SOURCE, June 2010, available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/Jun10_FullSource6_24.authcheckdam.pdf; *The Jevons Colloquium: Behavioral Economics in Consumer Protection and Competition Law*, COMPETITION POL'Y INT'L, Spring 2010, at 89; *A Symposium on Antitrust and Behavioral Economics*, COMPETITION POL'Y INT'L, Spring 2010, at 3.

9. See, e.g., Agenda, Am. Antitrust Inst., 9th Annual Conference: The Next Antitrust Agenda (June 18, 2008), available at http://www.antitrustinstitute.org/files/agenda2008_062320081121.pdf; Brochure, Am. Bar Ass'n, Section of Antitrust Law, Spring Meeting (Mar. 28–30, 2012), available at http://www.americanbar.org/content/dam/aba/events/antitrust_law/2012/03/spring_meeting/spring_2012_brochure.authcheckdam.pdf; Program, Ass'n Am. Law Schs., AALS 2012 Annual Meeting: Academic Freedom and Academic Duty (Jan. 4–8, 2012), <http://www.aals.org/am2012/2012program.pdf>; Meeting Announcement, Brit. Inst. Int'l & Comp. L., Competition Law Forum Meeting: Behavioural Economics (July 1, 2009), <http://www.biicl.org/events/view/-/id/401/>. Moreover, at the *Next Generation of Antitrust Scholarship Conference* held at the New York University School of Law in January 2010, three out of the twelve papers applied behavioral economics to antitrust policy. Agenda, N.Y. Univ. Sch. of Law, Next Generation of Antitrust Scholarship Conference (Jan. 29, 2010), <http://www.law.nyu.edu/conferences/nextgenantitrust/>.

10. See, e.g., Amelia Fletcher, Chief Economist, U.K. Office of Fair Trading, Address at the European Commission Consumer Affairs Conference: What Do Policy-Makers Need from Behavioural Economists? (Nov. 28, 2008) (transcript available at http://ec.europa.eu/consumers/dyna/conference/programme_en.htm); Interview with Joseph Farrell, Dir. Bureau Econ., FTC, and Carl Shapiro, Deputy Assistant Att'y Gen. Econ. Analysis, U.S. Dep't Justice, Antitrust Div. (Jan. 22, 2010) [hereinafter Farrell & Shapiro Interview], available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/Feb10_FullSource2_25.authcheckdam.pdf; see also OFFICE OF FAIR TRADING, THE IMPACT OF PRICE FRAMES ON CONSUMER DECISION MAKING (2010) (U.K.), available at http://www.offt.gov.uk/shared_offt/economic_research/OFT1226.pdf; Bennett et al., *supra* note 7; Oldale, *supra* note 7; Press Release, Eur. Union Comm'n for Consumers, Why Consumers Behave the Way They Do: Commissioner Kuneva Hosts High Level Conference on Behavioural Economics (Nov. 28, 2008), available at http://europa.eu/rapid/press-release_IP-08-1836_en.htm; J. Thomas Rosch, Comm'r, FTC, Remarks at the Vienna Competition Conference: Behavioral Economics: Observations Regarding Issues that Lie Ahead (June 9, 2010) [hereinafter Rosch, Issues that Lie Ahead] (transcript available at <http://www.ftc.gov/speeches/rosch/100609viennaremarks.pdf>); J. Thomas Rosch, Comm'r, FTC, Remarks at the Conference on the Regulation of Consumer Financial Products: Managing Irrationality: Some Observations on Behavioral Economics and the Creation of the Consumer Financial Protection Agency (Jan. 6, 2010) [hereinafter Rosch, Managing Irrationality] (transcript available at <http://www.ftc.gov/speeches/rosch/100106financial-products.pdf>). Similarly, in June 2012, the Organization for Economic Co-Operation and Development (OECD) held discussions on competition and behavioral economics. *Competition Issues Under Discussion*, OECD, <http://www.oecd.org/daf/competition/mergers/workinprogress.htm>.

Some particularly enthusiastic proponents of behavioral antitrust depict it as an attractive wholesale alternative to the traditional economic approach to antitrust law.¹¹ Other supporters view the evidence on systematic deviations from strict rationality marshaled by the behavioral approach, at the very least, as confirming their longstanding suspicions of the soundness of the rationality assumptions underlying the accepted economic methodology in the field.¹² At the same time, however, some commentators have been quick to criticize behavioral antitrust on numerous grounds, challenging the robustness and validity of its empirical evidence as well as the clarity and coherence of its legal implications.¹³ In fact, certain detractors have gone so far as to argue that behavioral antitrust cannot possibly benefit the law.¹⁴

Nevertheless, a closer analysis reveals that both extreme positions in the behavioral antitrust debate are mistaken. Proponents are correct in holding that the behavioral approach can advance antitrust policy and doctrine based on a better understanding of market behavior. Yet those

11. See Stucke, *Gambit*, *supra* note 7, at 180–81 (viewing behavioral antitrust as an alternative to price theory and effects-based analysis); Rosch, *Managing Irrationality*, *supra* note 10, at 8–9. Commissioner Rosch stated:

By engaging in a fact-bound analysis of the conduct and its anticompetitive effect rather than, as the Chicago School would have it, assuming that certain conduct is inherently pro-competitive, I believe the Commission could incorporate insights from the behavioral economics literature in a way that would still put firms on notice of the type of conduct that is anticompetitive.

Id.; see also Horton, *supra* note 7, at 473–76 (criticizing traditional antitrust law and economics from an evolutionary biology and behavioral perspective and making the far-reaching assertion that “*Homo economicus* will become extinct [and as] *Homo sapiens* replaces *Homo economicus* in antitrust analysis, the Chicago School’s antitrust dominance will come to a timely end” (footnotes omitted)); Werden et al., *supra* note 7, at 127 (claiming, while criticizing it, that the behavioral approach questions “the assumption of profit maximization at the core of neoclassical economic theory”).

12. See, e.g., Stucke, *At the Gate*, *supra* note 2, at 513 (characterizing behavioral economics as questioning “neoclassical economic theories’ unrealistic and simplifying assumptions about human nature”); Stucke, *Reconsidering*, *supra* note 7, at 109 (“Antitrust policy is built on a flawed assumption of rationality.”).

13. For example, in Werden et al., *supra* note 7, the authors discuss the limits of traditional economics in the merger context and note that

To the extent such departures [from profit maximization] are mistakes, proponents of behavioral antitrust propose to inject paternalism into competition policy, but that is antithetical to the fundamental idea of competition policy. To the extent these departures result from pursuit of non-profit objectives, proponents might identify good reasons for concern about particular forms of anticompetitive conduct, *but they offer nothing to improve the identification of anticompetitive conduct.*

Id. at 138 (emphasis added); see also Wright & Stone, *supra* note 7, at 1553 (arguing that to fulfill its promise, behavioral economics must provide “a more robust and accurate account of both firm and consumer behavior” and concluding that “[u]ntil then, we must maintain our observation as to the tentative irrelevance of behavioral economics in antitrust”).

14. See, e.g., Wright & Stone, *supra* note 7, at 1526–27 (asserting their “behavioral irrelevance theorem” according to which “behavioral economics . . . fails to offer *any* clear policy implications for antitrust law”).

who believe behavioral antitrust can or should provide a complete substitute for the economic analysis of antitrust law are wrong. Instead, both the nascent stage of behavioral antitrust and, more significantly, the very nature of its methodology make it an extremely valuable complement to traditional antitrust economics—capable of offering important refinements and improvements—rather than its complete substitute. Similarly, detractors correctly point out important limitations of behavioral antitrust but overstate their case, failing to recognize the potential of this approach and the essential lessons it already offers for antitrust doctrine and enforcement policy.

This Article shows that many commentators, proponents and opponents alike, reach their respective erroneous conclusions largely due to a shared, fundamental misunderstanding when they treat concrete, empirical behavioral phenomena as if they were instead broad hypothetical assumptions.¹⁵ When this fundamental methodological error leads them astray, scholars make three distinct classes of mistakes, each of which generates its own faulty antitrust applications and policy conclusions.¹⁶ First, analysts fail to appreciate that human judgment and decision behavior is neither constant nor uniform but rather variable and heterogeneous, the evidence of systematic and predictable patterns at the overall population

15. Reeves, for example, mistakenly states that “[b]ehavioral economics attacks the rational profit-maximizer assumption head on by *assuming* that humans have cognitive limitations that prevent them from processing information perfectly and maximizing their utility.” Reeves, *supra* note 7, at 2 (emphasis added); see also Stucke, *Reconsidering*, *supra* note 7, at 121–22 (assuming, in turn, that firms, consumers, and the government exhibit constant and homogenous bounded rationality); Wright & Stone, *supra* note 7, at 1523, 1535–48 (arguing against what they perceive as the “irrationality hypothesis” used by “modern behavioralists” and basing much of their analysis on various hypothetical assumptions of deviations from rationality); cf. Cooper & Kovacic, *supra* note 7, at 780 (noting that behavioral antitrust scholars replace the “assumption of rationality with one of ‘bounded rationality’”). But see Stucke, *New Antitrust Realism*, *supra* note 7, at 11 (“Behavioral economics at its core is empirical.”).

16. Researchers also exhibit a fourth class of mistakes, common to behavioral–legal applications outside antitrust, when they exaggerate the intractability and other limitations of the behavioral evidence and thus understate its usefulness for antitrust analysis. Scholars who are used to the generality and elegance of hypothetical rational-actor models expect in vain the same “grand theory” attributes from behavioral antitrust. In addition, legal analysts sometimes are dismayed by the large number of potentially relevant behavioral findings or find the challenge of determining the ultimate effect of multiple, seemingly contradictory phenomena overwhelming. These concerns largely stem from commentators’ lack of a first-hand familiarity with behavioral research. Otherwise sophisticated antitrust scholars fail to realize that the concrete, empirically driven nature of behavioral analysis mostly is incompatible with a grand-theory approach. And while concerns about multiple or conflicting phenomena do have merit, a careful study of the evidence shows these conflicts sometimes are illusory or at least less significant than they initially appear. See generally Jeffrey J. Rachlinski, *The “New” Law and Psychology: A Reply to Critics, Skeptics, and Cautious Supporters*, 85 CORNELL L. REV. 739, 745–52 (2000) (discussing methods for addressing seemingly conflicting behavioral phenomena and detailing how its core ideas are relevant to the law); Tor, *Behavioral Methodology*, *supra* note 1, at 301–04 (considering methods for resolving instances in which different and potentially contradictory behavioral processes co-occur).

level notwithstanding. When mistakenly assuming constancy, commentators ignore, for instance, the significance of boundary conditions—the circumstances outside of which a specific empirical regularity is not manifested¹⁷—and thus sometimes apply behavioral phenomena to irrelevant antitrust settings.

Second, scholars often disregard the concrete ways in which institutions—from markets and firms to enforcement agencies and courts—variously facilitate and inhibit more rational behavior on the part of antitrust actors. For example, behavioral antitrust detractors rightly cite competitive discipline as a force that promotes rational behavior by market participants. Yet these analysts neglect to examine further whether and how the processes of competitive discipline vary in their efficacy and consequences across different market conditions and behaviors. Behavioral antitrust proponents, on the other hand, occasionally commit the mirror-image mistake, failing to consider the rationality-facilitating force of markets and thereby implicitly assuming that behavioral phenomena are always robust to market discipline. In reality, however, markets differently facilitate and inhibit rationality in different circumstances. Therefore, both commentators who unquestioningly rely on markets to produce rational behavior and those who neglect their powerful effects altogether will inevitably reach some erroneous antitrust conclusions.

Third, analysts routinely and mistakenly equate deviations from strict rationality with harm to their perpetrators, to efficiency, and to competition that merits antitrust intervention. Consequently, they tend to embrace or reject the behavioral approach based on their preexisting views regarding the need for a more or less expansive antitrust policy instead of the merits of the behavioral evidence. In fact, however, certain deviations from standard rationality benefit rather than harm those actors exhibiting them.¹⁸ Other deviations may be costly to their perpetrators yet benefit other market participants or society at large.¹⁹ Finally, only a subset of the remaining deviations from strict rationality are comprised of behaviors that are both inefficient and also properly of antitrust concern.²⁰

After exploring the three categories of common mistakes and how they can misdirect behavioral antitrust analyses, this Article discusses two essential sets of lessons the behavioral approach already can offer antitrust doctrine and enforcement policy, despite its nascent stage of development

17. See Tor, *Behavioral Methodology*, *supra* note 1, at 292–300 (examining specific areas of behavioral analysis where boundary conditions alter the effects of behavioral biases).

18. See, e.g., Leslie, *supra* note 3, at 280–85 (noting that seemingly irrational behavior can make economic sense in the context of antitrust conspiracies and predatory business practices).

19. See, e.g., Tor, *Entry*, *supra* note 2, at 543–45 (showing that optimistically overconfident entry can generate some social benefits even while harmful to entrants).

20. See, e.g., Tor & Rinner, *supra* note 7, at 845–63 (explaining that even efficiency-reducing resale price maintenance is only of antitrust concern under specific circumstances).

and inherent limitations. One set of lessons concerns the value of case-specific evidence for antitrust adjudication in both the courts—in contrast with the doctrinal trends of recent decades—and in agency enforcement actions—where such evidence is routinely evaluated, if sometimes based on inappropriate assumptions of rationality. Another set of lessons shows how antitrust doctrine can incorporate the evidence of behavioral regularities in the market without falling prey to the fundamental methodological error of treating these empirical patterns as if they were instead broad hypothetical assumptions. All in all, this Article finds that both some detractors and certain supporters overstate their respective cases: the behavioral approach already offers valuable antitrust lessons but cannot and should not altogether replace traditional antitrust law and economics.

Organizationally, Part I defines behavioral antitrust, highlighting the basic features of the relevant empirical evidence and briefly reviewing illustrative applications from the burgeoning literature in the field. This exercise clarifies the boundaries of behavioral antitrust and reveals why scholars' pervasive methodological error is indeed fundamental. Parts II–IV study the three classes of mistakes that supporters and critics of behavioral antitrust commonly make and the legal consequences of these mistakes. Part V concludes by outlining the two essential sets of lessons that the behavioral approach already offers antitrust doctrine and policy.

I. Foundations

The behavioral analysis of law has been popular among scholars for more than fifteen years,²¹ providing an explicit account of legally relevant behavior based on empirical behavioral evidence instead of either everyday intuition—like traditional legal scholarship—or the theoretical rational-actor construct of traditional law and economics.²² In contrast to its swift endorsement in most other legal fields, until a few years ago the behavioral approach found little traction in antitrust.²³ Yet, more recently, the field's receptiveness to this approach evinced a dramatic change, with an outpour of interest from scholars, practitioners, and even enforcement officials, who all debate the merits and demerits of behavioral antitrust.²⁴

This Part explains that neither the delayed reaction of antitrust scholarship to the behavioral approach nor the intensity of the current

21. See, e.g., Langevoort, *supra* note 5 (reviewing the already numerous behavioral applications in law approximately fifteen years ago); Sunstein, *supra* note 5 (same).

22. See generally Tor, *Behavioral Methodology*, *supra* note 1 (evaluating the accomplishments, potential, challenges, and limitations of the behavioral analysis of law).

23. See *supra* note 6 and accompanying text.

24. See *supra* note 7 and accompanying text.

debate over it is mere happenstance.²⁵ To appreciate the forces that shape the antitrust community's reaction to behavioral antitrust, subpart I(A) outlines the role of the rationality assumption in antitrust, highlighting some of its concrete manifestations in legal doctrine and enforcement agency policies. Subpart I(B) then defines the behavioral approach, focusing on the empirical evidence of real human behavior that systematically differs from models of strict rationality. The juxtaposition of these two subparts contrasts the empirically based behavioral approach with the pervasive reliance on hypothetical rationality in antitrust and, in turn, helps explain both the delayed recognition of the behavioral approach and the intensity of the current debate over its usefulness for the field. Subpart I(C) reviews some illustrative behavioral antitrust applications, while subpart I(D) explains the fundamental methodological error that permeates much of this recent scholarship on both sides of the debate, building a foundation for the remainder of this Article.²⁶

A. *The Rationality Assumption*

Present-day antitrust—perhaps more than any other legal area—is based on the traditional economic assumption that market participants are rational decision makers.²⁷ The producer firms whose conduct is the focus of the field are assumed to be perfectly rational competitors that make strictly rational judgments and whose decisions seek always and only to maximize profits.²⁸ Moreover, the microeconomic model of competition

25. Cf. Salinger, *supra* note 7, at 65 (“The interest in behavioral economics (and some of the resistance to it) stems from the belief that it justifies intervention that conventional economic analysis suggests is unwarranted.”).

26. Subparts I(A) and I(C) and Part III draw on and develop further this Author's analysis in Tor, *The Market*, *supra* note 7.

27. See, e.g., RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 3 (7th ed. 2007) (“The task of economics . . . is to explore the implications of assuming that man is a rational maximizer of his ends” (footnote omitted)); STEVEN SHAVELL, *FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW* 1–2 (2004) (discussing the role of the rationality assumption in descriptive analysis and noting that “the view taken will generally be that actors are ‘rational’” and “maximize their expected utility”); Jolls et al., *supra* note 1, at 1481–85 (discussing the conventional law and economics assumption that market participants are strictly rational); Tor, *Behavioral Methodology*, *supra* note 1, at 239–41 (reviewing rational-actor models in law and economics). Note that traditional antitrust economics assumes that all market participants, including consumers, are rational actors who obtain an optimal amount of information, evaluate that information in an unbiased manner, and then proceed to manifest their preexisting, well-ordered preferences in their market behavior. Cf. GARY S. BECKER, *THE ECONOMIC APPROACH TO HUMAN BEHAVIOR* 14 (1976) (arguing that “all human behavior can be viewed as involving participants who maximize their utility from a stable set of preferences and accumulate an optimal amount of information and other inputs in a variety of markets”).

28. See, e.g., AREEDA & HOVENKAMP, *supra* note 3 (“As a general proposition business firms are (or must be assumed to be) profit maximizers”); POSNER, *supra* note 3, at ix (“[T]he issue in evaluating the antitrust significance of a particular business practice should be whether it is a means by which a rational profit maximizer can increase its profits at the expense of efficiency”); see also HOVENKAMP, *supra* note 3, at 134 (“The entire antitrust enterprise is

that the law relies on further assumes that consumers are rational actors as well.²⁹

The rationality assumption is not merely an abstract postulate of antitrust economics, but has concrete legal manifestations throughout the field.³⁰ In *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*,³¹ for instance, the Supreme Court made the legal bar for allegations of illegal monopolization by predatory pricing under Section 2 of the Sherman Act nearly insurmountable by relying on the rationality assumption.³² The Court declared that conduct will not amount to predatory pricing unless the alleged scheme involved pricing below some measure of cost and the predator “had a reasonable prospect, or, under § 2 of the Sherman Act, a dangerous probability” of recouping its losses from such below-cost predation.³³ The opinion emphasized that because “[r]ecoupment is the ultimate object of an unlawful predatory pricing scheme,”³⁴ a rational

dedicated to the proposition that business firms behave rationally.”); Tor, *Entry*, *supra* note 2, at 488–90 (discussing the assumption of entrant rationality in antitrust analysis and citing additional sources); Werden et al., *supra* note 7, at 126–27 (“The tools of neoclassical economics now play a vital role in the analyses conducted by competition agencies and in the litigation of competition cases . . .”).

29. For a typical exposition of the role of consumer rationality in economic analysis see, for example, WILLIAM J. BAUMOL & ALAN S. BLINDER, *MICROECONOMICS: PRINCIPLES & POLICY* 85–98 (12th ed. 2012). For an informal description of the role of consumers in antitrust’s model of market competition, see Bennett et al., *supra* note 7, at 115–17.

30. Because this author and others already have discussed the role of the rationality assumption in antitrust doctrine at some length elsewhere, the present Article only provides a few illustrations. For additional analysis see Leslie, *supra* note 3, at 267–73; Reeves & Stucke, *supra* note 2, at 1549–53; Tor, *Entry*, *supra* note 2; Tor, *Predatory Pricing*, *supra* note 2; and Tor & Rinner, *supra* note 7, discussing resale price maintenance. Note that the impact of the rationality assumption is not limited to judicial doctrine but also informs the enforcement policies of the antitrust agencies. See, e.g., U.S. DEP’T OF JUSTICE & FTC, *HORIZONTAL MERGER GUIDELINES* § 1 (2010) [hereinafter 2010 MERGER GUIDELINES], available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> (“In evaluating how a merger will likely change a firm’s behavior, the Agencies focus primarily on how the merger affects conduct that would be *most profitable for the firm*.” (emphasis added)); Rosch, *Managing Irrationality*, *supra* note 10, at 9 (noting that a shift to the behavioral approach might impact merger guidelines).

31. 509 U.S. 209 (1993).

32. The Court stated that to be held liable for predatory pricing under Section 2 a competitor must have “a dangerous probability[] of recouping its investment in below-cost prices.” *Id.* at 224. The Court continued, “For the investment to be rational, the [predator] must have a reasonable expectation of recovering, in the form of later monopoly profits, more than the losses suffered.” *Id.* (alteration in original) (quoting *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588–89 (1986)); see also Leslie, *supra* note 3, at 263–64 (“Federal judges are more frequently concluding that some types of anticompetitive conduct are facially irrational or implausible and, therefore, could not have occurred as a matter of law (because it is implausible that a business would act irrationally).”).

33. *Brooke Grp.*, 509 U.S. at 224; see also Tor, *Predatory Pricing*, *supra* note 2, at 55 (noting that according to some economists the conditions for predatory pricing set out by the Supreme Court will rarely be satisfied).

34. *Brooke Grp.*, 509 U.S. at 224; see also Tor, *Predatory Pricing*, *supra* note 2, at 55, 58 n.25 (discussing the importance of the recoupment requirement for the Court).

profit-maximizing firm will not engage in such predation unless the monopoly profits it expects to charge in the future—once the competition is driven out of the market—suffice to compensate for those losses inevitably generated by its present, below-cost, predatory sales.³⁵

Because it adopted the rationality assumption, the Supreme Court concluded that predatory pricing schemes only rarely are tried and even more rarely are successful.³⁶ According to this view, for recoupment to be likely the predator must have, *inter alia*, a very large market share that is protected by significant entry barriers.³⁷ However, because few alleged predators meet the former condition, and few markets meet the latter one, the Court in *Brooke Group* concluded that price predation rarely occurs.³⁸ Consequently, the Court declared that predatory pricing allegations can be rejected summarily in the presumably common case of unlikely recoupment.³⁹

In the years since *Brooke Group*, the lower courts have followed the Court's directive, routinely rejecting predatory-pricing allegations based on the belief in their hypothetical irrationality and, hence, their assumed implausibility.⁴⁰ The same rationale was also applied by the Court more recently in *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*⁴¹ to reject allegations of predatory bidding because "a rational firm would not willingly suffer definite, short-run losses" without "a reasonable expectation" of recoupment.⁴² More generally, the *Weyerhaeuser* Court

35. See *Brooke Grp.*, 509 U.S. at 225–26; Tor, *Predatory Pricing*, *supra* note 2, at 55, 58 n.26 (noting that the Court has adopted the view of some economic theorists that predatory pricing is typically an irrational strategy). More precisely, rational predation must bear a positive, risk-adjusted, net present value, like any other rational investment activity.

36. See *Brooke Grp.*, 509 U.S. at 226; see also *Matsushita*, 475 U.S. at 588–89 ("A predatory pricing conspiracy is by nature speculative. . . . The foregone profits may be considered an investment in the future. For the investment to be rational, the conspirators must have a reasonable expectation of recovering, in the form of later monopoly profits, more than the losses suffered."); PHILLIP E. AREEDA & HERBERT HOVENKAMP, 3A ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 726a (3d ed. 2008) ("No rational firm would bear the losses, difficulties, and possible legal troubles of trying to exclude or discipline rivals by predatory pricing unless it is reasonably confident of a payoff that exceeds the investment . . .").

37. Tor, *Predatory Pricing*, *supra* note 2, at 55.

38. See *id.* (elaborating on the Supreme Court's reasoning in *Brooke Group*).

39. *Id.* at 55, 59 n.27.

40. See Leslie, *supra* note 3, at 272 ("[L]ower courts have reasoned that predatory pricing schemes are 'unlikely to be attempted by rational businessmen.'" (quoting *Stearns Airport Equip. Co. v. FMC Corp.*, 170 F.3d 518, 528 (5th Cir. 1999))). Leslie also points to two lower courts that used summary judgment to dismiss hypothetically irrational allegations of predatory schemes and were affirmed on appeal. See *id.* at 272 n.54 (citing *Nat'l Parcel Servs., Inc. v. J.B. Hunt Logistics, Inc.*, 150 F.3d 970 (8th Cir. 1998) and *C.B. Trucking, Inc. v. Waste Mgmt., Inc.*, 944 F. Supp. 66 (D. Mass. 1996), *aff'd*, 137 F.3d 41 (1st Cir. 1998) as examples).

41. 549 U.S. 312 (2007).

42. *Id.* at 319.

noted that a “rational business will rarely make th[e] sacrifice” involved in such predation.⁴³

The Court’s reliance on the rationality assumption to formulate antitrust doctrine is not limited to Section 2 predation. For one, allegations of a predatory horizontal conspiracy among competitors under Section 1 of the Sherman Act already were summarily rejected in *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*,⁴⁴ a few years prior to *Brooke Group*, once the Court determined that the conspiracy would have required irrational behavior by the alleged conspirators.⁴⁵ In reaching this conclusion, the Court in *Matsushita* similarly noted the necessity of a rational expectation of recoupment and explained that as unlikely as it believed predatory pricing schemes to be for a single firm, it considered these schemes even more irrational and unlikely for a cartel.⁴⁶

Notably, the rationality assumption ostensibly was relied on by the *Matsushita* Court only to establish a hurdle that plaintiffs’ allegations must clear to survive summary judgment.⁴⁷ The more recent *Brooke Group* and *Weyerhaeuser* opinions, on the other hand, went further in explicitly basing a substantive legal requirement for establishing predatory pricing and bidding on the rationality assumption.⁴⁸

Beyond their impact on predation-related doctrines, moreover, assumptions of rationality also have shaped the Court’s Section 1 jurisprudence with respect to vertical restraints between manufacturers and their distributors.⁴⁹ For instance, *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*⁵⁰ replaced the longstanding per se rule against minimum resale price maintenance (RPM)—a vertical restraint that forbids dealers from reselling the products they purchased from a manufacturer below a prescribed price—with a rule of reason approach.⁵¹ In reversing its older precedents, the Court surveyed an antitrust economics literature “replete

43. *Id.* at 323.

44. 475 U.S. 574 (1986).

45. *Id.* at 588–93.

46. *See id.* at 590–91.

47. *Id.* at 587–89; *see also* Leslie, *supra* note 3, at 339–40 (discussing *Matsushita* and arguing, *inter alia*, that it blurred the line between procedural and substantive antitrust rules).

48. *See supra* notes 31–39, 41–43.

49. *See* PHILLIP E. AREEDA & HERBERT HOVENKAMP, FUNDAMENTALS OF ANTITRUST LAW §§ 16.01–.09 (4th ed. Supp. 2013) (surveying some of the relevant case law).

50. 551 U.S. 877 (2007).

51. *Id.* at 881–82. Note that maximum RPM similarly was made subject to rule of reason analysis instead of per se condemnation a decade earlier in *State Oil Co. v. Khan*, 522 U.S. 3, 22 (1997). This was partly based on the rationality assumption. *See id.* at 17 (“But [setting maximum prices too low to support essential and desired services], by driving away customers, would seem likely to harm manufacturers as well as dealers and consumers, making it unlikely that a supplier would set such a price as a matter of business judgment.”); *see also* Leslie, *supra* note 3, at 273 (discussing the role of the rationality assumption in *Khan*).

with procompetitive justifications for a manufacturer's use of resale price maintenance⁵² based on an assumption of manufacturer rationality.⁵³

Leegin adopted the Chicago School argument that it would be irrational for manufacturers to use RPM, which has the general tendency of raising consumer prices and, therefore, reducing profits, unless they found the practice profitable on balance.⁵⁴ According to this view, RPM must be a procompetitive means for facilitating consumer demand and increasing manufacturers' profits despite the higher prices it generates, unless it is shown to support cartelization among either manufacturers or retailers.⁵⁵ Resale price maintenance may accomplish its beneficial outcome, for example, by encouraging distributors to provide valuable services to consumers before or after the sale, to engage in brand promotion, and so on.⁵⁶

Based on this reasoning, the *Leegin* Court found that RPM may be rationally anticompetitive in some limited settings but rationally procompetitive in many others, thereby necessitating a case-by-case rule of reason treatment instead of an automatic, per se condemnation.⁵⁷ Furthermore, after noting that the practice could be anticompetitive, the Supreme Court left lower courts the task of developing RPM's rule of reason analysis, providing them only with "certain factors" relevant to the inquiry,⁵⁸ all based on—and therefore limited by—the rationality assumption.⁵⁹ *Leegin* thus offers yet another, more recent illustration of the key role the rationality assumption plays in the formulation of substantive antitrust doctrines.

Besides its pervasive doctrinal impact, the rationality assumption also plays an important role in antitrust enforcement,⁶⁰ such as when agencies

52. *Leegin*, 551 U.S. at 889.

53. See generally Tor & Rinner, *supra* note 7, at 812 & n.45, 813–15 (reviewing the main procompetitive accounts of RPM and noting that they are based on the rationality assumption).

54. See *Leegin*, 551 U.S. at 896 (citing Frank Mathewson & Ralph Winter, *The Law and Economics of Resale Price Maintenance*, 13 REV. INDUS. ORG. 57, 67 (1998), for the proposition that a manufacturer will use minimum RPM only if increased demand from enhanced service would more than offset the negative demand impact of a higher retail price).

55. *Id.* at 892–93.

56. See *id.* at 890.

57. *Id.* at 894, 898–99.

58. *Id.* at 897–98; see also Tor & Rinner, *supra* note 7, at 854–57 (evaluating each of the factors enumerated by the Court in *Leegin*).

59. Tor & Rinner, *supra* note 7, at 854–57. For further detail see *infra* subpart I(C).

60. See, e.g., Stucke, *At the Gate*, *supra* note 2, at 543–45 (discussing the Federal Trade Commission's premerger analysis and its reliance on the assumption that behavior is rational). However, the Department of Justice does not appear to base its criminal enforcement policy on assumptions of strict rationality that, for instance, would rule out the possibility of cartelization where traditional economic models predict competitors cannot maintain such arrangements. Instead, it relies on case-specific evidence, particularly the evidence generated by cartel members

evaluate whether proposed mergers are likely substantially to lessen competition under Section 7 of the Clayton Act.⁶¹ In particular, although the antitrust agencies seek to base their merger decisions on the best available case-specific evidence,⁶² various elements of their analyses rely on the rationality assumption. For instance, one category of the potentially adverse effects of a merger on competition concerns the merger's potential for generating "coordinated effects."⁶³ These effects occur where a merger diminishes "competition by enabling or encouraging post-merger coordinated interaction among firms in the relevant market that harms customers."⁶⁴ When predicting the likelihood of post-merger coordination, however, the agencies routinely rely on the traditional, rationality-based, economic view of the conditions necessary for effective collusion to distinguish mergers that raise coordinated-effects concerns from those that do not.⁶⁵

In addition to the important role of the assumption of rationality with respect to producer firms, the assumption of consumer rationality also bears on antitrust doctrine and policy, as the case of aftermarket power illustrates. In *Eastman Kodak Co. v. Image Technical Services, Inc.*,⁶⁶ the Court affirmed a denial of summary judgment on claims of Section 1 tying and Section 2 monopolization.⁶⁷ The majority ruled that Kodak, a manufacturer of business copiers, could have exercised power in the aftermarket for the sale of machine parts despite competition in the primary market for copiers.⁶⁸

Conversely, the dissent argued that a competitive market in copiers necessarily would prevent Kodak from exercising power in parts.⁶⁹ After all, if consumers who already possessed Kodak machines were "locked in"

that partake in the leniency program. *See id.* at 575–80, 581 & n.324 (noting differences between the agencies' approach to criminal cartels and other enforcement policies).

61. This Section is codified at 15 U.S.C. § 18 (2012).

62. *See, e.g.*, 2010 MERGER GUIDELINES, *supra* note 30, § 2 (noting that "[t]he Agencies consider any reasonably available and reliable evidence to address the central question of whether a merger may substantially lessen competition" and laying out categories and sources of evidence that agencies have found most informative).

63. *Id.* § 7.

64. *Id.*

65. *See id.* § 7.2; *see also* Interview with Alison Oldale, Deputy Dir. Antitrust, Bureau Econ., FTC (Apr. 24, 2012), available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/jun12_oldale_intrvw_6_26f.authcheckdam.pdf (stating that behavioral models "aren't there yet" and that "in the meantime our existing models give us workable approximations" but conjecturing that "the first place behavioral economic analysis might be brought to bear on antitrust enforcement will be in areas like coordinated effects or exchange of information[,] . . . areas where our existing theories are not very helpful").

66. 504 U.S. 451 (1992).

67. *Id.* at 456, 486.

68. *Id.* at 476–78.

69. *Id.* at 490–91 (Scalia, J., dissenting).

because they must use compatible parts, any exploitation of the firm's power would raise the price of parts.⁷⁰ Yet such a higher aftermarket price effectively would make Kodak's machines more costly and less attractive to rational consumers—who take into account the future costs of parts and services over the copier's lifetime—in the competitive primary market for copiers.⁷¹ Assuming consumer rationality, therefore, the defendant—wishing to avoid damage to its copier sales in the primary market—could not engage in an anticompetitive exercise of aftermarket power.⁷²

It is thus clear that the assumption of consumer rationality played a significant, if somewhat implicit, role in the disagreement between the opinions of the majority and the dissent.⁷³ While perfectly rational consumers in the primary market would have sufficed to deter Kodak from exploiting aftermarket power, the same does not necessarily hold for boundedly rational consumers who may systematically underestimate or fail to consider the future costs of parts.⁷⁴

Vertical price restraints offer another example of the role of consumer rationality in doctrinal debates. As noted above, the arguments over the appropriate legal treatment of RPM have focused on the balance of its harms and benefits for strictly rational firms.⁷⁵ Interestingly, one argument for minimum RPM that manufacturers repeatedly advanced but economists summarily rejected was the “loss-leader” concern.⁷⁶ Manufacturers argued that retailers discount attractive products, selling them even below wholesale prices, to attract customers and increase sales and profits from other products at quantities that more than compensate for the retailers'

70. *Id.* at 496–97.

71. *Id.* at 494–95.

72. *Id.* at 495.

73. For analyses of the merits of these respective positions see, for instance, Steven C. Salop, *The First Principles Approach to Antitrust, Kodak, and Antitrust at the Millennium*, 68 ANTITRUST L.J. 187 (2000) and Carl Shapiro, *Aftermarkets and Consumer Welfare: Making Sense of Kodak*, 63 ANTITRUST L.J. 483 (1995).

74. *Cf.* Bennett et al., *supra* note 7, at 119 (arguing that “[p]assive consumers do not provide the same type of constraints on firms as active consumers do” and, in the context of aftermarkets, softened competition due to “myopic consumers who are unaware of their biases” manifests itself in overall higher prices and a loss in allocative efficiency); Werden et al., *supra* note 7, at 136 (discussing the possible implications of consumers’ hyperbolic discounting to the analysis of a merger between producers of durable consumer goods whose customers must also purchase proprietary complements, which are essentially aftermarket products).

75. See *supra* notes 49–59 and accompanying text; see also Tor & Rinner, *supra* note 7, at 807.

76. Tor & Rinner, *supra* note 7, at 813; *cf.* Howard P. Marvel, *The Resale Price Maintenance Controversy: Beyond the Conventional Wisdom*, 63 ANTITRUST L.J. 59, 73–77 (1994) (arguing that manufacturers might employ RPM to support inventory holdings and that they object to the use of their products as “loss leaders” out of a fear that competing retailers will refuse to stock products that can only be sold at a loss). *But see* Barak Y. Orbach, *Antitrust Vertical Myopia: The Allure of High Prices*, 50 ARIZ. L. REV. 261, 277–82 (2008) (arguing that consumers sometimes value high prices in and of themselves).

losses on the former loss leaders.⁷⁷ Manufacturers oppose the use of their products as loss leaders despite the short-term wholesale profits the practice generates because they believe that frequent discounts diminish the reputation and value of both the specifically discounted products and the manufacturer's brand writ large.⁷⁸ However, even economists who favor RPM reject the loss-leader argument, arguing that discounting would not change rational consumer perceptions of the quality of standard goods.⁷⁹

Finally, in the area of merger enforcement, both the agencies and merging parties routinely predict the unilateral effects of mergers based on the estimation of consumer demand.⁸⁰ Much like in other aspects of merger evaluation, however, some common merger simulation methods assume consumer rationality regarding the choice among competing products and services.⁸¹

77. Howard P. Marvel & Stephen McCafferty, *The Welfare Effects of Resale Price Maintenance*, 28 J.L. & ECON. 363, 375 (1985); Tor & Rinner, *supra* note 7, at 813.

78. See, e.g., AM. FAIR TRADE COUNCIL, INC., *RESALE PRICE MAINTENANCE BY MEANS OF FAIR TRADE LAW IN FORCE APRIL 1, 1942*, at 4–5 (1942) (stressing that frequent discounts on products hurt manufacturers and cause consumers to believe that a discounted product is worth no more than is charged by the price-cutting manufacturer); see also *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 883 (2007) (noting that one of the reasons Leegin gave for adopting its RPM policy was the “concern that discounting harmed [its] brand image and reputation”).

79. See Tor & Rinner, *supra* note 7, at 813. Economists may find the argument compelling with respect to a narrow class of goods whose “luxury” value indeed derives in part from their relatively high price. See, e.g., Laurie Simon Bagwell & B. Douglas Bernheim, *Veblen Effects in a Theory of Conspicuous Consumption*, 86 AM. ECON. REV. 349, 349 (1996); Harvey Leibenstein, *Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand*, 64 Q.J. ECON. 183 (1950); see also sources cited *infra* note 152 (discussing empirical evidence for a persistent positive correlation between perceptions of price and quality).

80. E.g., 2010 MERGER GUIDELINES, *supra* note 30, § 6; PETER DAVIS & ELIANA GARCÉS, *QUANTITATIVE TECHNIQUES FOR COMPETITION AND ANTITRUST ANALYSIS* §§ 8.3–.5 (2009); Gregory J. Werden & Luke M. Froeb, *Unilateral Competitive Effects of Horizontal Mergers*, in *HANDBOOK OF ANTITRUST ECONOMICS* 44, 66–70 (Paolo Buccirossi ed., 2008).

81. See, e.g., Elizabeth M. Bailey, *Behavioral Economics: Implications for Antitrust Practitioners*, ANTITRUST SOURCE, June 2010, art. 4, at 1, 4–5 (noting the dependence of critical loss analysis on assumptions regarding the standard shape of the demand curve); Oliver Budzinski & Isabel Ruhmer, *Merger Simulation in Competition Policy: A Survey*, 6 J. COMPETITION L. & ECON. 277 (2009) (reviewing numerous shortcomings of the different classes of models used in merger simulation, including the reliance of some on restrictive, rationality-based assumptions regarding the shape of the demand function); Daniel Hosken et al., *Demand System Estimation and Its Application to Horizontal Merger Analysis* (FTC, Working Paper No. 246, 2002), available at http://www.ftc.gov/sites/default/files/documents/reports/demand-system-estimation-and-its-application-horizontal-merger-analysis/wp246_0.pdf (noting that one significant limitation of logit models is their restrictive assumption of the independence of irrelevant alternatives, one of the axioms of rational choice); see also Oldale, *supra* note 7, at 141 (noting that, even where demand is estimated based on actual aggregate data, a behaviorally informed understanding of the factors shaping consumer demand “could highlight possible ways in which the merger might affect the demand function itself, and so suggest reasons why demand should not be treated as a given”). See generally ABA SECTION ON ANTITRUST LAW, *ECONOMETRICS: LEGAL, PRACTICAL, AND TECHNICAL ISSUES* 133–37, 269–309 (2005) (offering a nontechnical introduction to merger simulation methods and noting their many limitations, including the reliance of different models

B. *Defining Behavioral Antitrust*

In clear contrast to the hypothetical rationality assumption, the behavioral approach seeks to provide an empirically based account of the behavior of antitrust actors, from consumers, entrepreneurs, managers, and other business decision makers, to judges, juries, and enforcement officials.⁸² Toward this end, behavioral antitrust draws on the extensive findings of behavioral decision research, the psychology of judgment and decision making, and related disciplines.⁸³

The main findings of behavioral decision research can be classified into the two general domains of *judgment* and *decision making* (or “choice”), roughly paralleling what economists refer to as individuals’ *beliefs* and *preferences*, respectively.⁸⁴ Judgment research is concerned with the intuitive formation of beliefs about the past, present, or future state of the world. Intuitive judgments involve mental processes that are neither completely automatic—like visual perception—nor elaborate and controlled—as when people solve a complex problem using a mathematical formula.⁸⁵ The study of decision making, on the other hand, examines how individuals choose among alternative courses of action—choices that economists traditionally have considered a mere manifestation of preferences⁸⁶ but psychological research proves to entail far more complex processes.⁸⁷

on assumptions regarding the behavior of market participants and certain properties of consumer demand).

82. See, e.g., Bennett et al., *supra* note 7, at 114–15 (discussing consumer, or “demand side,” behavior); Cooper & Kovacic, *supra* note 7 (applying behavioral economics to enforcement-agency decision making); Ginsburg & Moore, *supra* note 7, at 90 (examining the potential that “judges will consult behavioral economics or literature influenced by behavioral economics with increasing regularity in the not-too-distant future”); Leslie, *supra* note 3, at 342 (“As Chicago School thinking has become entrenched, judges have dismissed and rejected antitrust claims based on narrow and inaccurate conceptions of how businesses operate.”); Tor & Rinner, *supra* note 7, at 837–39 (analyzing managers’ overestimation of their ability to control risks); Tor, *Entry*, *supra* note 2, at 534–36 (examining the entry judgments and decisions of entrepreneurs in manufacturing industries as well as those of financiers with respect to the ventures of those entrepreneurs).

83. Tor, *Behavioral Methodology*, *supra* note 1, at 242 & n.15.

84. E.g., Nicholas Barberis & Richard Thaler, *A Survey of Behavioral Finance*, in 2 ADVANCES IN BEHAVIORAL FINANCE 1, 12–22 (Richard H. Thaler ed., 2005) (dividing relevant psychological findings among the domains of beliefs and preferences); Colin Camerer, *Individual Decision Making*, in THE HANDBOOK OF EXPERIMENTAL ECONOMICS 587, 589 (John H. Kagel & Alvin E. Roth eds., 1995) (dividing his analysis into separate sections on judgment and choice).

85. See, e.g., Daniel Kahneman & Shane Frederick, *Representativeness Revisited: Attribute Substitution in Intuitive Judgment*, in HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT 49, 50 (Thomas Gilovich et al. eds., rev. ed. 2003) (explaining that intuitive judgments “occupy a position . . . between the automatic parallel operations of perception and the controlled serial operations of reasoning”).

86. See, e.g., MARK BLAUG, THE METHODOLOGY OF ECONOMICS 141–44 (2d ed. 1992) (providing a short, nontechnical overview of revealed preferences theory).

87. See generally CHOICES, VALUES, AND FRAMES (Daniel Kahneman & Amos Tversky eds., 2000) (providing evidence from multiple articles that decision making involves a variety of

Notably, one of the main foci of judgment and decision research has been the study of whether human behavior accords with normative standards of rationality and—insofar as it does not—how and why it deviates from these standards.⁸⁸ Scholars compare intuitive judgments, for example, with the normative standards that probability theory offers for the formation and updating of beliefs.⁸⁹ Similarly, in the decision-making domain, researchers contrast the assumptions underlying the normative model of rational choice with actual choice behavior.⁹⁰

By now, many of the most robust findings of behavioral decision research have been reviewed in the legal literature generally⁹¹ and, albeit less extensively, in antitrust scholarship specifically.⁹² Hence, the following paragraphs offer only a brief overview of the overarching approach of behavioral decision research.

When forming their beliefs about the world, antitrust actors routinely make legally relevant judgments, mostly under conditions of uncertainty.⁹³

different factors). For a useful elaboration of the distinction between judgment and decision making, see, for example, Robyn M. Dawes, *Behavioral Decision Making and Judgment*, in 1 THE HANDBOOK OF SOCIAL PSYCHOLOGY 497, 497–99, 530–33 (Daniel T. Gilbert et al. eds., 4th ed. 1998). See also Daniel Kahneman, *Preface to CHOICES, VALUES, AND FRAMES*, *supra*, at ix–xi; Gregory Mitchell, *Taking Behavioralism Too Seriously? The Unwarranted Pessimism of the New Behavioral Analysis of Law*, 43 WM. & MARY L. REV. 1907, 1920 n.20 (2002) (elaborating on the distinction between judgment and decision).

88. See Tor, *Behavioral Methodology*, *supra* note 1, at 245–72 (providing a general examination of the main psychological research and findings in the area of deviations from rationality in judgment and decision-making outcomes); see also William M. Goldstein & Robin M. Hogarth, *Judgment and Decision Research: Some Historical Context*, in RESEARCH ON JUDGMENT AND DECISION MAKING: CURRENTS, CONNECTIONS, AND CONTROVERSIES 3, 4–6 (William M. Goldstein & Robin M. Hogarth eds., 1997) (discussing the advent of the influential von Neumann–Morgenstern axioms and how they “instigated a pattern of psychological experiments in which behavioral deviations from a presumed standard of rationality are considered the ‘interesting’ phenomena to be explained”).

89. See, e.g., Dawes, *supra* note 87, at 530–33 (comparing common cognitive biases with the Bayes Theorem of rational action).

90. See, e.g., Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 ECONOMETRICA 263 (1979) [hereinafter Kahneman & Tversky, *Prospect Theory*] (critiquing expected-utility theory as a descriptive model of decision making and presenting evidence from experiments in which subjects exhibited pervasive tendencies inconsistent with utility theory’s basic tenets); Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, 59 J. BUS. (SPECIAL ISSUE) S251, S252 (1986) [hereinafter Tversky & Kahneman, *Rational Choice*] (“[D]eviations of actual behavior from the normative model are too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system.”).

91. See, e.g., sources cited *supra* note 1.

92. See, e.g., Armstrong & Huck, *supra* note 7; Bennett et al., *supra* note 7; Reeves & Stucke, *supra* note 2; Tor & Rinner, *supra* note 7; Tor, *Behavioural Approach*, *supra* note 2; Tor, *Entry*, *supra* note 2; Tor, *Predatory Pricing*, *supra* note 2.

93. The distinction between risk and uncertainty was originally made in FRANK H. KNIGHT, *RISK, UNCERTAINTY AND PROFIT* 19–20 (1921). For one definition of the distinction between uncertainty, risk, and certainty in a classical text, see R. DUNCAN LUCE & HOWARD RAIFFA, *GAMES AND DECISIONS: INTRODUCTION AND CRITICAL SURVEY* 13 (1957).

They predict the future success of a new technological platform they consider buying or the future performance of their business venture; they judge whether the evidence at trial proves that a defendant indeed participated in an illegal cartel; and they determine whether the present activities of a particular retailer violate their manufacturer's distribution policy.

Such judgments require—at least implicitly—that individuals assess the probability of different outcomes, a task for which people use cognitive heuristics (mental shortcuts), immediate affective reactions, and more.⁹⁴ These heuristic processes, which help real-world, “boundedly rational” decision makers economize on their limited cognitive resources,⁹⁵ also generate some costs. Cognitive heuristics, for instance, permit decision makers quickly to reach approximate judgments most of the time, with little conscious effort.⁹⁶ However, the same mental shortcuts also cause sometimes predictable and systematic errors known as “judgmental biases.”⁹⁷

Based on the beliefs they form through judgment,⁹⁸ antitrust actors constantly must make legally relevant decisions under uncertainty. They have to determine what course of action to take in the market when engaging in competitive and strategic interaction, making enforcement and policy decisions, and more. For the hypothetical rational actor, decision making is a straightforward matter, a mere revelation of preexisting, well-ordered preferences⁹⁹ that always maximizes subjective expected utility

94. See, e.g., Tor, *Behavioral Methodology*, *supra* note 1, at 245–51 (discussing various judgment heuristics).

95. See *id.* at 242 & n.16, 243 (offering a brief discussion of the development of the concept of bounded rationality); see also Salinger, *supra* note 7, at 71 (“[B]ounded rationality means that individuals (or firms) act purposefully, but not necessarily as if they are both fully informed and perfectly rational.”); Glenn Ellison, *Bounded Rationality in Industrial Organization 1* (Jan. 2006) (unpublished manuscript), available at <http://economics.mit.edu/files/904> (noting that the term “boundedly rational” has been used by different groups of economists to describe different styles of work and discussing three different “traditions” of work that use this term).

96. See, e.g., Kahneman & Frederick, *supra* note 85, at 58 (“[P]eople . . . are often content to trust a plausible judgment that quickly comes to mind.”).

97. See, e.g., *id.* at 53 (recognizing that “[m]any judgments are made by . . . attribute substitution” and that these are sometimes “given . . . too much or too little weight” (emphasis omitted)); see also Rachlinski, *supra* note 16, at 755–56 (noting that people, particularly judges, typically are unaware of using heuristics); Tor, *Behavioral Methodology*, *supra* note 1, at 245 (explaining that decision makers will often answer an easier question whose answer comes readily to mind when they are confronted with a harder question).

98. In reality, of course, decision and choice do not always follow judgment, although analytically they should be based on the beliefs antitrust actors hold based on judgment.

99. The notion that choices “reveal” people’s preferences originated with P.A. Samuelson, *A Note on the Pure Theory of Consumer’s Behaviour*, 5 *ECONOMICA* 61 (1938) and P.A. Samuelson, *A Note on the Pure Theory of Consumer’s Behavior: An Addendum*, 5 *ECONOMICA* 353 (1938), though he did not use that terminology at the time, and has received much attention and development since. For one short and highly readable discussion of the concept and its

(SEU).¹⁰⁰ When faced with risky or uncertain prospects, the rational actor takes into account her judgments of the value and probability of these options as well as her risk preferences.¹⁰¹ Risk-neutral decision makers choose the option with the highest expected value,¹⁰² risk-averse ones discount the expected value of risky or uncertain prospects to account for the risk involved, and risk-seeking actors find risky prospects more attractive than their mere expected value indicates.¹⁰³

Importantly for antitrust analysis, in economic models the decision behavior of business managers is even more narrowly circumscribed: managers are tasked with maximizing the firm's profits and, therefore, should exhibit risk neutrality when making decisions on behalf of the firm.¹⁰⁴ While they may be risk averse under limited circumstances, rational managers would not make for their firms risk-seeking decisions—which by definition have a negative expected value and are therefore deemed irrational market behavior.¹⁰⁵

However, much as in the case of belief formation through judgment, a wealth of psychological evidence reveals that real, boundedly rational individuals systematically and predictably deviate from the theoretical

appeal, see Amartya Sen, *Behaviour and the Concept of Preference*, 40 *ECONOMICA* 241, 241–44 (1973).

100. *E.g.*, BLAUG, *supra* note 86, at 229. In defining rationality, Blaug states:

[S]ome regard . . . the most characteristic feature of neoclassical economics [as] its insistence on methodological individualism: the attempt to derive all economic behavior from the action of individuals seeking to maximize their utility, subject to the constraints of technology and endowments. This is the so-called *rationality postulate*, which figures as a minor premise in every neoclassical argument.

Id. The axiomatization of SEU was formalized by JOHN VON NEUMANN & OSKAR MORGENTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* 617–28 (60th Anniversary ed. 2004) and LEONARD J. SAVAGE, *THE FOUNDATIONS OF STATISTICS* (1954); Savage developed the notion of personal, subjective probability and tied it to expected utility. For a discussion of rational choice theory in law, see Korobkin & Ulen, *supra* note 1, at 1060–75.

101. *See* ROBIN M. HOGARTH, *JUDGMENT AND CHOICE: THE PSYCHOLOGY OF DECISION* 89–90 (2d ed. 1987) (describing how a rational person will make a decision in an uncertain situation based on her subjective value of the possible outcomes combined with her risk attitude).

102. For example, a risk-neutral person would prefer a 50% chance of receiving \$101 over the certain receipt of \$50.

103. *See, e.g.*, VON NEUMANN & MORGENTERN, *supra* note 100, at 629 (noting specifically that their axiomatization of expected utility does not require a specific risk attitude); *see also* HOGARTH, *supra* note 101 (describing these different utility functions and their interpretation).

104. *See* AREEDA & HOVENKAMP, *supra* note 3; POSNER, *supra* note 27, at 289; Korobkin & Ulen, *supra* note 1, at 1066 (“Nearly all law-and-economics literature on business organizations, following the neoclassical economic theory of firms, is built on the explicit or implicit assumption that firms seek to maximize profits.” (footnote omitted)).

105. *See infra* note 365 (collecting sources discussing the concept of net present value). *But see infra* subpart III(B) (explaining that some deviations from models of strict rationality—including certain forms of risk-seeking behavior—are in fact rational for managers individually and, occasionally, for their firms as well).

model of rational choice in important respects.¹⁰⁶ The same sensitivity to subtle contextual cues that helps people intuitively navigate complex real-world situations also leads them predictably to violate the normative requirements for SEU maximization by acting inconsistently at different times, in different contexts, with respect to different subject matters, and so on.¹⁰⁷

In sum, behavioral antitrust can be defined as the application of empirical behavioral findings to antitrust law. This approach draws upon the extensive evidence generated by researchers focusing on the processes that shape human judgment and decision making, paying particular attention to those systematic, predictable deviations of real, boundedly rational behavior from the assumptions of strict rationality.¹⁰⁸

C. Illustrative Applications

In recent years, numerous commentators have joined the few researchers that previously offered behavioral antitrust analyses, quickly generating a sizable body of scholarship that addresses many areas of antitrust law.¹⁰⁹ Behavioral analyses of antitrust law typically draw on evidence suggesting that real market participants deviate systematically in some specific respect from the predictions of the rationality-based economic models that antitrust law relies on. In some cases, scholars further argue that these deviations warrant changes in enforcement policy or antitrust doctrine.¹¹⁰ This subpart illustrates the range of applications commentators already offer, providing a more concrete foundation for the critical evaluation of this scholarship in the remainder of this Article.

Where horizontal restraints among competitors are concerned, scholars argue that behavioral forces make cartelization both more likely and more

106. See Tor, *Behavioral Methodology*, *supra* note 1, at 245–57 (offering examples of ways individuals tend to deviate from the theoretical model of rational choice).

107. The literature in this area is voluminous. See generally CHOICES, VALUES, AND FRAMES, *supra* note 87 (collecting important articles in this area); Dawes, *supra* note 87, at 499–530 (reviewing and discussing some of the basic decision-making phenomena that violate the axioms of rational choice). For one review and legal application of some basic decision-making findings, see Tor, *Behavioral Methodology*, *supra* note 1, at 258–72.

108. Note that this definition also delimits the boundaries of the behavioral approach to antitrust law, excluding, for instance, critiques of the rationality assumption that are not based on empirical behavioral evidence. Similarly, behavioral antitrust properly understood does not encompass those market features that traditional antitrust economics already account for, including asymmetric information and related phenomena, network effects, and more. *Contra* Stucke, *Monopolization*, *supra* note 7, at 552–53 (denoting as behavioral certain nonbehavioral aspects of network effects and learning processes).

109. See sources cited *supra* notes 6–14 and accompanying text.

110. See, e.g., Reeves & Stucke, *supra* note 2, at 1532–33, 1577 (stating that “[c]onsumers are not perfectly objective and rational Bayesians” and later suggesting that behavioral economics should start to influence antitrust doctrine as a result of these deviations).

stable than traditional antitrust theories suggest.¹¹¹ This position is supported by the numerous examples of real-world cartels that were exposed and prosecuted in industries and product markets where, according to traditional economic accounts, they should not have existed and could not have thrived for extended periods.¹¹² These ubiquitous real-world cartels, both domestic and global in scope, spanned markets with large numbers of competitors, relatively low entry barriers, nonhomogeneous products with complex pricing and cost structures, and other characteristics that make cartelization unlikely for strictly rational actors.¹¹³

Explaining this evidence, commentators argue that behavioral factors, such as managers' social preferences for trust and cooperation, personal relationships, social networks, and social norms all help competing firms both establish and maintain collusive arrangements where rationality-based models that ignore such factors expect them to fail.¹¹⁴ Other researchers point to additional, nonsocial phenomena, such as managers' aspiration to

111. See, e.g., Armstrong & Huck, *supra* note 7, at 19–22 (noting that vengeful behavior or *esprit de corps* can sustain collusion); Leslie, *supra* note 3, at 280–84, 324–34 (arguing that seemingly irrational conduct may be a rational business decision in the context of an antitrust conspiracy); Reeves & Stucke, *supra* note 2, at 1563–67 (expressing skepticism about the assumption that the presence of big buyers in a market causes rational cartel members to defect); Stucke, *At the Gate*, *supra* note 2, at 568–69 (noting the stability of conspiracies with eleven or more participants); Marie Goppelsroeder, *Three Is Still a Party: An Experiment on Collusion and Entry* 24–26 (Amsterdam Ctr. for Law & Econ., Working Paper No. 2009–05, 2009), available at <http://ssrn.com/abstract=1368728> (summarizing findings on entrant behavior that successfully sustained collusion); see also Christoph Engel & Lilia Zhurakhovska, *Oligopoly as a Socially Embedded Dilemma. An Experiment* 24–25 (Nov. 2011) (unpublished manuscript), available at http://www.coll.mpg.de/pdf_dat/2011_01online.pdf (discussing the behavioral effects of sanctions and externalities on collusion).

112. See, e.g., Armstrong & Huck, *supra* note 7, at 22 (noting evidence of *esprit de corps* in the American steel cartel and the nineteenth-century UK shipping cartel); Leslie, *supra* note 3, at 324–34 (analyzing alleged price-fixing conspiracies in the tobacco, citric acid, and potash industries); Reeves & Stucke, *supra* note 2, at 1563–66 (noting that cartels in the citric acid, lysine, liquid crystal display panels, air transportation, Dynamic Random Access Memory, and graphite electrodes industries all persisted despite the existence of large, sophisticated buyers); Stucke, *At the Gate*, *supra* note 2, at 565–66 (noting that over twenty industries with moderate or low barriers to entry have been criminally prosecuted for price fixing or bid rigging).

113. More precisely, these factors diminish the likelihood of cartelization in rationality-based models only under some common specifications. For scholarship on the circumstances that lead to cartelization, see Margaret C. Levenstein & Valerie Y. Suslow, *What Determines Cartel Success?*, 44 J. ECON. LITERATURE 43, 45–49 (2006) and George J. Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44, 45–48 (1964).

114. See, e.g., Armstrong & Huck, *supra* note 7, at 21–22 (noting the central role of trust and camaraderie, fostered through social events and meetings, in facilitating collusion); Bennett et al., *supra* note 7, at 124 (“[T]here is evidence that personal friendship and trust can play an important role in sustaining collusion, with cartel members often investing a lot of time and effort in individual relationships.”); Leslie, *supra* note 3, at 281 (noting that facially irrational conduct, such as declining to make profitable sales, is often employed as a “trust-building goodwill gesture[]” in order to “maintain friendly relations among cartel participants”).

obtain merely satisfactory—rather than maximal—profitability.¹¹⁵ Firms whose managers exhibit such preferences find the potential for more secure profits through cartelization more attractive than the profit-maximizing firm does.¹¹⁶

Analysts also argue, however, that behavioral forces can destabilize, rather than facilitate, collusion due to processes that traditional models ignore. For example, some studies of experimental markets show that an increase in the amount of information available to competitors about rivals' output and profits—which would make easier oligopolistic coordination by rational actors—can lead in fact to less collusive, more competitive market behavior.¹¹⁷ Similarly, the broader behavioral literature makes clear that individuals' concern for relative—as opposed to absolute—outcomes is ubiquitous,¹¹⁸ particularly common in competitive settings,¹¹⁹ and evidenced

115. See, e.g., R.M. Cyert & James G. March, *Organizational Factors in the Theory of Oligopoly*, 70 Q.J. ECON. 44, 63 (1956) (analyzing firms' planning and budgeting processes and finding "adequate basis to justify the introduction of the concept of an acceptable-level profit norm in place of the traditional profit maximizing assumption"); Huw David Dixon, *Keeping up with the Joneses: Competition and the Evolution of Collusion*, 43 J. ECON. BEHAV. & ORG. 223, 224 (2000) (advancing a model in which "the aspiration level of all firms is to have at least normal-profits" and concluding that "cooperation is not only possible, but almost inevitable" in this economic system (emphasis omitted)); Jörg Oechssler, *Cooperation as a Result of Learning with Aspiration Levels*, 49 J. ECON. BEHAV. & ORG. 405, 406 (2002) (building on Dixon's work and showing that "imitation may result in collusion if the population average is imitated in the form of an aspiration level"); cf. HERBERT A. SIMON, *ADMINISTRATIVE BEHAVIOR: A STUDY OF DECISION-MAKING PROCESSES IN ADMINISTRATIVE ORGANIZATION* 270–75 (3d ed. 1976) (noting that in actual organizational practice, "no one attempts to find an optimal solution for the whole problem," but instead "specialized members or units of the organization . . . find a 'satisfactory' solution for one or more subproblems").

116. Note that a similar result may obtain in the familiar case where rational, yet risk-averse, managers who pursue their self-interest believe the expected outcomes of cartelization to be more stable and less risky than competition to maximize profits and, therefore, diverge from what is optimal for the firm. See, e.g., Giancarlo Spagnolo, *Managerial Incentives and Collusive Behavior*, 49 EUR. ECON. REV. 1501, 1503 (2005) (arguing that "[f]irms whose pricing policy is in the hands of managers that prefer smooth profit streams can support any collusive agreement at lower discount factors than profit-maximizing ones" and explaining that "the preference for smooth profit streams reduces managers' appreciation of short-run profits from unilaterally breaking a collusive agreement and increases that of losses from the punishment phase that follows"). See generally Henry Hansmann & Reinier Kraakman, *What Is Corporate Law?*, in REINIER KRAAKMAN ET AL., *THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH* 1, 2–3 (2d ed. 2009) (providing a brief introduction to agency problems in corporate law); John W. Pratt & Richard J. Zeckhauser, *Principals and Agents: An Overview*, in PRINCIPALS AND AGENTS: THE STRUCTURE OF BUSINESS 1, 2–4 (John W. Pratt & Richard J. Zeckhauser eds., 1985) (offering a general introduction to the principal-agent relationship).

117. See, e.g., Steffen Huck et al., *Does Information About Competitors' Actions Increase or Decrease Competition in Experimental Oligopoly Markets?*, 18 INT'L J. INDUS. ORG. 39 (2000); Steffen Huck et al., *Learning in Cournot Oligopoly: An Experiment*, 109 ECON. J. C80, C87–89 (1999); Theo Offerman et al., *Imitation and Belief Learning in an Oligopoly Experiment*, 69 REV. ECON. STUD. 973 (2002).

118. See, e.g., Jerry Suls & Ladd Wheeler, *A Selective History of Classic and Neo-Social Comparison Theory*, in *HANDBOOK OF SOCIAL COMPARISON: THEORY AND RESEARCH* 3, 3–15 (Jerry Suls & Ladd Wheeler eds., 2000) (summarizing the history of self-evaluation through social

in managerial behavior.¹²⁰ Yet the concern for relative outcomes, if manifested by managers when making decisions on behalf of their firms, can sometimes destabilize cartels and make markets more competitive.¹²¹

More generally, beyond showing how specific firm and market characteristics may facilitate or inhibit collusion in ways that traditional models neglect, the behavioral evidence also reveals that established patterns of market behavior—whether competitive or collusive—tend to exhibit greater stability than standard antitrust models assume.¹²² Extant rivals are slower to recognize and embark on mutually profitable opportunities for coordinated behavior—whether legal, collaborative arrangements or illegal cartelization—than rationality-based accounts allow for.¹²³ At the same time, established collaborative or collusive arrangements are also more stable than they would have been if the parties were strictly rational actors.¹²⁴

A number of factors combine to make market behavior “sticky.” In the domain of judgment, for instance, established norms of rivalry diminish competitors’ ability to identify profitable opportunities for cooperation while collusive norms can have the opposite effect.¹²⁵ Managers’ risk attitudes also can lead them to overestimate the value of extant arrangements and underestimate the benefits of alternative courses of

comparison and discussing the importance of relative comparisons). This concern is related to social comparison, a fundamental psychological process whereby people engage in self-evaluation and self-enhancement by comparing themselves to others—“a core aspect of human experience.” *Id.* at 15.

119. *See generally* Andrew E. Clarke et al., *Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles*, 46 J. ECON. LITERATURE 95 (2008) (finding that one’s happiness is related to income relative to others rather than absolute income).

120. *See, e.g.*, Armstrong & Huck, *supra* note 7, at 17–18 (discussing the importance of relative performance with regard to managerial behavior); Lorenz Graf et al., *Debiasing Competitive Irrationality: How Managers Can Be Prevented from Trading Off Absolute for Relative Profit*, 30 EUR. MGMT. J. 386, 386–90 (2012) (reviewing findings for managers’ frequent preference for relative position, at times even at the expense of profit maximization). *See generally* Robert Gibbons & Kevin J. Murphy, *Relative Performance Evaluation for Chief Executive Officers*, 43 INDUS. & LAB. REL. REV. 30-S (1990) (addressing the costs and benefits of relative performance evaluations for chief executive officers).

121. Armstrong & Huck, *supra* note 7, at 19. Concerns for relative position can also have the opposite effect of reinforcing cartelization under some circumstances. *See id.*

122. *See* Aviram & Tor, *supra* note 2, at 247–63 (discussing the stabilizing functions of social norms).

123. *See id.* (noting that uncertainty, social norms, managerial perception of risk, the illusion of control, and status quo bias impact market participants’ judgments of information sharing).

124. *See id.* at 251–52.

125. *See, e.g., id.* at 250–54 (noting that managers’ aversion to seemingly uncontrolled risks erects an additional barrier to collaboration with rivals); Margaret M. Blair & Lynn A. Stout, *Trust, Trustworthiness, and the Behavioral Foundations of Corporate Law*, 149 U. PA. L. REV. 1735, 1774–75 (2001) (noting that, in experimental settings, subjects who cooperate during initial rounds tend to continue their cooperation and observing that similar patterns are seen in the business world).

interaction with rivals.¹²⁶ Moreover, some decision phenomena—including the status quo bias and the aversion to comparative ambiguity—may both lead competitors consciously to forego risky opportunities for profitable collusion and inhibit cartelists' willingness to chance potentially profitable competitive alternatives to ongoing collusive arrangements.¹²⁷

Beyond horizontal restraints, questions of monopolization generally, and the likelihood of predatory behavior specifically, have received significant attention from behavioral antitrust scholars. This author and others identified circumstances where monopolists may engage in predatory behavior that fails to maximize expected profits and is therefore irrational according to the standard account.¹²⁸ For example, managers of a dominant firm that is losing market share may take excessive risks due to loss aversion, while those of established, profitable monopolists may exhibit the opposite pattern of excessive risk avoidance.¹²⁹ Some scholars offer further evidence from antitrust cases of predatory behavior that appears irrational,¹³⁰ while others show how even rational monopolists may find it beneficial to imitate the behavior of their irrational counterparts when market participants know that some monopolists may engage in irrational predation.¹³¹

At the same time, some analysts suggest that traditional models can overstate the harm from substantial market power.¹³² According to this argument, real firms sometimes avoid fully exploiting their market power, charging prices they deem “fair” instead of maximizing profits.¹³³ For instance, when market power is generated by recent or temporary changes in market conditions, firms may not exercise it fully, whether to maintain a

126. Aviram & Tor, *supra* note 2, at 254–57.

127. *See id.* at 257–63.

128. *See, e.g.,* Tor, *Predatory Pricing*, *supra* note 2, at 55 (“In contrast with the accepted wisdom on the extreme rarity of predatory pricing, the behavioral evidence suggests that dominant firms and monopolists consciously may engage in high-risk, negative net present value predation under some circumstances.”); *see also* Leslie, *supra* note 3, at 274–84 (discussing various examples of firms engaging in behavior inconsistent with perfect rationality and profit maximization).

129. Tor, *Predatory Pricing*, *supra* note 2, at 55–56.

130. *See, e.g.,* Leslie, *supra* note 3, at 274–84.

131. *See, e.g.,* Armstrong & Huck, *supra* note 7, at 30–31 (explaining how it can be rational for a firm to mimic a competitor that is engaging in predatory pricing); Leslie, *supra* note 3, at 297–301 (describing how credible threats to engage in predatory behavior can be rational); *see also* Aaron Edlin, *Predatory Pricing*, in RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW 144, 151–53 (Einer Elhauge ed., 2012) (explaining that formal models show that “[w]hether predation is a successful strategy depends very much on whether predator and prey believe it is a successful strategy”).

132. *See, e.g.,* Bailey, *supra* note 81, at 5–7.

133. *See, e.g., id.* *See generally* Daniel Kahneman et al., *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 AM. ECON. REV. 728 (1986) (analyzing how standards of fairness can explain market anomalies).

reputation for offering low prices or to avoid negative reactions from consumers to prices the latter perceive as “unfair.”¹³⁴

A different behavioral antitrust inquiry concerns aftermarket power—both within and beyond monopolization claims—as illustrated by the divided Court in *Kodak*: the majority ruled that the manufacturer could have exercised aftermarket power in parts despite competition in the primary market for copiers. This holding would have been impossible if consumers were all perfectly rational, incorporating the expected costs of parts over the copier lifetime into the original purchase price of the machine.¹³⁵

Importantly, the majority’s conclusion did not require a finding that Kodak in fact exercised power in the parts aftermarket since the Court only affirmed the denial of summary judgment by the court of appeals.¹³⁶ Kodak’s actual aftermarket power depended on the proportion of myopic consumers (who did not take future costs effectively into account) to their more sophisticated counterparts (who did account for these costs) as well as on the competitive conditions in the primary copier market. As the proportion of its sophisticated consumers increased, for instance, Kodak would have needed to dissipate more of its aftermarket profits to keep the copiers attractive to this group in the primary market.¹³⁷

The ultimate welfare loss from the exercise of aftermarket power in this and similar situations therefore depends, first, on the relative proportions of sophisticated to myopic consumers and, second, on the intensity of primary market competition. However, in contrast to the prediction of rationality-based analyses, such as the one promoted by the *Kodak* dissent, a potentially significant loss to efficiency remains even when the primary market is fully competitive so long as the machines sold in the primary market are subsidized by the aftermarket, with an overconsumption in the former and underconsumption in the latter.¹³⁸ Hence even firms facing more competitive conditions—such as Kodak did in the copier market—may benefit from exploiting boundedly rational consumers.¹³⁹

134. See, e.g., Bailey, *supra* note 81, at 5–7.

135. See *supra* notes 66–74 and accompanying text (discussing the role of the rationality assumption in *Kodak*).

136. *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 485–86 (1992).

137. See *id.* (recognizing that it could be the case that the primary market at issue disciplined the aftermarket).

138. Bennett et al., *supra* note 7, at 135 n.25 (discussing the effects of aftermarket exploitation).

139. See OFFICE OF FAIR TRADING, *supra* note 10, §§ 1.1–1.2 (finding that, in contrast to predictions of standard economic theory, the way prices are presented to consumers—or “framed”—affects consumer decision making and can cause consumer welfare losses); Oren Bar-Gill, *Competition and Consumer Protection: Behavioral Economics Account*, in SWEDISH COMPETITION AUTH., THE PROS AND CONS OF CONSUMER PROTECTION 12, 14, 25–27 (2012), available at <http://www.konkurrensverket.se/upload/Filer/Trycksaker/Rapporter/Pros&Cons/>

In the area of vertical restraints of trade, antitrust scholars have argued that product bundling and tying may exert more powerful effects on consumer behavior than traditional models acknowledge.¹⁴⁰ Behavioral analysts suggest, for example, that consumer inertia, the endowment effect, and the impact of defaults on consumer choice all indicate that consumers may find it difficult to switch even where the objective costs of switching from one product to another are small.¹⁴¹ Dominant firms thus can use bundling, tying, and similar devices more effectively to foreclose competition than would be the case if consumers were strictly rational.¹⁴² In the same vein, both theoretical arguments and experimental tests suggest that rebate schemes and other loyalty programs have stronger effects on the behavior of real consumers than traditional antitrust models expect them to have.¹⁴³

Notably, the potential susceptibility of consumers to behavioral manipulation by firms will not always advantage monopolists or dominant firms. The stickiness of consumer behavior often redounds to these incumbents' benefit because new entrants and smaller competitors may find it more difficult to attract consumers based only on lower price or higher quality than standard models predict. Yet multiproduct firms with a smaller

rapport_pros_and_cons_consumer_protection.pdf (noting that firms may exploit the misperceptions of rational consumers despite the presence of competition); Bennett et al., *supra* note 7, at 121 (“[B]ehavioral economics suggests that even small switching costs [due to tying and bundling practices] can have significant effects on consumer behavior in the presence of consumer inertia, endowment effects, and default bias.”).

140. See, e.g., Bennett et al., *supra* note 7, at 121–22; Stucke, *Monopolization*, *supra* note 7, at 564–67; Petit & Neyrinck, *supra* note 7, at 7–11.

141. See, e.g., Bennett et al., *supra* note 7, at 121; Stefano DellaVigna, *Psychology and Economics: Evidence from the Field*, 47 J. ECON. LITERATURE 315, 322–23 (2009) (explaining that transaction costs can be insufficient to account for default effects); Stucke, *Monopolization*, *supra* note 7, at 564–67 (discussing the role of default bias in recent cases); Petit & Neyrinck, *supra* note 7, at 9–10 (noting that EU competition law “accommodates such scenarios of ‘psychological’ bundling” and discussing Microsoft’s pre-installation of Windows Media Player as an example of anticompetitive bundling without “coerc[ion] in the economic or technical sense” (emphasis omitted)).

142. Bennett et al., *supra* note 7, at 121; DellaVigna, *supra* note 141; Stucke, *Monopolization*, *supra* note 7, at 564–67; Petit & Neyrinck, *supra* note 7, at 9–10; see also Nicholas Economides & Ioannis Lianos, *The Elusive Antitrust Standard on Bundling in Europe and in the United States in the Aftermath of the Microsoft Cases*, 76 ANTITRUST L.J. 483, 544 (2009) (discussing efforts by firms to coerce intermediaries into rejecting competing bundles, thereby excluding rivals and limiting consumer choice).

143. See Martin Beckenkamp & Frank P. Maier-Rigaud, *An Experimental Investigation of Article 82 Rebate Schemes*, 2 COMPETITION L. REV. (SPECIAL ISSUE) 1 (2006) (presenting experimental evidence that rebate and discount schemes “exert a significant attraction” that enhances their potentially exclusionary effect beyond standard theoretical predictions); Alexander Morell et al., *Sticky Rebates: Target Rebates Induce Non-Rational Loyalty in Consumers* 22 (Feb. 2013) (unpublished manuscript), available at http://www.coll.mpg.de/pdf_dat/2009_23online.pdf (finding that “loyalty rebates induce a stickiness effect” in that they impede rational switching by consumers); see also Economides & Lianos, *supra* note 142 (discussing how firms can use practices such as rebates to influence consumer choices).

share in one market but sufficiently deep pockets otherwise may profitably expend resources on shaping consumer behavior and, consequently, exert greater competitive pressure on incumbents than extant models assume.¹⁴⁴

In the case of vertical price restraints, both the historical evidence and the behavioral literature reveal that some manufacturers excessively impose RPM, when it is legal, on their retailers.¹⁴⁵ Manufacturers are prone to error with respect to vertical price restraints due to a confluence of behavioral phenomena. Judgmental biases—including anchoring, availability, and representativeness—lead them to overestimate the expected harms of retailer price cutting.¹⁴⁶ Loss aversion and fairness-driven behavior further make manufacturers averse to price cutting,¹⁴⁷ and they also find the direct price control offered by RPM an excessively attractive response to price cutting.¹⁴⁸ Moreover, RPM makes it particularly difficult for manufacturers to learn from experience whether it is in fact an efficient practice for their distribution system.¹⁴⁹ Notably, however, additional analysis reveals that even while boundedly rational RPM is costly for manufacturers and their retailers, the practice raises antitrust concerns only in those limited circumstances where it also harms the competitive process, such as when it is employed by firms with market power or is pervasive in an industry.¹⁵⁰

Apart from this important lesson with respect to manufacturer behavior and RPM, the behavioral evidence is also informative regarding the impact of this practice on consumers. We have seen that economic scholars and the Court rejected manufacturers' loss-leader concerns because even deep discounts should not change rational perceptions of the quality of standard consumer goods.¹⁵¹ However, behavioral marketing research long has identified a persistent positive relationship between price and perceptions of quality, in both the laboratory and the field, for a broad range of products.¹⁵² Thus even while showing that manufacturers tend to use RPM excessively,

144. *But see* Bennett et al., *supra* note 7, at 119 (noting only the potential hindrance bounded rationality of consumers poses to dynamic competition but neglecting its potentially procompetitive effects).

145. Tor & Rinner, *supra* note 7, at 839–47.

146. *Id.* at 822–29. *But see infra* note 152 and accompanying text (discussing evidence for the effect of loss-leader practices on perceptions of the quality of manufacturers' products).

147. *Id.* at 829–33.

148. *See id.* at 833–39.

149. *Id.* at 842–47.

150. *See id.* at 839–54 (explaining that RPM is costly and unprofitable in many circumstances).

151. *Id.* at 813; *cf.* Marvel, *supra* note 76.

152. *See generally* Donald R. Lichtenstein et al., *Price Perceptions and Consumer Shopping Behavior: A Field Study*, 30 J. MARKETING RES. 234, 236 (1993) (describing “a positive association between price and perceived quality”); Valarie A. Zeithaml, *Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence*, J. MARKETING, July 1988, at 2, 11 (“Price reliance is a general tendency in some consumers to depend on price as a cue to quality.”).

the empirical behavioral evidence at least partly confirms one reason for the longstanding resistance of these market participants to loss-leader practices, economists' disbelief notwithstanding.

The implications of loss-leader effects on consumers for antitrust doctrine, however, are not necessarily in line with the manufacturers' familiar argument. For example, although discounts that diminish perceptions of quality harm the manufacturers and reduce consumer welfare, they may generate efficiency gains if the retail prices favored by manufacturers send exaggerated quality signals that would not survive retail competition absent RPM.

With respect to merger policy, commentators draw on empirical evidence from the corporate finance literature as well as on some behavioral findings to note that many mergers prove inefficient rather than profit maximizing as the agencies commonly assume.¹⁵³ Empirical studies found, for one, that mergers often diminish the market value of the acquiring firm,¹⁵⁴ and behavioral research long has suggested that some excess merger activity is driven by the optimistic overconfidence of managers.¹⁵⁵ Related, a number of scholars contend that merger-specific efficiencies—which parties routinely proffer in accordance with the horizontal merger guidelines in support of transactions that raise competitive concerns¹⁵⁶—not only are difficult to substantiate but often fail to materialize.¹⁵⁷

Yet, even among those who note the prevalence of inefficient mergers, opinions diverge as to whether this systematic deviation from standard models matters for antitrust. Some argue that an accounting for the overall efficiency of proposed mergers is outside antitrust law's prohibition of only

153. See Horton, *supra* note 7, at 493 & n.118, 497; Reeves & Stucke, *supra* note 2, at 1561–62; Stucke, *At the Gate*, *supra* note 2, at 573–75; Stucke, *Reconsidering*, *supra* note 7, at 155–56; Spencer Weber Waller, *Corporate Governance and Competition Policy*, 18 GEO. MASON L. REV. 833, 873–81 (2011); see also Roberto A. Weber & Colin F. Camerer, *Cultural Conflict and Merger Failure: An Experimental Approach*, 49 MGMT. SCI. 400 (2003) (describing one particularly overlooked potential cause of merger inefficiencies or failures: culture conflict).

154. See Sara B. Moeller et al., *Wealth Destruction on a Massive Scale? A Study of Acquiring-Firm Returns in the Recent Merger Wave*, 60 J. FIN. 757 (2005); Dennis C. Mueller, *The Finance Literature on Mergers: A Critical Survey*, in COMPETITION, MONOPOLY AND CORPORATE GOVERNANCE: ESSAYS IN HONOUR OF KEITH COWLING 161, 178 (Michael Waterson ed., 2003); David J. Ravenscraft & F.M. Scherer, *Life After Takeover*, 36 J. INDUS. ECON. 147 (1987); F.M. Scherer, *Some Principles for Post-Chicago Antitrust Analysis*, 52 CASE W. RES. L. REV. 5, 17–18 (2001).

155. Richard Roll, *The Hubris Hypothesis of Corporate Takeovers*, 59 J. BUS. 197, 197–201 (1986). The agency problems generated by rational, self-interested managerial behavior can similarly lead to excess, inefficient merger activity.

156. See 2010 MERGER GUIDELINES, *supra* note 30, § 10 (observing that merger-generated efficiencies can help to enhance competition and endorsing such mergers).

157. See Horton, *supra* note 7, at 493–94; Oldale, *supra* note 7, at 143; Reeves & Stucke, *supra* note 2, at 1561–62; Stucke, *At the Gate*, *supra* note 2, at 573–75; Waller, *supra* note 153, at 875–76; Weber & Camerer, *supra* note 153, at 400–01.

those mergers that are likely “substantially to lessen competition.”¹⁵⁸ They also aver that the agencies already are skeptical regarding claims of merger-specific efficiencies.¹⁵⁹ Others counter that the evidence of prevalent inefficient mergers justifies a closer scrutiny by the agencies of transactions with potentially anticompetitive effects.¹⁶⁰ After all, merger policy seeks to balance the uncertain prospects of over- and underenforcement—that is, the risk of blocking efficient mergers versus the risk of allowing the consummation of anticompetitive ones.¹⁶¹ Hence, these commentators assert, the risks of overenforcement diminish, and a greater emphasis on preventing anticompetitive mergers is warranted, if inefficient mergers indeed are prevalent.¹⁶²

The competition among new entrants into markets and the impact of entry on incumbents’ market power offer a final illustration in an area with significant implications across antitrust law. Prospective entry plays an important role in merger assessments because it can counteract the anticompetitive effects of increased market power that might otherwise follow a merger.¹⁶³ More generally, effective entry can prevent even firms with large market shares from exerting market power,¹⁶⁴ an essential

158. See Clayton Act § 7, 15 U.S.C. § 18 (2012).

159. See Oldale, *supra* note 7, at 143 (“[B]ehavioral economics reinforces what competition authorities always suspected about claims that a merger will generate efficiencies: that these should be treated with a degree of healthy scepticism.”); see also Reeves, *supra* note 7, at 8 (observing that agencies may scrutinize mergers in relatively minute detail to ensure that the result will be efficient); Werden et al., *supra* note 7, at 130 (“[T]he U.S. enforcement agencies have articulated a skeptical view of the power of entry to prevent anticompetitive effects from mergers.”); Farrell & Shapiro Interview, *supra* note 10 (discussing agency skepticism toward party-supplied merger simulations). Parties who seek the approval of their proposed merger have a clear, rational interest in overstating the merger’s efficiency benefits, for which reason the agencies are skeptical of such efficiency claims. Cf. Daniel A. Crane, *Rethinking Merger Efficiencies*, 110 MICH. L. REV. 347 (2011) (criticizing the hostile approach of antitrust agencies to efficiency claims).

160. See, e.g., Reeves & Stucke, *supra* note 2, at 1563; Stucke, *At the Gate*, *supra* note 2, at 575; Waller, *supra* note 153, at 881; see also Horton, *supra* note 7, at 501–02.

161. William E. Kovacic, *Assessing the Quality of Competition Policy: The Case of Horizontal Merger Enforcement*, 5 COMPETITION POL’Y INT’L 129, 130 (2009).

162. Reeves & Stucke, *supra* note 2, at 1560–63; Stucke, *At the Gate*, *supra* note 2, at 573–75, 583; Stucke, *Reconsidering*, *supra* note 7, at 155–56; Waller, *supra* note 153, at 881.

163. See 2010 MERGER GUIDELINES, *supra* note 30, § 9 (“The prospect of entry into the relevant market will alleviate concerns about adverse competitive effects only if such entry will deter or counteract any competitive effects of concern so the merger will not substantially harm customers.”).

164. See *Ball Mem’l Hosp., Inc. v. Mut. Hosp. Ins., Inc.*, 784 F.2d 1325, 1335 (7th Cir. 1986) (rejecting the argument that market share indicates market power even in the absence of entry barriers and stating that “the lower the barriers to entry, and the shorter the lags of new entry, the less power existing firms have”); *Will v. Comprehensive Accounting Corp.*, 776 F.2d 665, 672 n.3 (7th Cir. 1985) (“Unless barriers to entry prevent rivals from entering the market at the same cost of production, even a very large market share does not establish market power.”); William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 950

element of monopolization and attempted monopolization, tying, exclusive dealing, and other illegal practices.¹⁶⁵

Traditional models assume that entry will only take place when it maximizes entrants' profits, thus requiring a positive risk-adjusted net present value.¹⁶⁶ The empirical evidence on entry paints a very different picture, however, showing abundant entry that appears unjustified based on entrants' objective prospects for survival and profitability.¹⁶⁷ Studies further reveal two additional puzzling entry phenomena. First, entry appears rather insensitive to some (though not all) of the main economic predictors of expected future profitability, including the expected intensity of competition, certain entry barriers, and more.¹⁶⁸ Second, start-up entrants not only fail more frequently than their diversifying counterparts—a pattern that alone might have reflected merely the greater riskiness of their ventures—but do so to such an extent that they obtain lower expected payoffs and thus exhibit inferior average performance altogether.¹⁶⁹

A behavioral analysis of entrants' judgments reveals, however, that these three puzzling phenomena largely correspond to the patterns of the psychology of optimistic overconfidence.¹⁷⁰ New entrants typically make their personally significant judgments of entry's prospects under conditions of extreme uncertainty.¹⁷¹ In such circumstances, overoptimism and a number of related phenomena lead real entrants, as a group, to overestimate their prospects upon entry.¹⁷² These processes, moreover, both reduce entrants' sensitivity to market predictors of success¹⁷³ and exert a

(1981) (explaining the relationship between entry, market share, and market power and proposing that a significant amount of market share does not necessarily indicate market power).

165. See PHILLIP E. AREEDA ET AL., 2B ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 420b & n.11 (3d ed. 2007) ("Entry conditions are therefore relevant to assessing the market power required by most antitrust rules" because "[m]arket power bears on the anticompetitive potential of challenged conduct").

166. Tor, *Entry*, *supra* note 2, at 489 & nn.15–17, 490.

167. See, e.g., JOHN R. BALDWIN, THE DYNAMICS OF INDUSTRIAL COMPETITION: A NORTH AMERICAN PERSPECTIVE 359 (1995) (stating that empirical evidence supports the life-cycle model rather than entry only when profits are maximized); P.A. Geroski, *Some Data-Driven Reflections on the Entry Process*, in ENTRY AND MARKET CONTESTABILITY: AN INTERNATIONAL COMPARISON 282, 295 (P.A. Geroski & J. Schwalbach eds., 1991). See generally Tor, *Entry*, *supra* note 2, at 490–92 (discussing this puzzle).

168. Tor, *Entry*, *supra* note 2, at 492–94.

169. *Id.* at 494–96.

170. See *id.* at 504 ("[A] wealth of psychological data show that in circumstances of this kind . . . people tend to exhibit a significant bias. . . . [T]his bias results from a number of psychological processes that affect entrants' judgments of both the *probability* and *value* of their prospective ventures.").

171. *Id.* at 487, 527 n.192.

172. See *id.* at 505–14 (offering an in-depth analysis of the impact of these phenomena on entrants).

173. *Id.* at 514–20.

differential impact on start-ups versus diversifying entrants that makes the former more biased when judging their entry prospects.¹⁷⁴

The behavioral forces that shape entrants' judgments generate a competitive landscape that differs significantly from that envisioned by traditional antitrust models. Because all entry is not the same, more biased and numerous start-ups fail at far greater proportions than their diversifying competitors but still are overrepresented among those few entrants who ultimately survive and prosper.¹⁷⁵ Furthermore, insofar as new entry is associated with innovation, particularly for start-ups, boundedly rational entry may be socially beneficial overall despite its costs for entrants.¹⁷⁶

Where the impact of entry on incumbents is concerned, the behavioral analysis of entry suggests, for example, that while entry often is not exceptionally difficult, post-entry success and survival are unlikely for most entrants.¹⁷⁷ Start-ups, and small entrants generally, rarely pose a short-term competitive threat to incumbents, but some large diversifying entrants possibly do.¹⁷⁸ In the long run, however, the few successful, often biased, innovative entrants are an important source of competitive pressure on incumbents.¹⁷⁹ These outcomes have important implications for antitrust law and policy. For one, they support the law's hostility to unnecessary restrictions on new entry, given its important procompetitive benefits.¹⁸⁰

At the same time, the behavioral analysis of entry indicates that the law should be wary of relying on low entry barriers alone to guarantee short-run competitive pressure on incumbents.¹⁸¹ In the area of predatory pricing, for instance, we saw that *Brooke Group* requires plaintiffs to show that the alleged predator had a rational prospect of recoupment, and we also saw that such recoupment is considered unlikely when entry barriers are low.¹⁸² Our analysis suggests, however, that courts should not rely on mere evidence of low entry barriers to conclude that recoupment is unlikely. After all, a high rate of *overconfident* entry may be accompanied by very limited market penetration that does little to prevent such recoupment. Instead, courts should focus on the likely and actual past success of entrants

174. See *infra* text accompanying notes 214–17 (discussing the role of moderating variables in shaping the competition among new entrants and its market effects).

175. Tor, *Entry*, *supra* note 2, at 531–33.

176. *Id.* at 537–40.

177. *Id.* at 490–92; see also *id.* at 531–43, 548–49 (discussing a number of additional significant consequences of boundedly rational entry for competition and antitrust law).

178. *Id.* at 494–96.

179. *Id.* at 537–43.

180. *Id.* at 549–50.

181. *Id.* at 550–52.

182. *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224–26 (1993); Tor, *Predatory Pricing*, *supra* note 2, at 55.

in penetrating the market as better indicators of the short-term competitive constraint on incumbents' potential recoupment.¹⁸³

All in all, the preceding examples clearly show that behavioral antitrust already provides a wide range of analyses across the field. These analyses vary with respect to the type of evidence they draw on, how they apply behavioral findings to antitrust-relevant market phenomena, and the lessons they offer antitrust doctrine and policy. Regrettably, moreover, some of the contributions to this new literature as well as many of its critiques manifest a common, fundamental methodological error in behavioral antitrust analysis to which we now turn.

D. *The Fundamental Methodological Error*

The apparent tension between antitrust law's extensive reliance on the rationality assumption on the one hand and the behavioral focus on deviations from strict rationality on the other may account for the heated debate now taking place between supporters and detractors of behavioral antitrust.¹⁸⁴ It may also explain, moreover, the delayed penetration of the behavioral approach into antitrust scholarship as compared to most other legal fields.¹⁸⁵

Yet even as antitrust increasingly takes notice of behavioral insights, a more subtle, but no less significant, tension lies beneath the explicit contrast between the behavioral and traditional economic perspectives on antitrust rationality. The extensive use of neoclassical economics has inculcated in the antitrust community a reliance on simplifying assumptions as analytical tools where rationality is concerned and beyond. Hypothetical assumptions play an important role, for example, in the central antitrust concept of market definition, which assists in determinations of market power and the effects of potentially anticompetitive conduct throughout antitrust law.¹⁸⁶

183. Tor, *Entry*, *supra* note 2, at 553–55. The author also notes that while courts often reject predatory pricing allegations summarily where entry barriers appear low, they sometimes examine factors that are associated with entrants survival and penetration rather than mere entry. *Id.* For instance, *Brooke Group* itself relied on evidence of rapid expansion in the relevant segment that was partly due to successful penetration, 509 U.S. at 233–34, and so did the First Circuit in *R.W. Int'l Corp. v. Welch Food, Inc.*, 13 F.3d 478, 488 (1st Cir. 1994), citing the Court's *Brooke Group* ruling.

184. See *supra* note 7 and accompanying text.

185. See, e.g., Arnaudo, *supra* note 5 (“[W]hen considering the growing fortunes of [behavioral economics], the process towards a [behavioral antitrust] could have been expected to occur much faster . . .” (footnote omitted)); Stucke, *At the Gate*, *supra* note 2, at 514 (“While tossed against the rocks elsewhere, within the quiet waters of antitrust these rational choice theories stand largely unchallenged.”).

186. See 2010 MERGER GUIDELINES, *supra* note 30, § 4 (offering guidelines for defining the relevant market and detailing the assumptions used); see also Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 ANTITRUST L.J. 129 (2007) (discussing the significance of the market-definition process in determining anticompetitive effect and how that process should best be conducted); Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437 (2010)

The market definition process helps practitioners and antitrust economists predict and explain to clients how an enforcement agency will determine whether a proposed merger is likely substantially to lessen competition under Section 7 of the Clayton Act.¹⁸⁷ More generally, hypothetical assumptions provide antitrust with the benefits of increased tractability, predictability, and conceptual clarity.¹⁸⁸

Commentators long familiar with the powerful simplifying assumptions of traditional antitrust law and economics quite naturally approach behavioral antitrust in the same way.¹⁸⁹ Whether asserting its virtues or criticizing its shortcomings, these commentators routinely speak of a behavioral approach that “attacks the rational profit-maximizer assumption head on by *assuming* that humans have cognitive limitations that prevent them from processing information perfectly and maximizing their utility,”¹⁹⁰ “replac[es] the assumption of rationality with one of ‘bounded rationality,’”¹⁹¹ or relies on an “irrationality hypothesis.”¹⁹²

Importantly, such statements reflect not merely casual, inaccurate usage, but rather a fundamental methodological error that permeates the recent behavioral antitrust discourse. When treating concrete, empirical behavioral findings as if they were broad, hypothetical propositions in the mold of the familiar rationality assumption, antitrust commentators

(noting the prominent role of the market-definition process in competition law cases and arguing that it should be abandoned).

187. See Baker, *supra* note 186, at 130–31; Gregory J. Werden, Why (Ever) Define Markets? An Answer to Professor Kaplow 1, 9–14 (Feb. 13, 2012) [hereinafter Werden, An Answer to Professor Kaplow] (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2004655. And while there may be disagreements—sometimes significant ones—among scholars or litigating parties on how to define a given product market, the concept itself is commonly understood and so are the more technical tests associated with it (such as those of the hypothetical monopolist and critical loss).

188. See, e.g., Salinger, *supra* note 7, at 67 (“The rationality assumption plays so prominently in the literature because it is tractable . . . and yields some quite accurate predictions.”); see also HOVENKAMP, ANTITRUST ENTERPRISE, *supra* note 3, at 7, 31–34 (discussing the Chicago School’s “twin propositions that markets are relatively simple and tend naturally toward competitive outcomes”); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 931 (1979) (describing the benefits of the Chicago School economics’ “powerful simplifications”); cf. Werden et al., *supra* note 7, at 126 (concluding that “competition policy should continue to rely on neoclassical economic analysis based on the assumption of profit maximization”).

189. A similar pattern can be found in other fields, particularly those where traditional economic analysis plays a central role. See, e.g., H. Kent Baker & John R. Nofsinger, *Behavioral Finance: An Overview*, in BEHAVIORAL FINANCE: INVESTORS, CORPORATIONS, AND MARKETS 3, 3 (H. Kent Baker & John R. Nofsinger eds., 2010) [hereinafter BEHAVIORAL FINANCE] (“An underlying *assumption* of behavioral finance is that the information structure and the characteristics of market participants systematically influence individuals’ investment decisions as well as market outcomes.” (emphasis added)).

190. Reeves, *supra* note 7, at 2 (emphasis added).

191. Cooper & Kovacic, *supra* note 7, at 780.

192. Wright & Stone, *supra* note 7, at 1523.

misconceive the nature of the empirically based behavioral approach. This confusion of hypothesis for evidence is not always benign, at times leading otherwise sophisticated scholars to make three distinct classes of mistakes, each with its attendant erroneous applications and policy conclusions in behavioral antitrust.

II. The First Mistake: Assuming Constant and Uniform Bounded Rationality

Commentators make the first mistake when they erroneously equate behavioral antitrust with an *assumption of a constant and uniform set of deviations from strict rationality*. The tendency to assume constant bounded rationality leads antitrust scholars to pay little attention to the specific contours and boundaries of behavioral phenomena, while the assumed uniformity results in a failure to account for the heterogeneity of actors' behavior—both among similarly situated actors and for the same actor in different circumstances or with respect to different behavioral phenomena. This Part explains the significance of the limited constancy and uniformity of behavioral patterns and illustrates the problematic consequences of their neglect for behavioral analyses of antitrust.¹⁹³

A. *Variability, Not Constancy*

In sharp contrast to the constancy of hypothetical strict rationality, the bounded rationality of real antitrust actors has specific empirical contours and boundaries. Different behavioral phenomena are manifested more strongly in some circumstances and more weakly in other situations, at times disappearing altogether.¹⁹⁴ Moreover, all behavioral phenomena are not created equal: some are more robust and pervasive while others exert significant impact on behavior only under limited conditions.¹⁹⁵ To determine whether and how these phenomena are likely to impact the behavior of antitrust actors one must therefore carefully attend to their boundaries and limits.

Most obviously, the proper application of behavioral phenomena requires their accurate understanding. Yet one finds within the extensive behaviorally oriented legal literature—mostly in other areas but now in antitrust as well—analyses that confuse different findings with one another,

193. This Part builds significantly on the more comprehensive review of the behavioral evidence showing variability and heterogeneity and its implications across the laws in Avishalom Tor, *Law for a Behaviorally-Complex World* (unpublished manuscript) (on file with author).

194. See Tor, *Behavioral Methodology*, *supra* note 1, at 292–96 (explaining the significance of boundary conditions for behavioral analyses of law).

195. See *id.* at 293 (recognizing that “processes of judgment and choice depend on the environment within which people operate”); see also Rachlinski, *supra* note 16 (comparing the broader set of circumstances under which overoptimism is manifested with the narrower boundaries of ambiguity aversion).

mix multiple phenomena together, or simply mischaracterize the empirical evidence.¹⁹⁶ Unsurprisingly, such mistakes occasionally lead legal researchers to erroneous conclusions.¹⁹⁷ Importantly, moreover, these confusions often follow a failure to engage the empirical behavioral evidence directly. Analysts instead rely on second- or third-hand accounts, primarily within the legal literature, of behavioral findings.¹⁹⁸

Beyond such basic confusions, however, scholars who accurately understand behavioral findings may still fail to appreciate the significance of the contours of the empirical evidence for legal analysis. For example, one recent study of the historical effects of the decision in *United States v. Paramount Pictures, Inc.*¹⁹⁹ on the business model of the film industry argues in passing that, from a behavioral perspective, ambiguity aversion could explain the industry's reliance on relational—instead of formal—vertical contracting in situations characterized by extreme uncertainty.²⁰⁰ The study's author seems to suggest that in such situations ambiguity-averse decision makers avoid formal contracting, preferring instead more open-ended relational contracts.²⁰¹ While intuitively plausible, this argument neglects to account for the contours of ambiguity aversion, which studies show is largely comparative rather than absolute: decision makers prefer a well-defined risk to an ambiguous one but routinely take ambiguous risks when the former option is unavailable.²⁰² In the film industry, however, ambiguity is so pervasive that an aversion to it is

196. See, e.g., Wright & Stone, *supra* note 7, at 1530 (describing heuristics as “loose categories” and stating that Kahneman and Tversky's prospect theory—which is a theory of choice, not judgment—“grouped irrational behaviors together” within three categories of heuristics—which are judgment rather than choice phenomena—referring to framing effects as “biases,” and more).

197. See, e.g., *id.* at 1552 (concluding that the flaw of behaviorally informed antitrust is the uncertainty it introduces with regard to the predictive power of enforcement).

198. See, e.g., Roger Van den Bergh, *Behavioral Antitrust: Not Ready for the Main Stage*, 9 J. COMPETITION L. & ECON. 203, 215–16 (2013) (citing Reeves & Stucke, *supra* note 2, to support assertions about behavioral biases). While this tendency may have resulted in part from legal scholars' unfamiliarity with behavioral research methods, it also reflects the common confusion between broad hypothetical assumptions (and other logical arguments) and concrete empirical evidence.

199. 334 U.S. 131 (1948).

200. Ryan M. Riegg, *Opportunism, Uncertainty, and Relational Contracting—Antitrust in the Film Industry*, 6 U. DENV. SPORTS & ENT. L.J. 107, 124–25 (2009).

201. See *id.*

202. See Craig R. Fox & Amos Tversky, *Ambiguity Aversion and Comparative Ignorance*, 110 Q.J. ECON. 585 (1995) (proposing the comparative ignorance hypothesis and finding that ambiguity aversion disappears when a person evaluates either a clear or vague prospect in isolation); Craig R. Fox & Martin Weber, *Ambiguity Aversion, Comparative Ignorance, and Decision Context*, 88 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 476 (2002) (expanding on the comparative ignorance hypothesis through four experiments). But see Clare Chua Chow & Rakesh K. Sarin, *Comparative Ignorance and the Ellsberg Paradox*, 22 J. RISK & UNCERTAINTY 129, 129, 138 (2001) (showing that ambiguity aversion sometimes remains in noncomparative settings, although it is significantly stronger in the comparative setting).

unlikely to play a significant role in the selection of vertical contracting practices, unlike concerns about risk, opportunistic behavior, and more that may well favor relational contracting in this setting.²⁰³

Another, more significant, illustration of the need to account for both the contours and boundaries of behavioral phenomena is some analysts' argument that market participants routinely avoid making rational entry attempts due to boundedly rational risk aversion.²⁰⁴ Initially, the argument appears straightforward: once a profitable entry opportunity has been identified, potential entrants must decide whether to invest resources in the uncertain prospect of entry. Behavioral research shows that decision makers tend to be risk averse beyond the dictates of rationality when faced with prospects that are potentially beneficial vis-à-vis the status quo ("gains," in prospect theory parlance).²⁰⁵ Therefore, so the argument goes, real entrants routinely avoid positive-net-present-value entry opportunities that would have attracted their hypothetical, strictly rational—and thus less risk averse—counterparts.²⁰⁶

Yet not only is the assertion of common risk aversion among potential entrants at odds with extensive empirical findings from industrial-organization research,²⁰⁷ but a closer examination also reveals that it is not supported by the behavioral evidence either, for a number of reasons.²⁰⁸ First, new entry entails not only the uncertain prospect of a gain compared to the status quo but also a significant possibility of a loss if entry fails. In other words, entrants face a mixed gain/loss gamble rather than one involving gains alone. Yet decision makers' reluctance to take such mixed gain/loss gambles primarily is a manifestation of loss aversion, not risk

203. Moreover, research shows that comparative ignorance is an important driver of this phenomenon. Individuals are less concerned about shared ambiguity but are averse to it when their counterparties have superior knowledge about the relevant decision. See Fox & Weber, *supra* note 202, at 476–77; see also Fox & Tversky, *supra* note 202, at 599 (finding that an “uncertain prospect becomes less attractive when people are made aware that the same prospect will also be evaluated by more knowledgeable individuals”). Yet as the study’s author notes, citing a famous screenwriter, “nobody knows anything” about what makes a movie a hit or not. Riegg, *supra* note 200, at 129. Hence ignorance is largely shared, and ambiguity aversion is not a likely force with respect to the most significant factor in this contracting environment.

204. See, e.g., Stucke, *At the Gate*, *supra* note 2, at 563–72; Stucke, *New Antitrust Realism*, *supra* note 7, at 6–11; Petit & Neyrinck, *supra* note 7, at 4–5. Potential entrants may be rationally risk averse in some situations, although traditional economic analysis assumes firms to be risk-neutral decision makers. See *supra* notes 104–07 and accompanying text.

205. Kahneman & Tversky, *Prospect Theory*, *supra* note 90, at 268–69.

206. See, e.g., Stucke, *At the Gate*, *supra* note 2, at 569–72; Stucke, *New Antitrust Realism*, *supra* note 7, at 6–11; Petit & Neyrinck, *supra* note 7 at 4–5.

207. Tor, *Entry*, *supra* note 2, at 488–501.

208. Entrants may sometimes shun potentially profitable entry opportunities for a variety of traditional economic and behavioral reasons. Stucke, *New Antitrust Realism*, *supra* note 7, at 8–10. The present discussion only illustrates the limited explanatory power of framing and reference points in this case.

aversion.²⁰⁹ Because losses are felt more strongly than comparable gains, individuals require an expected payoff that is significantly higher than what is needed merely to generate positive expected value to make up for their potential painful loss.²¹⁰ A reluctance to embark upon new entry that is born in loss aversion, however, not only differs from standard risk aversion in its psychological roots but also has different behavioral contours.²¹¹

Most notably, potential entrants are likely to exhibit risk seeking instead of risk aversion because they usually do not consider the prospects of entry in the abstract but rather contemplate a specific venture. Hence they tend to compare the various possible outcomes of entry to the successful outcome they hope to achieve, perceiving those outcomes that fall short of their aspiration as undesirable ones, which generates loss aversion.²¹² Such loss-averse entrants, however, will embark on far riskier ventures than their risk-averse counterparts would be willing to undertake.²¹³

The role of framing and reference points in shaping entrants' risk preferences thus illustrates why antitrust analysts should consider the specific contours and boundaries of the behavioral phenomena they apply. Upon closer scrutiny, the same effects of framing that initially seem to

209. The seminal article that introduced prospect theory uses a simple mixed gamble example to illustrate loss aversion. See Kahneman & Tversky, *Prospect Theory*, *supra* note 90, at 263–64, 279; see also Sabrina M. Tom et al., *The Neural Basis of Loss Aversion in Decision-Making Under Risk*, 315 SCI. 515, 515–18 (2007) (describing neural imaging evidence for loss aversion in mixed gambles); Amos Tversky & Daniel Kahneman, *Advances in Prospect Theory: Cumulative Representation of Uncertainty*, 5 J. RISK & UNCERTAINTY 297 (1992) (offering evidence of loss aversion in mixed gambles).

210. See Kahneman & Tversky, *Prospect Theory*, *supra* note 90, at 285.

211. For one, loss-averse entrants will be more reluctant to enter than entrants who are merely risk averse. Cf. Matthew Rabin, Comment, *Risk Aversion and Expected-Utility Theory: A Calibration Theorem*, 68 ECONOMETRICA 1281, 1288 (2000) (showing that standard risk-aversion cannot explain commonly observed, more extreme instances of risk-averse behavior, which is driven by loss-aversion). The former entrants also will respond more to changes in the *magnitude* of the potential loss they would face if their entry attempt were to fail compared to changes in its *probability* instead of simply adjusting the net present value of entry to their degree of risk aversion as merely risk-averse entrants would do. See, e.g., George Wu & Alex B. Markle, *An Empirical Test of Gain-Loss Separability in Prospect Theory*, 54 MGMT. SCI. 1322, 1332 (2008) (showing that when choosing between mixed gambles, individuals are less sensitive to differences in the probabilities of potential outcomes).

212. See Johannes Abeler et al., *Reference Points and Effort Provision*, 101 AM. ECON. REV. 470, 487 (2011) (showing, experimentally, how expectations impact real effort provision and contrasting risk-averse behaviors with loss-averse behavior); Chip Heath et al., *Goals as Reference Points*, 38 COGNITIVE PSYCHOL. 79, 93 (1999) (presenting evidence that goals both function as reference points and exhibit the properties of loss aversion and diminishing sensitivity).

213. The present analysis focuses only on the risk attitudes as an illustration, while in fact entrants are likely to be risk seeking due to the contribution of judgmental biases. See Tor, *Entry*, *supra* note 2, at 503–31 (describing the relevant evidence at length).

make potential entrants risk averse in fact may facilitate loss-averse, risk-seeking entry.

Moreover, the case of entry highlights the importance of accounting not only for the basic contours and boundaries of behavioral phenomena but also for the key variables that moderate their effects on market participants.²¹⁴ We saw that a behavioral analysis of entrants' judgments of the prospects of entry helps explain a series of otherwise puzzling empirical findings regarding patterns of new entry into markets.²¹⁵ We further saw that the variables that moderate optimistic overconfidence help explain the inferior average performance of start-up entrants compared to their diversifying counterparts.²¹⁶ Two such variables in particular—the intensity of preferences and the ambiguity of the decision environment—systematically lead start-up entrants to exhibit more biased judgments of their prospects than those manifested by diversifying entrants.²¹⁷

While these findings bear important implications for the competition among entrants, for entry's effects on incumbent firms in the market, and for various antitrust rules, they also reveal the necessity for behavioral antitrust scholars to consider the effect of moderating variables on those market behaviors they study.²¹⁸ Without attending to the effects of preference intensity and ambiguity on the competition among entrants, behaviorally informed analysts might erroneously expect excess entry to be more effective than it is in disciplining incumbents²¹⁹ or mistakenly believe that the cohort of *ex post* successful entrants resembles the pool of those attempting entry *ex ante*.

B. Heterogeneity, Not Uniformity

Much like they neglect the variability of empirical behavioral phenomena, antitrust commentators frequently fail to appreciate the

214. A moderator variable affects the direction and/or strength of the relationship between two other variables. Reuben M. Baron & David A. Kenny, *The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations*, 51 J. PERSONALITY & SOC. PSYCHOL. 1173, 1174 (1986).

215. See Tor, *Entry*, *supra* note 2, at 503–31.

216. See *id.* at 487, 520–31.

217. See *id.*; see also Arnold C. Cooper et al., *Entrepreneurs' Perceived Chances for Success*, 3 J. BUS. VENTURING 97, 103 (1988) (finding that "entrepreneurs' perceptions of their own odds for success display a noteworthy degree of optimism"); Ken G. Smith et al., *Decision Making Behavior in Smaller Entrepreneurial and Larger Professionally Managed Firms*, 3 J. BUS. VENTURING 223, 223 (1988) (finding that entrepreneurs are less likely to follow a formal rational, decision process than established firms).

218. See Tor, *Entry*, *supra* note 2, at 520–31.

219. See Wright & Stone, *supra* note 7, at 1541 ("[T]he existence of irrationally optimistic potential entrants policing for the existence of supracompetitive profits, and even entering in their absence from time to time, reduces the incentive to engage in all sorts of anticompetitive behavior.").

heterogeneity of human behavior.²²⁰ Instead, they assume population-level uniformity, both among different actors who are similarly situated and for the same actor across different circumstances and different behavioral phenomena.²²¹

Yet in reality human judgment and decision behavior is highly heterogeneous. Different antitrust actors will manifest different deviations from strict rationality depending on factors such as cognitive ability,²²² thinking style,²²³ risk-taking propensity,²²⁴ personality traits,²²⁵ and more.²²⁶ Notwithstanding this evidence for systematic individual differences in specific behavioral phenomena, however, the correlation *within* individuals among different deviations from rationality generally is small and so is the proportion of the overall variance in behavior that systematic individual differences account for.²²⁷ Moreover, people exhibit particular behavioral

220. *But see* CHRISTOPH ENGEL, GENERATING PREDICTABILITY: INSTITUTIONAL ANALYSIS AND DESIGN 1–10 (2005) (describing the heterogeneity of human judgment and decision behavior as a challenge for the predictability needed for human interaction generally and policy and institutional design more specifically).

221. *See, e.g.*, Stucke, *Reconsidering*, *supra* note 7, at 121–22; Wright & Stone, *supra* note 7, at 1537.

222. *See, e.g.*, Edward T. Cokely & Colleen M. Kelley, *Cognitive Abilities and Superior Decision Making Under Risk: A Protocol Analysis and Process Model Evaluation*, 4 JUDGMENT & DECISION MAKING 20 (2009) (finding that individual differences in cognitive abilities and related skills can systematically predict normatively superior and logically consistent judgments and decision making); Keith E. Stanovich & Richard F. West, *Individual Differences in Framing and Conjunction Effects*, 4 THINKING & REASONING 289 (1998) (discussing the implications of the finding that subjects with higher cognitive abilities were disproportionately likely to avoid potential framing and conjunctive fallacies).

223. *See, e.g.*, Richard F. West et al., *Heuristics and Biases as Measures of Critical Thinking: Associations with Cognitive Ability and Thinking Dispositions*, 100 J. EDUC. PSYCHOL. 930, 930 (2008) (discovering that “[m]easures of thinking dispositions” including “actively open-minded thinking and need for cognition” actually predicted “variance in . . . classes of critical thinking skills after general cognitive ability had been controlled”).

224. *See, e.g.*, Kevin T. Mahoney et al., *Individual Differences in a Within-Subjects Risky-Choice Framing Study*, 51 PERSONALITY & INDIVIDUAL DIFFERENCES 248 (2011) (utilizing risk style and thinking style to predict individual differences in response to framing problems).

225. *See, e.g.*, Marco Lauriola & Irwin P. Levin, *Personality Traits and Risky Decision-Making in a Controlled Experimental Task: An Exploratory Study*, 31 PERSONALITY & INDIVIDUAL DIFFERENCES 215 (2001) (exploring the “big five” personality traits and their respective correlations to risky decision making); Irwin P. Levin et al., *A New Look at Framing Effects: Distributions of Effect Sizes, Individual Differences, and Independence of Types of Effects*, 88 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 411, 425 (2002) (finding personality traits “predictive of the magnitude of framing effects” and concluding that the experimental design provided evidence that individual differences in framing effects are linked to stable personality characteristics, such as conscientiousness and agreeableness).

226. *See* Ann-Renée Blais et al., *Individual Differences in Decision Processing and Confidence Judgments in Comparative Judgment Tasks: The Role of Cognitive Styles*, 38 PERSONALITY & INDIVIDUAL DIFFERENCES 1701 (2005) (finding that stable individual differences in decision time, accuracy, and response confidence emerged across all comparative judgment tasks, although the basis for these differences remained elusive).

227. *See* Kirstin C. Appelt et al., *The Decision Making Individual Differences Inventory and Guidelines for the Study of Individual Differences in Judgment and Decision-Making Research*, 6

phenomena to different degrees at different times in different contexts.²²⁸ Hence some antitrust actors will better approximate the assumptions of rationality-based models, or deviate from them, on some occasions, while other actors will do so in other situations or with respect to different phenomena.²²⁹ Indeed, those robust, systematic, and predictable deviations from rationality that are documented at the *population* level do not reflect individual-level uniformity but rather are the aggregation of significant individual-level heterogeneity in judgment and decision behavior.

Antitrust analyses that disregard the heterogeneity of market behavior may misconstrue the reasons for and the consequences of competitive and anticompetitive practices alike. The behavioral analysis of RPM revealed, for example, that some manufacturers excessively impose this vertical restraint in their distribution systems when it is legal, to their own detriment and at a cost to some of their retailers, and may only learn of their costly mistake after extended periods of time.²³⁰ Commentators neglecting the heterogeneity of manufacturer behavior mistakenly suggested that this behavioral finding reveals an additional anticompetitive harm of RPM beyond those identified by traditional rationality-based analyses, a harm that could support a return to the now-discarded rule of per se illegality.²³¹

JUDGMENT & DECISION MAKING 252, 253, 257 (2011) (noting inconsistent results for individual difference measures in judgment and decision making and attributing them in part to the greater impact of situational variables, “which can overwhelm any impact of individual differences”); Wim De Neys & Jean-François Bonnefon, *The ‘Whys’ and ‘Whens’ of Individual Differences in Thinking Biases*, 17 TRENDS COGNITIVE SCI. 172, 172 (2013) (discussing different approaches to research in this area and explaining that the “accounts we survey . . . [do] not entail that different reasoners cannot be biased for different reasons or that the same reasoner is always biased for the same reasons. Obviously, the locus of individual differences *need not be fixed and can be contingent on specific task, context, person, or developmental factors*” (emphasis added)).

228. See, e.g., N.S. Fagley & Paul M. Miller, *Framing Effects and Arenas of Choice: Your Money or Your Life?*, 71 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 355, 355, 370 (1997) (noting that although “[t]here was a significant sex by frame interaction such that only women exhibited framing effects on choice,” the authors found that “[subjects] made more risky choices when outcomes involved human lives than when they involved money, regardless of [frame]”); Rui Mata et al., *Age Differences in Risky Choice: A Meta-Analysis*, 1235 ANNALS N.Y. ACAD. SCI. 18 (2011) (using a systematic literature review to discover that age-related differences varied considerably based on the task at hand); cf. Gregory Mitchell, *Why Law and Economics’ Perfect Rationality Should Not Be Traded for Behavioral Law and Economics’ Equal Incompetence*, 91 GEO. L.J. 67, 98–99 (2002) (reviewing some empirical evidence, with an emphasis on the impact of changes in affect, and suggesting that “the propensity to act rationally varies not only across individuals but also within individuals over time”). See generally Appelt et al., *supra* note 227, at 257 (advocating a “person-by-decision-and/or-situation interaction approach that examines how individual differences interact with other individual differences, with decision features, and with situational factors to influence behavior in a given context”).

229. Moreover, behavior that deviates further from the assumptions of rationality is not always associated with inferior performance in the market. See *infra* section III(A)(1).

230. Tor & Rinner, *supra* note 7, at 839–42.

231. See, e.g., Ginsburg & Moore, *supra* note 7, at 98 (suggesting that the evidence of boundedly rational RPM “is of greater relevance to a legislature considering whether to make

Others offered to designate RPM, in light of the behavioral evidence, a presumptively illegal practice that courts could dispose of with a “quick look.”²³² Yet the significant heterogeneity of manufacturer behavior, where boundedly rational uses of RPM coexist with other rationally procompetitive and rationally anticompetitive instances of the practice, makes *per se* illegality inappropriate here.²³³ Behavioral antitrust in fact supports the *Leegin* Court’s overruling of earlier precedents and embrace of a rule of reason approach, even while it highlights the need for a structured rule of reason for RPM that also accounts for behavioral regularities as opposed to the alternative of an open-ended, unstructured rule of reason.²³⁴

More recently, some analysts have begun considering explicitly the implications of systematic differences between classes of antitrust actors.²³⁵ By routinely falling prey to the fundamental methodological error, however, these commentators still tend to reach erroneous conclusions. For instance, one behavioral antitrust scholar sought to determine how the law should respond to the interaction among firms, consumers, and the government, assuming that each of these different classes of actors is either uniformly “rational” or uniformly “boundedly rational.”²³⁶ Intersecting these two alternative assumptions with respect to the three sets of actors, this scholar reached a series of conclusions regarding the consequences of, say, a “boundedly rational” government responding to “rational” firms’ exploitation of “boundedly rational” consumers²³⁷ or of another, strange, hypothetical world in which consumers are “rational” but firms are “boundedly rational.”²³⁸

Because of this assumed uniformity, many otherwise interesting and potentially valuable observations that are made throughout this scholar’s analysis—whether with respect to consumers, firms, or the government’s role—are simultaneously too broad and too narrow. Take for instance the argument that a “rational” government that seeks to respond to the possible

resale price maintenance illegal *per se*” even while noting that courts making decisions in specific cases must determine whether a particular instance of RPM is anticompetitive).

232. Reeves & Stucke, *supra* note 2, at 1582 n.341.

233. Tor & Rinner, *supra* note 7, at 854–55.

234. *See id.* at 855–63 (arguing that the presence of excessive or inefficient use of RPM should be part of the rule of reason inquiry after *Leegin* since market forces are slow to eliminate such use and finding the factors enumerated in *Leegin* to be relevant to this inquiry); *see also infra* subpart V(B).

235. *See infra* Part III for an examination at length of the distinction that scholars increasingly make between firms and consumers following the intuition that firms are sophisticated organizations that benefit from experience and expertise, with advantages consumers usually lack that allow exploitation.

236. Stucke, *Reconsidering*, *supra* note 7, at 121–22. Strikingly, Stucke explicitly acknowledges variability and heterogeneity even while failing to realize that treating bounded rationality as a broad, universal assumption could lead to mistaken conclusions. *See id.* at 122.

237. *Id.* at 144–53.

238. *Id.* at 154–62.

exploitation of “boundedly rational” consumers by “rational” firms must be concerned with factors such as the identification of consumer preferences, the impact of defaults set by the government, or the negative effects of intervention on consumer autonomy, while balancing these against the need to protect consumers from “corporate autocracy.”²³⁹ Some of these concerns merit serious consideration in antitrust and regulatory policy, but they do not always apply when “rational” firms and government face “boundedly rational” consumers. Nor are the enumerated concerns limited to this specific hypothetical juxtaposition of a differing but uniform rationality of the three classes of antitrust actors. “Boundedly rational” firms with superior resources and information sometimes may also exploit consumers, whether or not the latter are “rational.” A “boundedly rational” government that sets defaults still can shape consumer behavior or encroach on consumer autonomy, and so on. Instead, a clearer and more fruitful approach would recognize the inevitable bounded rationality of all classes of actors. It would then seek to account for the variability and heterogeneity of behavior both among the different classes and within each class—consumers, firms, and government actors—and develop policy prescriptions based on the empirical evidence most relevant to the question at hand.²⁴⁰

Similarly, erroneous conclusions plague some analyses that aim to criticize the behavioral approach based on sweeping assumptions of rationality or “irrationality.” To illustrate, one pair of commentators recently argued that the “behavioralist model myopically focuses on the implications of irrationality on certain *specific* market participants, usually incumbent firms or cartel members, while ignoring or assuming away the broader implications of applying an identical cognitive bias to others.”²⁴¹ The criticism of some behavioral antitrust applications, which the present Article considers at length, is appropriate. But when mistakenly asserting that valid legal analysis must assume that all behavioral phenomena apply identically to all market participants all the time, this commentary offers yet another clear example of the fundamental methodological error.

Ironically, the same two authors level a further charge of naïveté that behavioral scholars allegedly manifest when they “impute a given cognitive bias to *only* a monopolist or to *only* entrants, but not to both, or to other firms at large. There is simply no basis in the behavioral economics literature for this assumption”²⁴² By now it should be clear that this charge itself is naïve, not only failing to recognize the extensive empirical

239. *See id.* at 139–44.

240. A full analysis of these questions would also address the significant role of institutions in shaping the behavior of the different classes of actors, as Part III, below, illustrates at length.

241. Wright & Stone, *supra* note 7, at 1535.

242. *Id.* at 1535–36.

evidence for the heterogeneity of judgment and decision behavior at the individual level but also revealing a misunderstanding of the inherently variable nature of behavioral phenomena even at the population level, when whole classes of actors are concerned.

To use these analysts' own illustration, incumbents and entrants may differ in important respects, both between them and within each group of antitrust actors. We already saw, for instance, that new entrants exhibit greater optimistic overconfidence than their diversifying competitors.²⁴³ Importantly, the systematic difference between the two categories of entrants—an example of the variability of overconfidence—does not result from an assumption that one class of entrants fails to manifest a phenomenon that another exhibits. Instead, the factors that are empirically shown to moderate this judgment bias—including the degree of ambiguity and the intensity of preferences—cause a systematic divergence between the two categories of entrants.²⁴⁴ Similarly, one should expect the class of potential new entrants itself to be heterogeneous, with entrants revealing different degrees of optimistic overconfidence. Since the decision to attempt entry involves self-selection, however, those more biased potential entrants will be overrepresented among the actors who end up attempting entry.²⁴⁵ Both variability and heterogeneity thus suggest that new entrants will be particularly biased, as a group, generating a prediction that clearly differs from either traditional antitrust models that assume perfect entrant rationality or analyses that mistakenly assume universal and uniform bounded rationality.

Finally, the same two authors who seek to criticize behavioral antitrust advance their main critique by proposing a “behavioral irrelevance theorem” that they “believe provides a more realistic account of firm-level irrationality as it relates to antitrust policy.”²⁴⁶ In another illustration of the fundamental methodological error, the proposed theorem is based on a model that imagines incumbents and entrants, respectively, as either “rational” or “irrational” and proceeds to outline the implications of the four resulting combinations of entrant–incumbent interaction.²⁴⁷ Thus even while presenting their approach as more sophisticated, these scholars repeatedly and naïvely assume a single, uniform, all-encompassing “irrationality,” ignoring the evidence of variability and heterogeneity, with

243. Tor, *Entry*, *supra* note 2, at 520–31.

244. *Id.*

245. *Cf. id.* at 563–64 (examining the factors that lead to an overrepresentation of more biased entrants when considering the variability of entry judgments).

246. Wright & Stone, *supra* note 7, at 1527.

247. *Id.* at 1536–48.

respect to both behavioral phenomena generally and competition among entrants and between them and incumbents more specifically.²⁴⁸

III. The Second Mistake: Assuming (Away) Institutional Effects

Real antitrust actors do not operate in an abstract, context-free environment. Both consumers and producers make their judgments and decisions in market settings, where the former seek to satisfy their wants while the latter try to succeed as businesses by the means they believe most effective for accomplishing their goal. Moreover, the producers antitrust law is concerned about typically are large business associations, whose significant actions in the market are determined by often complex interactions among multiple individuals within the organization. The legal decision makers who shape antitrust law and policy—from judges and juries in antitrust courts to enforcement officials in regulatory agencies—similarly operate within, and are affected and constrained by, institutional frameworks.

Yet commentators frequently take one of two extreme approaches, either ignoring the effects of antitrust institutions altogether or assuming that these institutions perfectly align the behavior of antitrust actors with rationality-based models. Behavioral proponents who assume away institutional effects usually tend not to explain why these effects are unimportant or irrelevant to the antitrust questions they examine.²⁴⁹ Nor do behavioral opponents, who routinely assume that antitrust institutions—particularly markets and firms²⁵⁰—guarantee rational behavior, tend to pause to examine the specific conditions that determine whether and how these institutional effects take place.²⁵¹

248. See, e.g., Tor, *Entry*, *supra* note 2, at 565 (“A related important lesson . . . is that the legal analyst should strive to develop an accurate understanding of those variables that determine whether and how biased different actors are likely to be.”). Notably, the analysis offered by the two authors is flawed even based on its erroneous assumptions, arguing, for example, that rational entrants make irrational incumbent behavior irrelevant. See Wright & Stone, *supra* note 7, at 1541. As explained above, “irrational” predation can be successful (and even comprise a rational strategy).

249. See, e.g., Stucke, *Monopolization*, *supra* note 7, at 552–53 (discussing learning by firms and consumers in the same breath, without considering the institutional differences between the two types of market participants).

250. *But see* Cooper & Kovacic, *supra* note 7, at 782 (examining, theoretically, how the behavior of enforcement agencies may be shaped by some behavioral forces).

251. See, e.g., Werden et al., *supra* note 7, at 128 (arguing that evidence of individual decision behavior need not carry to firms and that “[m]oreover, what really matters in competition policy is not so much the behavior of firms as the performance of markets, which need not be significantly impaired by firm decision making subject to behavioral biases”). This common error is puzzling given the incorporation of behavioral insights into mainstream economics in recent decades. Behavioral antitrust opponents today echo earlier arguments made by scholars outside antitrust. See, e.g., Jennifer Arlen, *Comment: The Future of Behavioral Economic Analysis of Law*, 52 VAND. L. REV. 1765, 1770 (1998) (suggesting that the effects of the heuristics and biases offered by behavioral analyses might be weaker than generally assumed and making no distinction

In reality, however, the effects of institutions on antitrust actors are pervasive yet variable. Consumers behave differently in market and nonmarket environments, while producers' incentives and competitive pressures vary depending on the specific market settings, organizational environments, the type of business conduct involved, and more. Judges, juries, and regulators similarly are likely to exhibit varying degrees of rationality depending on the tasks and institutional contexts they face.

The following subparts therefore illustrate the importance of institutional effects in behavioral antitrust analysis by examining how markets and firms shape the behavior of antitrust actors. These illustrations will reveal that the neglect of either the significance of institutional effects or their limits can lead to erroneous antitrust conclusions.

A. Markets

Markets are perhaps the most significant antitrust institution given the primary concern of the field with protecting the competitive process—that is, the competition among producers to supply consumer demand.²⁵² From a behavioral perspective, markets play an additional, complex role, however, sometimes aligning consumer and producer behavior with the normative standards of rationality while at other times failing to do so or even facilitating deviations from these standards.²⁵³

1. Demand-Side Rationality.—For consumers, markets supply not only goods and services but also the information that can help them form more rational beliefs and make more rational decisions.²⁵⁴ When markets offer better and more readily available information, consumers' judgments and decisions may be more accurate and better aligned with their

between antitrust actors in making this suggestion). For one rare and insightful, if brief, discussion of the important-yet-limited role of institutions in promoting rationality in legal settings generally, see Jeffrey J. Rachlinski, *The Psychological Foundations of Behavioral Law and Economics*, 2011 U. ILL. L. REV. 1675, 1689–90.

252. See, e.g., *Pac. Bell Tel. Co. v. Linkline Commc'ns, Inc.*, 555 U.S. 438, 447–49 (2009) (recognizing that antitrust law is limited to protecting competition in the marketplace); *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 885–87 (2007) (discussing both the role of reason and per se restrictions as mechanisms that allow courts to police the competitive landscape); *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 553–54 (2007) (highlighting the role of antitrust law in facilitating competition by policing only certain types of conduct).

253. Tor, *Behavioral Methodology*, *supra* note 1, at 310–13; cf. Bar-Gill, *supra* note 139, at 15 (noting, with respect to the interaction between consumers and producers, that “[t]he behavioral economics model . . . is context dependent” such that while his analysis is “often stated in general terms, implementation must be market specific” and “[t]he severity of the behavioral market failure, and the ability of competition to mitigate the welfare costs of the behavioral market failure, will vary from market to market”).

254. For one classical economic treatment of the role and importance of information for consumer decisions, see George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213 (1961), in which the author discusses the costs of information search and their implications for advertising, the role of specialized intermediaries, and more.

preferences.²⁵⁵ The available evidence on consumer behavior, however, paints a more complex picture. For one, the products and services that consumers must choose among will not always justify a commitment of significant time or cognitive or financial resources to make optimal judgments and decisions, leading consumers rationally to ignore relevant information.²⁵⁶

However, producers who expect to benefit from consumers' educated choices may respond by providing relevant information to consumers via advertising campaigns, marketing, and similar efforts.²⁵⁷ Such responses not only tap the superior information that producers already possess about their products and services but also offer significant economies of scale, given the low cost of offering the same (or similar) information to additional consumers.²⁵⁸ Nevertheless, insofar as numerous competing producers offer such information, extolling the superiority of their wares, consumers still must determine which products and services best match their preferences.

In some cases, the opportunity profitably to provide consumers with unbiased information and advice will attract an additional set of market participants—namely, information intermediaries—to fulfill this

255. On the conditions necessary for such improvements, see *infra* notes 299–303 and accompanying text.

256. Cf. Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211 (1995) (discussing rational ignorance regarding contractual terms as a form of bounded rationality); Richard A. Posner, *The Law and Economics of Contract Interpretation*, 83 TEXAS L. REV. 1581, 1585–86 (2005) (noting that the expected benefit of a “good” form contract to the consumer is slight and therefore is unlikely to figure in the decision whether to buy the seller’s product).

257. See, e.g., Justin P. Johnson & David P. Myatt, *On the Simple Economics of Advertising, Marketing, and Product Design*, 96 AM. ECON. REV. 756, 756 (2006) (recognizing that advertising and marketing activity can shift the demand curve in a positive direction for producers’ firms if consumers respond favorably to a product); Phillip Nelson, *Advertising as Information*, 82 J. POL. ECON. 729, 743–44 (1974) (highlighting the importance of the consumer in producer advertising decisions); Stigler, *supra* note 254, at 220–24 (noting that advertisements serve in part to identify the sellers and prices of goods and also suggesting that the value of information increases as well-informed customers seek additional information more extensively).

258. See, e.g., Stigler, *supra* note 254, at 220 (“A small \$5 advertisement in a metropolitan newspaper reaches (in the sense of being read) perhaps 25,000 readers, or fifty readers per penny, and, even if only a tiny fraction are potential buyers (or sellers), the economy they achieve in search . . . may be overwhelming.”). Recent scholarship further suggests that producers may possess better information regarding consumers’ behavior than do consumers themselves. See Oren Bar-Gill & Franco Ferrari, *Informing Consumers About Themselves*, 3 ERASMUS L. REV. 93 (2010) (arguing the significance of product-use information and the need to regulate its disclosure); Oren Bar-Gill & Oliver Board, *Product-Use Information and the Limits of Voluntary Disclosure*, 14 AM. L. & ECON. REV. 235 (2012) (same). But see Emir Kamenica et al., *Helping Consumers Know Themselves*, 101 AM. ECON. REV. 417 (2011) (showing that requiring firms to inform consumers about themselves decreases consumer expenditure at given prices but can increase equilibrium prices, offsetting the direct benefit of this information).

function.²⁵⁹ These specialized service providers, ranging from long-standing outlets aimed at the general public, such as *Consumer Reports*, to more recent internet databases and services, to personalized consultants and advisors, can help improve the quality of consumers' judgments and decisions.

Yet, despite the increasing abundance of information—and occasionally because of it—many consumers still commonly and routinely make product and service choices that are suboptimal for them.²⁶⁰ Even when competition is present, producers in some markets prefer to offer only partial or opaque information to limit the ability of consumers to evaluate their products.²⁶¹ Specifically, producers can benefit by designing products that lead more naive consumers to make inferior, costly decisions—as in the case of some credit card plans—that both increase producers' profits and subsidize the superior products chosen by more sophisticated consumers, helping attract the latter as well.²⁶² In other instances, sellers develop products that are more complex than necessary to satisfy consumer

259. See FRANK ROSE, *THE ECONOMICS, CONCEPT, AND DESIGN OF INFORMATION INTERMEDIARIES: A THEORETIC APPROACH* 36–37 (1999) (explaining that buyers of goods demand information to make more informed purchases and this demand has given rise to a market for information to be purchased); DANIEL F. SPULBER, *MARKET MICROSTRUCTURE: INTERMEDIARIES AND THE THEORY OF THE FIRM* xxiii (1999) (observing that customers can be asymmetrically informed about product quality and that intermediaries help to fill this gap); Thomas F. Cosimano, *Intermediation*, 63 *ECONOMICA* 131 (1996) (offering a model showing the conditions for beneficial intermediation and the costs its presence imposes on sellers who do not use it); Daniel F. Spulber, *Market Microstructure and Intermediation*, *J. ECON. PERSP.*, Summer 1996, at 135 (elucidating the role of the intermediary in the market system); see also Stigler, *supra* note 254, at 216–17 (discussing the role of distributors as information intermediaries).

260. See Oren Bar-Gill & Elizabeth Warren, *Making Credit Safer*, 157 *U. PA. L. REV.* 1, 26–55 (2008) (arguing that consumers make systematic mistakes in their choice and use of credit products due to imperfect information and irrationality); Oren Bar-Gill, *Seduction by Plastic*, 98 *NW. U. L. REV.* 1373, 1395–1408 (2004) (contending that “imperfect self-control” can explain consumers' systematic underestimation of their future borrowing); Brian Bucks & Karen Pence, *Do Homeowners Know Their House Values and Mortgage Terms?* 1, 26–27 (Fed. Reserve Bd. Fin. & Econ. Discussion Series, Working Paper No. 2006-03, 2006), available at <http://www.federalreserve.gov/Pubs/feds/2006/200603/200603pap.pdf> (reporting that borrowers with a limited understanding of mortgage terms are at risk of taking out more costly mortgages than they qualify for).

261. See, e.g., OREN BAR-GILL, *SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS* 80 (2012) (“Increased complexity may be attractive to issuers, as it allows them to hide the true cost of the credit card in a multidimensional pricing maze.”).

262. Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 *Q.J. ECON.* 505, 519–20 (2006). See generally BAR-GILL, *supra* note 261, at 8 (arguing that sellers must be aware of consumer biases and perceptions in order to remain in the market).

demand—such as where certain cellular service plans are concerned²⁶³—making it exceedingly difficult to compare among competing offerings.²⁶⁴

All in all, while current-day markets typically provide consumers with abundant information that can facilitate better judgments and decisions, consumers still face significant challenges. Where the interests of producers and consumers diverge substantially, the latter frequently are at a fundamental disadvantage compared to the former—who have the experience, opportunity, and resources needed to exploit consumers. Nonetheless, the basic observation of consumer disadvantage that permeates other areas of the law—most notably consumer protection and some regulatory regimes—until recently has largely been absent from antitrust discourse.²⁶⁵ The hypothetical consumer in traditional antitrust models is not just strictly rational, but usually also immune to the institutional constraints that impact real consumers in market settings.²⁶⁶

Yet should the evidence of consumers' bounded rationality enter the antitrust calculus? After all, Nobel Prize-winning economist Milton Friedman argued that markets in the aggregate perform "as if" they were comprised of rational participants because the deviations of irrational actors

263. Bar-Gill, *supra* note 139, at 35–41.

264. See, e.g., Bruce I. Carlin, *Strategic Price Complexity in Retail Financial Markets*, 91 J. FIN. ECON. 278 (2009) (presenting a model showing that as competition intensifies firms add complexity to their price structures to increase market power by preventing some consumers from becoming knowledgeable about prices); Chris M. Wilson, *Ordered Search and Equilibrium Obfuscation*, 28 INT'L J. INDUS. ORG. 496 (2010) (demonstrating "the incentives for an oligopolist to obfuscate by deliberately increasing the cost with which consumers can locate its product and price"); Glenn Ellison & Alexander Wolitzky, *A Search Cost Model of Obfuscation* (Nat'l Bureau of Econ. Research, Working Paper No. 15237, 2009), available at <http://www.nber.org/papers/w15237> (offering search models that show obfuscation can arise even with rational consumers who bear search costs). But see Alexia Gaudeul & Robert Sugden, *Spurious Complexity and Common Standards in Markets for Consumer Goods*, 79 ECONOMICA 209 (2012) (modeling a countervailing force of consumer preference for simple choice, which can reduce complexity); Eugenio J. Miravete, *Competition and the Use of Foggy Pricing*, 5 AM. ECON. J. MICROECONOMICS 194 (2013) (concluding that the transition from monopoly to competition in the early U.S. cellphone industry did not generally foster the use of tariff options aimed at profiting from consumer mistakes and offering alternative accounts for the observed "foggy" pricing).

265. Recently, economists considering some aspects of behavioral antitrust have begun considering the possibility and implications of consumer manipulation for antitrust. See Bennett et al., *supra* note 7, at 121; Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 131–35; Salinger, *supra* note 7, at 81–82; Maurice E. Stucke, *Behavioral Exploitation and its Implications on Competition and Consumer Protection Policies*, in THE PROS AND CONS OF CONSUMER PROTECTION, *supra* note 139, at 77; Petit & Neyrinck, *supra* note 7, at 9–11.

266. See Stucke, *Reconsidering*, *supra* note 7, at 122–23. One exception is the practice of merger enforcement, where the antitrust agencies routinely consider case-specific evidence, including evidence of consumer behavior with respect to the relevant products, when such data is available. See *infra* notes 270–74 and accompanying text (discussing the approach of the agencies to consumer behavior in merger investigations).

collectively cancel each other out.²⁶⁷ This argument, however, fails to account for *systematic* deviations from rationality that bias market behavior in predictable and consistent directions and therefore do not cancel out in the aggregate.²⁶⁸

Gary Becker, another Nobel Prize-winning economist, made a different argument, showing that one can derive the main implication of traditional economic models of consumer behavior—namely, the negatively sloping demand curve that associates higher prices with lower demand—without assuming rational behavior.²⁶⁹ Becker's argument suggests that consumers' systematic deviations from strict rationality should still generate recognizable markets, with negatively sloping demand curves, as we routinely observe in fact. But this insight is not particularly helpful for antitrust law and enforcement policy, which rely on assumptions of consumer rationality well beyond setting up negatively sloping demand curves.

We have already seen, in fact, that consumer rationality impacts antitrust doctrine in a number of areas, from the debate over aftermarket power in *Kodak*, to the analysis of bundling and tying, RPM, and even the efficacy of new entry. Systematic bias on the part of consumers may be troublesome for other key aspects of merger enforcement as well. The agencies and merging parties routinely estimate the unilateral effects of mergers based on models in which firms price to maximize profits in the face of aggregate consumer demand.²⁷⁰ Hence, merger predictions that fail to account for systematic biases in consumer demand—whereby consumers, for instance, over- or underreact to changes in the relative prices of products in a given market—may result in erroneous predictions of merger outcomes.²⁷¹

Some economists argue that there is little reason for alarm because merger assessments already account for any systematic consumer bias by drawing on data regarding consumers' actual choices in the relevant product

267. MILTON FRIEDMAN, *The Methodology of Positive Economics*, in *ESSAYS IN POSITIVE ECONOMICS* 3, 21–22 (1953) (emphasis omitted); see also Allan Gibbard & Hal R. Varian, *Economic Models*, 75 J. PHIL. 664, 669–73 (1978) (discussing the concepts of approximation and fit in microeconomic models that are based on false assumptions); Richard A. Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551, 1556 (1998) (echoing Friedman's argument in his critique of behavioral law and economics).

268. Tor, *Entry*, *supra* note 2, at 563.

269. Gary S. Becker, *Irrational Behavior and Economic Theory*, 70 J. POL. ECON. 1, 4–9 (1962) (showing that this basic feature of markets results not from the assumed rationality of market participants, but more directly from the effect of a change in price on opportunities).

270. See 2010 MERGER GUIDELINES, *supra* note 30, §§ 6.1–3; DAVIS & GARCÉS, *supra* note 80; Werden & Froeb, *supra* note 80.

271. Cf. Bennett et al., *supra* note 7, at 119 (noting that “[p]assive” consumers can reduce both the overall price elasticity of a product or its cross-elasticity with other products).

market.²⁷² This argument, however, does not apply to most merger investigations, only to those limited situations where extensive, quantitative scanner or similar data is readily available, such as in consumer goods markets.²⁷³ It also glosses over the role of consumer rationality even in some of those merger simulation methods that are commonly used when sufficiently detailed consumer-level data is available.²⁷⁴

Yet even when aggregate data from real consumer transactions enables reasonable predictions of merger effects, it does not resolve the more fundamental challenge of systematic consumer bias in merger assessments. When consumer choices are partly driven by systematic errors of judgment, choices in the market may fail to reflect consumers' true preferences.²⁷⁵ To illustrate, when consumers underestimate the risks associated with a given product, they demand greater quantities of that product than they would have absent their judgment error. A somewhat different problem occurs when consumers systematically deviate from rational choice precepts.²⁷⁶ Their behavior then may manifest real preferences, yet these may not always be those "true" preferences these consumers would have exhibited had they not been biased.²⁷⁷ Hence it is clear, even without resolving these significant questions, that the empirical behavioral evidence is potentially relevant to merger enforcement.²⁷⁸

Indeed the law should not ignore the complex relationship between markets, competition, and consumers' deviations from strict rationality,

272. See, e.g., Wright & Stone, *supra* note 7, at 1523.

273. See, e.g., DAVIS & GARCÉS, *supra* note 80, § 9.3.2 (explaining the limited availability of such data).

274. See sources cited *supra* note 81.

275. Stucke, *Reconsidering*, *supra* note 7, at 139–40; see also Werden et al., *supra* note 7, at 127 (implying that behavioral evidence could be used to challenge the assumption that consumers maximize utility via choice).

276. For the distinction between errors of judgment and errors of choice and their potentially distinct normative ramifications, see Tor, *Behavioral Methodology*, *supra* note 1, at 244–72.

277. See *id.* at 318 & n.344 (explaining that "true" preferences refer to those that individuals would have had if they had possessed an accurate estimate of the risks and benefits of products).

278. This observation raises a separate question of some importance concerning the goals of antitrust law. Modern antitrust law promotes efficiency by protecting competition based on the assumption that consumers maximize utility through their choices in the market. Therefore, evidence showing that consumer choice sometimes fails to maximize utility might raise questions regarding the validity of the competition–welfare link at the foundation of antitrust law, as scholars supporting and criticizing behavioral antitrust already have noted. See Alexander Morrell, *Behavioral Antitrust and Merger Control: Comment*, 167 J. INST. THEORETICAL ECON. 143, 146–47 (2011) (criticizing the argument made by Werden et al. that the behavioral evidence should be ignored, regardless of its validity, if it makes current practices in welfare economics obsolete). Note, however, that the behavioral evidence does not negate the importance of competition for consumer welfare. For one, the relevant inquiry is not whether consumer choice always maximizes welfare but whether competition tends significantly to improve consumer welfare compared to what prevails when competition diminishes. Yet a full consideration of this issue is beyond the scope of the present analysis.

given the many roles of hypothetical consumer rationality in both antitrust doctrine and enforcement practices.

2. *Supply-Side Rationality*.—Beyond providing producers with incentives and opportunities to react to the bounded rationality of consumers—whether by seeking to correct it or trying to exploit it—markets also help align producers' own behavior with rationality through a number of mechanisms.²⁷⁹ Some of these—such as the consequences of simple aggregation or the inevitably constrained resources of market participants—operate at the macro-level, facilitating “as if” rational outcomes for the market as a whole, irrespective of the actual rationality of specific market participants. Other, micro-level mechanisms—including profit motivation and learning from experience—directly facilitate more rational behavior on the part of individual producers. A final pair of mechanisms—product-market competition and arbitrage—operates at the market level yet impacts micro-level behavior by weeding out boundedly rational producers.²⁸⁰ Importantly, though powerful and significant, the various mechanisms of market rationality are imperfect, at times failing to ensure producer rationality and occasionally even facilitating systematic deviations from it.²⁸¹

Economists have long argued that markets overall may comport with the predictions of strictly rational models even while individual firms deviate from them. Milton Friedman explained that the aggregation of firm behavior in the market means that random errors will cancel out in the aggregate.²⁸² Nonetheless, as we saw already with respect to consumer behavior, systematic deviations from rationality may not cancel out, instead

279. The notion that nonmarket behavioral phenomena may not appear in market settings is common not just to opponents, but even to some proponents of the behavioral approach outside antitrust law. See, e.g., Arlen, *supra* note 251, at 1781–82 (suggesting that behavioral findings from nonmarket settings may not necessarily generalize to market settings); Jolls et al., *supra* note 1, at 1473 (finding it necessary to state that “law is a domain where behavioral analysis would appear to be particularly promising in light of the fact that nonmarket behavior is frequently involved”); Thomas S. Ulen, *The Growing Pains of Behavioral Law and Economics*, 51 VAND. L. REV. 1747, 1748–49, 1758–60 (1998) (arguing that bounded rationality may be of limited importance for the analysis of market behaviors because of competitive discipline).

280. To distinguish among the different mechanisms and their effects on rationality, the present subpart treats the firm as a single decision maker, while the next subpart considers in detail the various intra-organizational mechanisms that operate within the producer firm.

281. For the distinction between market-level rationality—namely, the compatibility of aggregate market outcomes with models based on assumptions of strict rationality—and micro-level, or individual, rationality that pertains to specific firms, see Becker, *supra* note 269, who introduces this distinction and uses it to explain seemingly contradictory findings at the two levels.

282. See FRIEDMAN, *supra* note 267, at 21–23.

generating broader market patterns that differ from predictions based on hypothetical rationality.²⁸³

Similarly, Becker extended his argument regarding irrational consumer behavior, *ceteris paribus*, to producers.²⁸⁴ He showed that even firms that do not maximize profits must respond systematically and predictably to changes in their production opportunity set: as the price of inputs or the competitive conditions in the market change, even firms acting randomly or those guided by inertia respond accordingly.²⁸⁵ For instance, Becker showed that the basic economic finding that a competitive market that becomes monopolized (or cartelized) will tend to lower output holds when firms are irrational.²⁸⁶

However, the generality of this result—which applies not just to business firms but to all decision makers with resource constraints²⁸⁷—also spells its limited significance for antitrust purposes. Becker indeed showed that rationality on the part of the individual decision-making unit is not required for aggregate market responses to move in the same *direction* as predicted by traditional models. Yet antitrust law treats differently market behaviors with the same general propensity—such as an increase in price or a reduction in output—depending on the *magnitude* of change. Mergers among competitors are legal unless they are likely substantially to lessen competition,²⁸⁸ monopolization and attempted monopolization both apply only to firms above a certain market power threshold,²⁸⁹ and exclusive dealing, tying arrangements, and some other restraints of trade similarly are prohibited for some firms yet permitted for others depending, *inter alia*, on their degree of market power.²⁹⁰ In each of these areas of antitrust doctrine,

283. See Tor, *Entry*, *supra* note 2, at 563 (discussing this caveat with respect to Friedman's argument).

284. Becker, *supra* note 269, at 9–12 (showing how the argument extends to firms that use decision rules other than profit maximization).

285. *Id.*

286. *Id.* at 11 (explaining that “a change from competition to monopoly shifts the production opportunity set toward lower outputs, which in turn encourages irrational firms to lower their outputs”).

287. See *id.* at 12.

288. See Clayton Act § 7, 15 U.S.C. § 18 (2012); 2010 MERGER GUIDELINES, *supra* note 30, *passim*.

289. See *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966) (recognizing that a plaintiff must demonstrate that the defendant possessed a certain level of “monopoly power” in order to prevail in a monopoly claim); *Ball Mem'l Hosp., Inc. v. Mut. Hosp. Ins., Inc.*, 784 F.2d 1325, 1334–35 (7th Cir. 1986) (“Unless the defendants possess market power, it is unnecessary to ask whether their conduct may be beneficial to consumers. Firms without power bear no burden of justification.”).

290. See *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 601–02 (1985) (noting that the right to select customers and associates is qualified where a firm seeks to create or maintain a monopoly); see also Avishalom Tor, *Unilateral, Anticompetitive Acquisitions of Dominance or Market Power*, 76 ANTITRUST L.J. 847 (2010) (expanding upon the special responsibilities of firms with monopoly power).

different markets that move in the same general direction generate very different legal results depending on the respective magnitude of change in market power. The nature of these changes, however, depends in part on the nature of producers' rationality in a given market setting.²⁹¹

Even when it evaluates market-wide outcomes, moreover, antitrust law ultimately is concerned with the conduct of specific firms. Yet the conduct of a given producer and its competitive effects also may depend on the degree to which the that firm, its competitors, suppliers, and so on adhere to the precepts of rational profit maximization. To illustrate, the same allegedly predatory conduct that would not occur in a world populated only by perfectly rational firms—say, because market conditions make recoupment of the costs invested in predation unlikely—can both take place and generate significant competitive harm where a real monopolist is (or is perceived to be) irrationally aggressive in the face of new entry.²⁹²

All in all, the rationality of market participants—as distinct from aggregate market outcomes—can be material for antitrust analysis, meriting a careful evaluation of the micro-level mechanisms of supply-side market rationality. Perhaps the most fundamental micro-level difference between market and nonmarket behavior is that the former primarily aims at earning profits. Whatever other motivations may contribute to their activities, profits are the *raison d'être* of business firms. We thus expect profit-seeking suppliers to be more rational, avoiding errors that decision makers exhibit in nonmarket settings.²⁹³

Traditionally in economics, the notion that monetary incentives matter and that larger monetary incentives lead to greater effort and better performance is near axiomatic.²⁹⁴ Yet the empirical evidence suggests this is not always the case: though financial incentives can increase effort, this greater effort generates only limited improvements in the rationality of people's intuitive judgment and decision making.²⁹⁵ In fact, sometimes

291. Cf. Thomas Russell & Richard Thaler, *The Relevance of Quasi Rationality in Competitive Markets*, 75 AM. ECON. REV. 1071, 1071 (1985) (showing, in an early model, that in the presence of systematic deviations from rationality the standard "rational" outcome at the market level holds only under very specific conditions but not as a general case).

292. Leslie, *supra* note 3, at 298–300; Tor, *Predatory Pricing*, *supra* note 2, at 55–57.

293. Or that consumers exhibit, even in market settings, given their very different incentives.

294. See, e.g., Uri Gneezy et al., *When and Why Incentives (Don't) Work to Modify Behavior*, J. ECON. PERSP., Fall 2011, at 191 (discussing the conditions under which extrinsic—particularly monetary—incentives work and do not work).

295. Colin F. Camerer & Robin M. Hogarth, *The Effects of Financial Incentives in Experiments: A Review and Capital-Labor-Production Framework*, 19 J. RISK & UNCERTAINTY 7, 7 (1999); Ondrej Rydval & Andreas Ortmann, *How Financial Incentives and Cognitive Abilities Affect Task Performance in Laboratory Settings: An Illustration*, 85 ECON. LETTERS 315 (2004) (showing that cognitive abilities are at least twice as important as financial incentives for performance). This is not to say that financial incentives do not matter. See, e.g., Vernon L. Smith, *Method in Experiment: Rhetoric and Reality*, 5 EXPERIMENTAL ECON. 91, 101–02 (2002) (highlighting the efficacy of financial incentives); Vernon L. Smith & James M. Walker,

increased monetary incentives even diminish the rationality of performance.²⁹⁶ Furthermore, producers' increased competitive efforts at times may be directed at goals such as increased market share or relative position in the market rather than pure profit maximization.²⁹⁷

For profit motivation to improve the performance of boundedly rational producers they must learn to correct their deviations from rationality. Effective learning requires market participants to identify their judgment and decision errors, to associate these errors with specific negative consequences, and, finally, to replace their deviations with more rational judgments and decisions.²⁹⁸ However, in the typical antitrust settings, such learning can be exceedingly difficult. Most judgments and decisions in product markets are made under uncertainty: outcomes are multiply determined and delayed; feedback is limited and noisy; and there is no reliable information about the counterfactual outcomes that would have occurred had a different choice been made.²⁹⁹

Over time and with experience producers nevertheless can improve their performance even without "true" learning. They may imitate

Monetary Rewards and Decision Cost in Experimental Economics, 31 *ECON. INQUIRY* 245, 259–60 (1993) (concluding, based on a review of experimental economics studies, that increased financial incentives reduce the variances in participants' performance and also tend to improve its quality).

296. See, e.g., Dan Ariely et al., *Large Stakes and Big Mistakes*, 76 *REV. ECON. STUD.* 451, 451–52 (2009) (comparing performance on identical tasks with varying monetary incentives); Uri Gneezy & Aldo Rustichini, *Pay Enough or Don't Pay at All*, 115 *Q.J. ECON.* 791, 791 (2000) (providing evidence that low financial incentives lead to worse performance than no incentives by crowding out alternative motivations but that high incentives improve performance); Dan N. Stone & David A. Ziebart, *A Model of Financial Incentive Effects in Decision Making*, 61 *ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES* 250, 258 (1995) (providing evidence that financial incentives can improve performance via increased motivation and diminish it by generating negative affect).

297. See Armstrong & Huck, *supra* note 7, at 13–17 (discussing how firms will sometimes choose to imitate similar firms rather than attempt to calculate their own optimal strategies); Stephen N. Garcia, Avshalom Tor & Richard Gonzalez, *Ranks and Rivals: A Theory of Competition*, 32 *PERSONALITY SOC. PSYCHOL. BULL.* 970 (2006); Gneezy et al., *supra* note 294; Goppelsroeder, *supra* note 111.

298. See, e.g., Hillel J. Einhorn, *Learning from Experience and Suboptimal Rules in Decision Making*, in *COGNITIVE PROCESSES IN CHOICE AND DECISION BEHAVIOR* 1 (Thomas S. Wallsten ed., 1980) (emphasizing the importance of unambiguous feedback for learning); Richard E. Nisbett et al., *Improving Inductive Inference*, in *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* 445, 445–46 (Daniel Kahneman et al. eds., 1982) (noting that decision makers need to know that an error has occurred, how it has occurred, and how to improve the decision process); Tversky & Kahneman, *Rational Choice*, *supra* note 90, at S274–75 (explaining that effective learning only takes place when "accurate and immediate feedback about the relation between the situational conditions and the appropriate response" is available).

299. On the importance of effective feedback, see Nigel Harvey & Ilan Fischer, *Development of Experience-Based Judgment and Decision Making: The Role of Outcome Feedback*, in *THE ROUTINES OF DECISION MAKING* 119, 119 (Tilman Betsch & Susanne Haberstroh eds., 2005) (noting that "when feedback is present . . . significant improvements are likely to occur. . . . [But] when people perform the task repeatedly without finding out anything about the results of their efforts, improvements are usually negligible").

successful competitors, follow established industry norms,³⁰⁰ or seek the advice of service providers with expertise in improving business outcomes.³⁰¹ Sometimes such efforts will align the producers' conduct with strict rationality, but at other times they will fail to do so. Imitation may be directed at the wrong elements of competitors' conduct, industry norms may be neither rational nor efficient, and to seek and invest in outside advice—not to mention follow it successfully—one must first recognize the suboptimal behavior.

If the challenges involved in learning from experience in product markets were not enough, many particularly significant antitrust-relevant judgments and decisions are infrequent, sometimes unique. Entry into new markets, mergers and acquisitions, the development of new business strategies and vertical arrangements, and so on all offer producers exceedingly limited learning opportunities.

At the micro level, then, though limited in their efficacy, both profit seeking and learning can improve the rationality of individual producers. But should the competitive process itself not suffice to align producer behavior with rationality-based models simply by weeding out those less capable competitors who fail to learn? Alchian's familiar argument states that underperforming producers in competitive markets will be less profitable than their competitors and ultimately will not survive.³⁰² Based on this logic, commentators frequently assume that competition will weed out boundedly rational decision makers who must deplete their resources by making inefficient decisions while their rational competitors enjoy higher profits.³⁰³

A more careful consideration shows, however, that rationality-inducing competition is limited in antitrust-relevant environments for two sets of reasons, one relating to the nature of behavioral deviations from rationality in markets, the other having to do with the subject matter of

300. See Armstrong & Huck, *supra* note 7, at 13–18 (discussing findings suggesting that “imitation enables firms to make use of other firms’ private information and optimizing behavior, and to enjoy the benefits of conformity (as imitating firms are likely to do as well as the average of their peers)”; see also Goppelsroeder, *supra* note 111, at 26 (noting that firms entering mature, cartelized industries might “simply join[] the cartel, [emulating successful competitors by] internalizing the collusive agreement so that tacit collusion can be sustained”).

301. See Bailey, *supra* note 81, at 6 (discussing arguments for continuing to treat firms as rational, profit-maximizing entities, one of which is that “firms may have access to a wide array of consultants and advisors who can assist in information processing and making optimal pricing decisions”).

302. Armen A. Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211, 213 (1950); see also Becker, *supra* note 269, at 9–12 (noting that Alchian’s argument is a specific iteration of the broader argument that markets behave rationally irrespective of the rationality of participants when resources are constrained).

303. Cf. Ernst Fehr & Jean-Robert Tyran, *Individual Irrationality and Aggregate Outcomes*, J. ECON. PERSP., Fall 2005, at 43, 44 (describing the common argument “that rational agents will drive the irrational agents from the market because the former make higher profits”).

antitrust law: first, while competition may weed out those who consistently underperform, deviations from rationality are variable and heterogeneous.³⁰⁴ When decision makers exhibit different biases to different degrees at different times, however, even those who ultimately outperform their competitors may still differ significantly from the hypothetical rational actor.³⁰⁵

Furthermore, even effective competitive discipline penalizes only behaviors that reduce profitability. Deviations from strict rationality that benefit market participants, on the other hand, are facilitated rather than hindered by competition. For example, competitive selection rewards with higher returns some biased decision makers who take risks that their rational competitors avoid, so these particular competitors will outperform their rational peers even while the majority of their boundedly rational counterparts fail.³⁰⁶ Similarly, producers who trust their peers, adhere to social norms, or exhibit other nonstandard social preferences may obtain higher profits through oligopolistic coordination or cartelization in market conditions that would prevent strictly rational competitors from doing so.³⁰⁷

Second, antitrust law largely focuses on those least competitive markets, which inevitably exert more limited disciplinary pressure on market participants. For instance, a monopolist or oligopolists in markets with significant entry barriers may dissipate some of their supracompetitive profits by operating less efficiently.³⁰⁸ Hence, systematic deviations from rationality, even when unprofitable, may survive in noncompetitive markets much like other inefficiencies.

Another disciplinary force besides product market competition is arbitrage by rational actors who identify, exploit, and, thus, erode the profit opportunities generated by the errors of boundedly rational decision makers.³⁰⁹ For this to happen, however, there must exist a sufficiently large

304. See *supra* Part II.

305. Cf. Fehr & Tyran, *supra* note 303, at 54 (showing how individual irrationality—even assuming its constancy—may translate to different aggregate market performance depending on whether deviations from rationality are strategic substitutes or strategic complements).

306. See Tor, *Entry*, *supra* note 2, at 504–11 (describing this type of competitive selection process in the competition between more and less biased entrants into manufacturing industries); cf. J. Bradford De Long et al., *The Survival of Noise Traders in Financial Markets*, 64 J. BUS. 1 (1991) (showing how overoptimistic traders in financial markets—as a group—may in fact earn higher returns on average and thus exhibit long-run survival). For related intra-firm processes that sometimes select for managerial deviations from strict rationality, see *infra* subpart III(B).

307. See, e.g., Armstrong & Huck, *supra* note 7, at 21–24; Leslie, *supra* note 3, at 280–83.

308. See generally HARVEY LEIBENSTEIN, *BEYOND ECONOMIC MAN: A NEW FOUNDATION FOR MICROECONOMICS* (1976) (discussing the theory of and evidence for “x-inefficiency”—that is, a nonallocative efficiency loss—where firms enjoy some degree of sheltering from competitive pressures).

309. See Andrei Shleifer & Robert W. Vishny, *The Limits of Arbitrage*, 52 J. FIN. 35, 35 (1997) (noting that a function of arbitrage “is to bring prices to fundamental values and to keep markets efficient”). See generally ANDREI SHLEIFER, *INEFFICIENT MARKETS: AN INTRODUCTION*

group of arbitrageurs who can both identify the opportunity and bear the risk and costs involved with selling to or buying from the boundedly rational actors; it also requires the ready availability of substitutes for the products overpriced or underpriced by boundedly rational actors.³¹⁰

Yet these conditions are uncommon even in sophisticated financial markets,³¹¹ not to mention real product markets. For example, rational arbitrageurs would find it difficult to engage in product market activities that profitably exploit a given manufacturer's excessive use of RPM that causes the ultimate overpricing of some products at retail. In fact, significant arbitrage is impractical in most product markets even where products are underpriced rather than overpriced so that no short selling is required. To illustrate, a monopolist engaging in below-cost predatory pricing would have offered arbitrageurs a profit opportunity, had they been able to purchase very large quantities of the heavily discounted product and then resell the product at higher prices on a later date. In reality, however, arbitrage is impractical here given the risks involved, the costs of buying sufficient quantities, stocking and reselling, and so on.

All in all, the myriad mechanisms of market rationality clearly constrain deviations from strict rationality, partly confirming the common intuition that producers are more likely to behave rationally than consumers. At the same time, however, the rationality-inducing effects of aggregation and resource constraints, of profit seeking and learning, and of competitive discipline and arbitrage are more limited than many analysts recognize, particularly in those market settings that antitrust law and policy are most concerned with.

B. *Managers and Firms*

While markets—particularly when they are competitive—can promote rationality, producers' judgment and decision behavior is also shaped by intra-firm institutions. Because producers are business organizations rather than mere individuals, they can: recruit experienced, highly capable agents to manage them; draw on organizational routines to guide managers' behavior; use contractual arrangements to align these agents' motivation

TO BEHAVIORAL FINANCE (2000) [hereinafter SHLEIFER, *INEFFICIENT MARKETS*] (providing a readable and comprehensive review of the early behavioral finance literature).

310. See SHLEIFER, *INEFFICIENT MARKETS*, *supra* note 309, at 4 (noting that arbitrage is most effective when "substitute securities are readily available"); Barberis & Thaler, *supra* note 84, at 5–7 (noting the importance of a close substitute for the mispriced security in minimizing risk for the arbitrageur); Denis Gromb & Dimitri Vayanos, *Limits of Arbitrage*, 2 ANN. REV. FIN. ECON. 251 (2010) (surveying the theoretical literature and offering a simple model that incorporates costs and constraints of arbitrage including risk; short-selling costs; leverage and margin constraints; and constraints on equity capital).

311. This observation is illustrated by the famous collapse of a multi-billion-dollar hedge fund whose trading strategy was based on arbitrage. See ROGER LOWENSTEIN, *WHEN GENIUS FAILED: THE RISE AND FALL OF LONG-TERM CAPITAL MANAGEMENT* (2000).

with the interests of the firm; and make group decisions by corporate boards of directors that can direct, monitor, and discipline managers.³¹²

As in the case of markets, however, the empirical evidence on managerial and firm behavior—both generally and with respect to antitrust-relevant tasks in particular—reveals a complex picture. Managers are sophisticated and experienced professional actors, but still human. Notably, managers are selected and shaped by institutional forces to manifest greater rationality in some respects but systematic bias in other respects, as amply illustrated by the empirical and theoretical literature in behavioral corporate finance.³¹³ In the same vein, corporate governance research demonstrates the limited ability of key intra-firm mechanisms—from contractual arrangements to boards—to guarantee desirable behavior by corporate decision makers.³¹⁴

1. Managers.—Business managers may be more rational in their judgment and decision behavior than other individuals because of their experience and expertise. Research shows that experts in some fields outperform individuals who do not have domain-specific expertise.³¹⁵ However, the evidence also reveals that where the rationality of judgment

312. Cf. Donald C. Langevoort, *Behavioral Approaches to Corporate Law*, in RESEARCH HANDBOOK ON THE ECONOMICS OF CORPORATE LAW 442 (Claire A. Hill & Brett H. McDonnell eds., 2012) (discussing some basic challenges of the behavioral analysis of legal questions pertaining to firms and managers in the context of corporate governance and the securities laws).

313. See *infra* section III(B)(1).

314. This literature is vast; some recent findings are reviewed. See, e.g., Lucian A. Bebchuk & Michael S. Weisbach, *The State of Corporate Governance Research*, 23 REV. FIN. STUD. 939 (2010). See generally KRAAKMAN ET AL., *supra* note 116 (providing basic insights into corporate governance structure); Luigi Zingales, *Corporate Governance*, in 1 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 497 (Peter Newman ed., 1998) (offering a clear analysis of the key issues concerning the various constraints and institutions employed within firms to incentivize and monitor managerial behavior).

315. Much of this research developed under “Naturalistic Decision Making” (or NDM)—an approach that focuses on how people make decisions in real-world settings—and while significant, its scope is limited compared to the broader judgment and decision-making literature. NDM defines experts based on the subjective perceptions of people in the field. See James Shanteau, *Competence in Experts: The Role of Task Characteristics*, 53 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 252, 255 (1992) (defining experts as “those who have been recognized within their profession as having the necessary skills and abilities to perform at the highest level”). See generally Gary Klein, *Naturalistic Decision Making*, 50 HUM. FACTORS 456, 457 (2008) (noting that NDM “shifted our conception of human decision making from a domain-independent general approach to a knowledge-based approach exemplified by decision makers who had *substantial experience*” (emphasis added)); Rebecca Pliske & Gary Klein, *The Naturalistic Decision-Making Perspective*, in EMERGING PERSPECTIVES ON JUDGMENT AND DECISION RESEARCH 559, 559 (Sandra L. Schneider & James Shanteau eds., 2003) (citing a definition of NDM as the study of “how people use their experience to make decisions in field settings”). But see *id.* at 577–80 (discussing common criticism of the weakness of the methods used by NDM researchers and questioning the inferences they make about the efficacy of expert decision making in the fields they study).

and decision behavior specifically is concerned, experts often make mistakes that resemble those of other individuals.³¹⁶

The main factors that determine experts' performance—besides the extent of their experience and subject matter expertise, of course—are the nature of the task and the decision environment.³¹⁷ Apparently, the learning processes that help experts develop more rational behavior resemble those that individuals use for learning more generally. In domains where feedback is clear and readily available—such as in the area of weather forecasting—experts can perform well even in the face of uncertainty, and they continuously improve their performance.³¹⁸ Yet in many other domains—particularly where feedback is limited and ambiguous—experts often fail to exhibit more rational behavior. As Kahneman and Klein recently noted, there are two preconditions for “the process of skill acquisition that supports the intuitive judgments and preferences of genuine experts,” namely, “high-validity environments and an adequate opportunity to learn [in] them.”³¹⁹

Skilled intuition can only develop in environments that offer valid—causal and statistical—cues to the nature of the situation with sufficient regularity.³²⁰ Importantly, validity should not be confused with certainty; some uncertain environments provide decision makers with significant statistical cues that can assist in acquiring domain-specific expertise. In games of chance like bridge or poker, for instance, experts can identify superior bets that improve their overall performance without guaranteeing the success of every given choice.³²¹

316. Colin F. Camerer & Eric J. Johnson, *The Process–Performance Paradox in Expert Judgment: How Can Experts Know So Much and Predict So Badly?*, in RESEARCH ON JUDGMENT AND DECISION MAKING, *supra* note 88, at 342, 342–43 (noting that behavioral studies “suggest that a wide range of experts . . . are not much better predictors than [those with lesser expertise]” and seeking to reconcile this with the view of cognitive scientists, who argue that “expertise is a rare skill that develops only after much instruction, practice, and experience”); *see also* Daniel Kahneman & Gary Klein, *Conditions for Intuitive Expertise: A Failure to Disagree*, 64 AM. PSYCHOLOGIST 515, 515 (2009) (mentioning “the commonplace that expert intuition is sometimes remarkably accurate and sometimes off the mark”).

317. *See* Kahneman & Klein, *supra* note 316, at 520–23.

318. Allan H. Murphy & Robert L. Winkler, *Probability Forecasting in Meteorology*, 79 J. AM. STATISTICAL ASS'N 489, 493 fig.1, 494 fig.2 (1984) (reviewing evidence for good calibration of weather forecasters probability judgments and their improvements over time in real-world and experimental settings alike).

319. Kahneman & Klein, *supra* note 316, at 519; *see also* ROBIN M. HOGARTH, EDUCATING INTUITION 90 (2001) (arguing that because “[i]ntuitions are acquired through experience” and “the validity of a person’s intuition depends on the kind of learning structure in which that intuition was acquired,” the concept of learning structure not only provides a framework for assessing the validity of intuition but also suggests the kinds of environments that would develop good intuitions).

320. Kahneman & Klein, *supra* note 316, at 520.

321. *Id.*

In the same vein, individuals may fail to develop reliable skilled intuitions even in environments that in principle offer high-validity cues. For one, where the decision task involved is uncommon, there may not be sufficient opportunities to learn its rules. In other cases, people may hold subjectively compelling intuitions that lead them to overemphasize some environmental cues or ignore others despite ample opportunities to acquire skill in judgment.³²²

Unsurprisingly, therefore, numerous studies reveal experts making some systematic judgment and decision errors, even while these more experienced, sophisticated actors outperform nonexperts in some settings. In fact, some of the earliest studies of intuitive judgment biases used experts in statistics as participants.³²³ Other experimental studies and field evidence show biases in the clinical judgments of doctors, psychiatrists, and other health professionals.³²⁴

The evidence also reveals systematic errors by professionals with expertise in tasks that require complex judgments and decisions in business and finance.³²⁵ For instance, studies found anchoring effects among veteran accountants and real estate brokers,³²⁶ desirability bias among investment

322. *Id.* at 521–22 (discussing these limitations and providing some illustrations).

323. This was the case, for example, with some of the famous early studies of heuristics and biases that Amos Tversky and Daniel Kahneman conducted. See Daniel Kahneman & Amos Tversky, *On the Psychology of Prediction*, 80 PSYCHOL. REV. 237, 238 (1973) (describing studies showing judgment errors using, *inter alia*, a large sample of graduate students in psychology at three major U.S. universities); Amos Tversky & Daniel Kahneman, *Belief in the Law of Small Numbers*, 76 PSYCHOL. BULL. 105, 105 (1971) (using as experimental subjects the experts participating in meetings of the Mathematical Psychology Group and the American Psychological Association).

324. See, e.g., Hal R. Arkes et al., *Hindsight Bias Among Physicians Weighing the Likelihood of Diagnoses*, 66 J. APPLIED PSYCHOL. 252 (1981) (physicians exhibiting the hindsight bias); Loren J. Chapman & Jean P. Chapman, *Illusory Correlation as an Obstacle to the Use of Valid Psychodiagnostic Signs*, 74 J. ABNORMAL PSYCHOL. 271 (1969) (erroneous intuitive beliefs in psychotherapists); Barbara J. McNeil et al., *On the Elicitation of Preferences for Alternative Therapies*, 306 NEW ENG. J. MED. 1259, 1261–62 (1982) (physicians showing framing effects); Roy M. Poses & Michele Anthony, *Availability, Wishful Thinking, and Physicians' Diagnostic Judgments for Patients with Suspected Bacteremia*, 11 MED. DECISION MAKING 159, 159 (1991) (physicians influenced by “the availability heuristic and by wishful thinking, a form of the value bias”). See generally Katherine H. Hall, *Reviewing Intuitive Decision-Making and Uncertainty: The Implications for Medical Education*, 36 MED. EDUC. 216 (2002) (providing a detailed description of associated heuristics and biases in clinical decision making); Natalia Karelaia & Robin M. Hogarth, *Determinants of Linear Judgment: A Meta-Analysis of Lens Model Studies*, 134 PSYCHOL. BULL. 404 (2008).

325. Cf. Derek J. Koehler et al., *The Calibration of Expert Judgment: Heuristics and Biases Beyond the Laboratory*, in HEURISTICS AND BIASES, *supra* note 85, at 686, 710 (concluding that expert judgment was miscalibrated in line with the qualitative predictions of the heuristics and biases approach in all of the five domains surveyed but that the magnitude of bias was greater in areas such as medical, business, and sports judgments, where experts had less training and technical assistance in statistical modeling).

326. See Edward J. Joyce & Gary C. Biddle, *Anchoring and Adjustment in Probabilistic Inference in Auditing*, 19 J. ACCT. RES. 120 (1981) (accountants); Gregory B. Northcraft &

managers,³²⁷ subadditive judgments by options traders,³²⁸ and framing effects among financial planners.³²⁹

Still, one might hope for a better alignment with rational models on the part of top corporate managers due to selection effects.³³⁰ The managers whose behavior is most relevant for antitrust purposes are not only expert, experienced business decision makers; they also belong to a smaller, more select group that reaches elevated positions on the corporate ladder. These managers may differ from other professionals both in their stronger drive to succeed in the business world and in consistently outperforming their competitors in the intra-firm tournament for top management positions. Hence these more accomplished, better-performing managers might also be more rational than their typical competitors.³³¹

Although selection effects can promote more rational behavior among senior corporate managers, however, both theory and evidence suggest these processes are of limited efficacy. In some respects, the limited efficacy of intra-firm competitive selection echoes the limits of marketplace competition discussed above at length.³³² Yet certain mechanisms of market rationality are even more constrained or altogether irrelevant where managerial rationality is concerned: managerial behavior, by definition, is a matter of individual, not aggregate, macro-level rationality. And managerial rationality is an even less likely target for arbitrage than firm-level conduct in product markets.³³³

Margaret A. Neale, *Experts, Amateurs, and Real Estate: An Anchoring-and-Adjustment Perspective on Property Pricing Decisions*, 39 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 84 (1987) (real estate brokers).

327. See Robert A. Olsen, *Desirability Bias Among Professional Investment Managers: Some Evidence from Experts*, 10 J. BEHAV. DECISION MAKING 65, 66–70 (1997).

328. See Craig R. Fox, Brett A. Rogers & Amos Tversky, *Options Traders Exhibit Subadditive Decision Weights*, 13 J. RISK & UNCERTAINTY 5, 16 (1996).

329. Michael J. Roszkowski & Glenn E. Snelbecker, *Effects of “Framing” on Measures of Risk Tolerance: Financial Planners Are Not Immune*, 19 J. BEHAV. ECON. 237 (1990).

330. See Werden et al., *supra* note 7, at 134 (“[F]irms do not randomly select individuals from the general population to make their important decisions, but rather hire and promote employees on the basis of their skills.”); cf. Wright & Stone, *supra* note 7, at 1525 (“[T]he firm is not merely a heterogeneous hodgepodge of individuals, but an institution constructed to lower transaction costs relative to making use of the price system . . .”).

331. Cf. Werden et al., *supra* note 7, at 134 (“Even if most individuals make badly biased decisions in the face of risk and uncertainty, Wall Street analysts do not because they are selected for their understanding of probability theory.”); Langevoort, *supra* note 312, at 442–45 (making a similar observation in the corporate governance context).

332. See *supra* subpart III(A).

333. See Baker & Nofsinger, *supra* note 189, at 8 (suggesting that intra-firm behavior will be further removed from strict rationality than market behavior given the greater limits of arbitrage in this setting and the concentration of decision-making power in a few hands).

Moreover, managerial tournaments at best reward those performance elements that most closely correlate with the firm's long-run profitability.³³⁴ Because rationality only partly correlates with the firm's success, even effective competitive selection within the firm will promote managers who exhibit some systematic deviations from rationality. For instance, successful managers may benefit from a reputation for consistency and commitment, which can lead them to take into account sunk costs that rational actors are supposed to disregard.³³⁵

Similarly, managerial tournaments may promote overconfidence—a term denoting a cluster of loosely related deviations from rational judgment³³⁶ that has received much scholarly attention in recent years.³³⁷

334. In reality, intra-firm promotions also depend on additional factors that may be only tenuously related to the firm's long-run profitability, from the manager's ability to avoid association with failure through various social and cultural factors. Insofar as they exert significant influence on the outcome of managerial tournaments, therefore, these factors further attenuate the rationality-promoting potential of intra-firm competition.

335. See Dawes, *supra* note 87, at 500–02 (describing the attention to sunk costs as an ambiguous anomaly on this and related grounds); Langevoort, *supra* note 312, at 444 (noting that attention to sunk costs may be beneficial for managers); see also Barry M. Staw, *The Escalation of Commitment: An Update and Appraisal*, in ORGANIZATIONAL DECISION MAKING 191, 210 (Zur Shapira ed., 1997) (asserting that the debate over the rationality of escalation decisions in organizational settings should be replaced with an effort to account for the behavioral evidence in this domain).

336. As a term of art, overconfidence refers both to the miscalibration of probability estimates—when decision makers are too confident in the accuracy of their judgments—as well as optimistic overconfidence in one's relative or absolute performance, outcomes, and so on. See Markus Glaser & Martin Weber, *Overconfidence*, in BEHAVIORAL FINANCE, *supra* note 189, at 241, 242 (stating, albeit with some imprecision, that “[t]he two main facets of overconfidence are miscalibration and the better-than-average effect”). For an introduction to research on miscalibration, see Dale Griffin & Lyle Brenner, *Perspectives on Probability Judgment Calibration*, in BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 177 (Derek J. Koehler & Nigel Harvey eds., 2004), which reviews some key findings and approaches in this area, and Sarah Lichtenstein et al., *Calibration of Probabilities: The State of the Art to 1980*, in JUDGMENT UNDER UNCERTAINTY, *supra* note 298, at 306, which provides an earlier, paradigm-setting contribution. For a summary of key findings on optimistic overconfidence, see Tor, *Entry*, *supra* note 2, at 504–14. See also HEURISTICS AND BIASES, *supra* note 85, at 230–378 (reviewing and discussing phenomena relating to both types of overconfidence).

337. See, e.g., Itzhak Ben-David et al., *Managerial Miscalibration*, 128 Q.J. ECON. 1547, 1547 (2013) (finding that “executives are severely miscalibrated” and that “realized market returns are within the executives’ 80% confidence intervals only 36% of the time”); Wen-I Chuang & Bong-Soo Lee, *An Empirical Evaluation of the Overconfidence Hypothesis*, 30 J. BANKING & FIN. 2489 (2006) (finding empirical evidence that overconfident investors overreact to private information and underreact to public information and that market gains increase investors’ overconfidence so they trade more aggressively in subsequent periods); Stephen P. Ferris et al., *CEO Overconfidence and International Merger and Acquisition Activity*, 48 J. FIN. & QUANTITATIVE ANALYSIS 137, 137 (2013) (finding that “[o]verconfidence helps to explain the number of offers made by a CEO, the frequencies of nondiversifying and diversifying acquisitions, and the use of cash to finance a merger deal”); Simon Gervais et al., *Overconfidence, Compensation Contracts, and Capital Budgeting*, 66 J. FIN. 1735, 1761 (2011) [hereinafter Gervais et al., *Capital Budgeting*] (studying “the interaction of managerial overconfidence and compensation in the context of a firm’s investment policy”); Anand M. Goel & Anjan V. Thakor, *Overconfidence, CEO Selection, and Corporate Governance*, 63 J. FIN. 2737 (2008) (showing that

For example, overconfident managers may persevere in difficult situations, exhibit greater ambition and confidence in their performance, and disproportionately attribute their successes to their own prowess over luck, all of which may make them more attractive to the firm than their unbiased peers and, consequently, more likely to be selected for top positions.³³⁸

Of course, overconfidence is not all-around beneficial for either the managers or their firms. On the one hand, a recent empirical study shows that firms in innovative industries with overconfident CEOs invest more in innovation, obtain more patents and patent citations, and achieve greater innovative success for given research and development expenditures (but also have more volatile returns).³³⁹ Some models further show that

an overconfident manager “has a higher likelihood than a rational manager of being deliberately promoted to CEO under value-maximizing corporate governance” (emphasis omitted); Dirk Hackbarth, *Managerial Traits and Capital Structure Decisions*, 43 J. FIN. & QUANTITATIVE ANALYSIS 843, 843 (2008) (“Optimistic and/or overconfident managers choose higher debt levels and issue new debt more often”); Ulrike Malmendier & Geoffrey Tate, *CEO Overconfidence and Corporate Investment*, 60 J. FIN. 2661, 2661 (2005) [hereinafter Malmendier & Tate, *CEO Overconfidence*] (“Overconfident managers overestimate the returns to their investment projects and view external funds as unduly costly.”); Ulrike Malmendier & Geoffrey Tate, *Does Overconfidence Affect Corporate Investment? CEO Overconfidence Measures Revisited*, 11 EUR. FIN. MGMT. 649 (2005) [hereinafter Malmendier & Tate, *Corporate Investment*] (linking CEO overconfidence with firm investment decisions); Jijun Niu, *The Effect of CEO Overconfidence on Bank Risk Taking*, 30 ECON. BULL. 3288 (2010) (finding that banks managed by overconfident CEOs take more risks than their peer institutions); Alexander Puetz & Stefan Ruenzi, *Overconfidence Among Professional Investors: Evidence from Mutual Fund Managers*, 38 J. BUS. FIN. & ACCT. 684 (2011) (finding that equity mutual fund managers trade more after good personal performance and that market performance has no significant impact); Catherine M. Schrand & Sarah L.C. Zechman, *Executive Overconfidence and the Slippery Slope to Financial Misreporting*, 53 J. ACCT. & ECON. 311, 311 (2012) (concluding that “[o]verconfident executives are more likely to exhibit an optimistic bias and thus are more likely to start down a slippery slope of growing intentional misstatements”); Anwer S. Ahmed & Scott Duellman, *Managerial Overconfidence and Accounting Conservatism* (Mays Bus. Sch., Tex. A&M Univ., Research Paper No. 2012-77, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2097895 (finding a negative correlation between CEO overconfidence and accounting conservatism and noting that external monitoring does not appear to mitigate this effect); Alberto Galasso & Timothy S. Simcoe, *CEO Overconfidence and Innovation* (Nat’l Bureau of Econ. Research, Working Paper No. 16041, 2010), available at <http://www.nber.org/papers/w16041.pdf> (reporting that overly optimistic and overconfident CEOs are more likely to pursue innovation); Ulrike Malmendier et al., *Corporate Financial Policies with Overconfident Managers* (Nat’l Bureau of Econ. Research, Working Paper No. 13570, 2007) [hereinafter Malmendier et al., *Overconfident Managers*], available at <http://www.nber.org/papers/w13570> (linking individual managerial characteristics, particularly overconfidence, to firm financing decisions).

338. See Goel & Thakor, *supra* note 337 (showing that overconfident managers are more likely to win intra-firm promotions); Langevoort, *supra* note 312, at 444 (noting that overconfidence can be a useful and highly adaptive trait in a business environment).

339. See David Hirshleifer et al., *Are Overconfident CEOs Better Innovators?* 67 J. FIN. 1457 (2012); see also Galasso & Simcoe, *supra* note 337 (finding a robust positive association between CEO overconfidence and citation-weighted patent counts, with a larger effect in more competitive industries, in a sample of large public firms from 1980 to 1994).

overconfidence or mild optimism can better align managerial behavior with shareholder interests.³⁴⁰

On the other hand, behavioral corporate finance research also reveals that banks with overconfident CEOs take greater risks than their peer institutions,³⁴¹ and top-performing mutual fund managers tend to trade more following their success—to a degree not explained by other factors—and exhibit worse performance when they do so.³⁴² Studies further show that managerial overconfidence distorts both investment and financing decisions at the firm level;³⁴³ helps explain the volume, type, and financing of mergers and acquisitions activity;³⁴⁴ and is even linked to aggressive accounting and an increased likelihood of financial misreporting.³⁴⁵

All in all, the evidence makes clear that managerial overconfidence and certain other deviations from strict rationality can survive—sometimes even thrive on—intra-firm selection processes. Most importantly, both theory and the rapidly accumulating evidence also show that behavioral phenomena like managerial overconfidence indeed exert significant, measurable effects on firm-level conduct in the market.

2. *Firms.*—Beyond their potentially superior individual rationality, managers also operate within large, complex business organizations that should be capable of generating better outcomes than individuals do, for a number of reasons. First, when firms have the time and means to learn from experience and repeated feedback, they can develop “organizational repairs”—that is, internal procedures and rules that aim to overcome systematic individual shortcomings.³⁴⁶ The management literature provides anecdotal illustrations, for example, of organizations using maxims intended to remind employees not to make biased attributions; utilizing strategies aimed at collecting sufficient, relevant information; and developing methods for evaluating their information and hypotheses more objectively.³⁴⁷

340. See, e.g., Gervais et al., *Capital Budgeting*, *supra* note 337.

341. See Niu, *supra* note 337.

342. See Puetz & Ruenzi, *supra* note 337.

343. See, e.g., Malmendier & Tate, *CEO Overconfidence*, *supra* note 337; Malmendier & Tate, *Corporate Investment*, *supra* note 337; Malmendier et al., *Overconfident Managers*, *supra* note 337.

344. See Ferris et al., *supra* note 337.

345. See Schrand & Zechman, *supra* note 337.

346. See generally Chip Heath et al., *Cognitive Repairs: How Organizational Practices Can Compensate for Individual Shortcomings*, 20 RES. ORGANIZATIONAL BEHAV. 1, 4–12 (1998) (discussing various common judgment and decision errors and suggesting ways organizations may attempt to correct them and also providing anecdotal evidence for such cognitive repairs).

347. See *id.*

Nevertheless, organizational repairs have limited success and largely are unpredictable, tending to be most efficacious when based on bottom-up learning within the firm in a specific domain.³⁴⁸ These characteristics, however, do not apply to most of the significant antitrust-related tasks managers face, which concern judgments and decisions regarding the firm's overall pricing or distribution strategy, strategic alliances with actual or potential competitors, mergers and acquisitions, and so on. The judgments and choices required in such cases are made infrequently, at the highest management levels, and usually offer only limited and noisy feedback, all of which make systemic organizational repairs unlikely.³⁴⁹

Second, managers may better approximate rational action simply because they function as agents of the firm.³⁵⁰ There is some evidence that agents—who operate on behalf of others—act more rationally than individuals acting on their own behalf. For example, the endowment effect—wherein individuals value entitlements they possess more highly than identical ones they do not hold³⁵¹—was not manifested by experimental participants taking the role of agents and transacting on behalf of their principals.³⁵² In the same vein, the behavioral evidence suggests

348. *Cf. id.* at 12–16 (discussing various classifications of repairs along different dimensions and their likely efficacy).

349. *See id.* at 12–15 (discussing methods of social feedback). *See generally supra* notes 298–99 and accompanying text (discussing factors that make learning difficult in many situations).

350. The agency relationship between managers and firms also generates some disadvantages, most notably due to the potential divergence of the parties' self-interest, which is of lesser concern here. For further background on managerial incentives and agency costs, see generally FRANK H. EASTERBROOK & DANIEL R. FISCHER, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 90–108 (1991); Eugene F. Fama, *Agency Problems and the Theory of the Firm*, 88 J. POL. ECON. 288 (1980); Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976); and Oliver E. Williamson, *Managerial Discretion and Business Behavior*, 53 AM. ECON. REV. 1032 (1963). For a review of more recent corporate governance research, see Bebchuk & Weisbach, *supra* note 314.

351. *See* Daniel Kahneman et al., *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, J. ECON. PERSP., Winter 1991, at 193, 194–97; Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. ECON. BEHAV. & ORG. 39, 43–47 (1980) (describing the endowment effect and providing examples of its application in business strategies and everyday life); *see also* Russell Korobkin, *The Endowment Effect and Legal Analysis*, 97 NW. U. L. REV. 1227 (2003) (applying the endowment effect to several areas of law).

352. Jennifer Arlen et al., *Endowment Effects Within Corporate Agency Relationships*, 31 J. LEGAL STUD. 1, 31–32 (2002) (finding that experimental participants acting as agents did not exhibit a significant endowment effect because they framed entitlements in terms of exchange value). Another study found a significant decrease in fairness concerns when participants in a bargaining transaction acted as agents owing a duty—such as that of corporate managers—to maximize the return to the principal. *See* Kent Greenfield & Peter C. Kostant, *An Experimental Test of Fairness Under Agency and Profit-Maximization Constraints (With Notes on Implications for Corporate Governance)*, 71 GEO. WASH. L. REV. 983, 1000, 1003–04 (2003).

that egocentric biases are less likely to impact judgments made on behalf of others insofar as the agent has not adopted the principal's perspective.³⁵³

The better alignment of agent judgment and choice with rational action, however, would be of limited assistance to managers in overcoming those judgment and decision errors they manifest with respect to major corporate decisions. For one, even the limited evidence of agents' increased rationality pertains only to a few of those behavioral phenomena that can impact antitrust-relevant behavior. Furthermore, agents' rationality advantages over principals do not apply to most antitrust-relevant managerial tasks. The experimental elimination of agents' endowment effect, for example, was driven by participants' framing of the entitlements they traded based on the exchange value of those entitlements.³⁵⁴ The impact of loss aversion on key antitrust-relevant decisions, on the other hand, concerns the managers' own strategic decisions about the overall course of the firm rather than about entitlements such as goods held by the firm for routine transactions.³⁵⁵ Agents' advantage regarding egocentric biases similarly is unlikely to pertain to judgments of their own managerial ability and expertise. More generally, the greater rationality of agents is less applicable to managers' judgments and decisions concerning their own abilities, plans, and performance.³⁵⁶

353. For instance, much of the evidence of optimistic bias comes from studies that compare participants' beliefs about their own prospects with their beliefs about the prospects of others. Hence the evidence that shows a systematic bias with respect to beliefs about oneself implies an unbiased (or at least a less optimistic) view of the prospects of third parties. See, e.g., Tor, *Entry*, *supra* note 2, at 505–08 (citing some of the key studies showing overoptimistic judgments). Similarly, the evidence regarding the moderating role of preference intensity on the processes of optimistic overconfidence, *id.* at 520–22 (discussing this evidence), also implies that agents may be less biased when making judgments on behalf of their principals.

354. See, e.g., Daniel Kahneman et al., *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. POL. ECON. 1325, 1325 (1990) (finding no endowment effect when using induced-value tokens); Amos Tversky & Daniel Kahneman, *Loss Aversion in Riskless Choice: A Reference-Dependent Model*, 106 Q.J. ECON. 1039, 1055 (1991) (“[R]eluctance to sell is surely absent in routine commercial transactions, in which goods held for sale have the status of tokens for money.”). But see Ian Bateman et al., *A Test of the Theory of Reference-Dependent Preferences*, 112 Q.J. ECON. 479 (1997) (finding some loss aversion for monetary payoffs); Ian Bateman et al., *Testing Competing Models of Loss Aversion: An Adversarial Collaboration*, 89 J. PUB. ECON. 1561, 1576–77 (2005) (same). See generally Nathan Novemsky & Daniel Kahneman, *The Boundaries of Loss Aversion*, 42 J. MARKETING RES. 119 (2005) (exploring the boundary conditions of loss aversion).

355. Tor & Rinner, *supra* note 7, at 829–30 (applying this distinction to managers' decisions to employ RPM in their distribution systems); see also Eric van Dijk & Daan van Knippenberg, *Buying and Selling Exchange Goods: Loss Aversion and the Endowment Effect*, 17 J. ECON. PSYCHOL. 517, 517 (1996) (finding that experimental market participants exhibited loss aversion for exchange goods when traders were uncertain about future exchange prices).

356. Cf. Tor, *Entry*, *supra* note 2, at 535–36 (arguing that the advantage of financiers over new entrants in making decisions regarding new ventures diminishes when they adopt the entrants' perspective). See generally MAX H. BAZERMAN & DON A. MOORE, *JUDGMENT IN MANAGERIAL DECISION MAKING* (7th ed. 2009) (reviewing and applying individual-level phenomena to managerial decision making); LEE ROY BEACH & TERRY CONNOLLY, *THE*

Third, corporate managers nonetheless may exhibit superior performance because they often do not make significant judgments and decisions alone but in a small group of top managers or the corporate board of directors, with the benefits of multiple viewpoints, cumulative experience, and deliberation.³⁵⁷

Despite its intuitive appeal, however, the empirical evidence does not support the claim that boards (or top management groups) will reliably avoid those systematic decision errors that plague individual managers. Instead, the evidence shows small groups outperform individual rationality in some cases but at other times exhibit similar or even more extreme judgmental biases and decision errors, with their ultimate performance largely dependent on case-specific variables.³⁵⁸

PSYCHOLOGY OF DECISION MAKING: PEOPLE IN ORGANIZATIONS (2d ed. 2005) (same); Leigh Thompson & Jo-Ellen Pozner, *Organizational Behavior*, in SOCIAL PSYCHOLOGY: HANDBOOK OF BASIC PRINCIPLES 913, 914 (Arie W. Kruglanski & E. Tory Higgins eds., 2d ed. 2007) (reviewing research on individual decision making in organizations and stating that “[t]he fundamental theme is that organizational decision makers . . . are hopelessly victimized by their own nonrational thought processes”).

357. See Stephen M. Bainbridge, *Why a Board? Group Decisionmaking in Corporate Governance*, 55 VAND. L. REV. 1, 19–31 (2002) (arguing that boundedly rational managers function optimally on a board with diverse viewpoints); Cass R. Sunstein, *Group Judgments: Statistical Means, Deliberation, and Information Markets*, 80 N.Y.U. L. REV. 962, 978–79 (2005) (discussing the intuitive appeal of reliance on deliberating groups to make better judgments and decisions than individuals and their extensive use in various domains, including corporate boards). *But see* Donald C. Langevoort, *The Human Nature of Corporate Boards: Law, Norms, and the Unintended Consequences of Independence and Accountability*, 89 GEO. L.J. 797, 800 (2001) (asserting that for a board to function optimally, some board members may need to function as mediators to mitigate the group’s inevitable polarization); Donald C. Langevoort, *Essay, Resetting the Corporate Thermostat: Lessons from the Recent Financial Scandals About Self-Deception, Deceiving Others and the Design of Internal Controls*, 93 GEO. L.J. 285, 315–16 (2004) (advocating enhanced internal-reporting controls that increase as the risk of self-serving managerial behavior increases).

358. See Daniel Gigone & Reid Hastie, *Proper Analysis of the Accuracy of Group Judgments*, 121 PSYCHOL. BULL. 149 (1997) (reviewing the literature and concluding that groups excel as judges only under limited conditions and tend to perform at the level of their average members when performing tasks whose solutions are not easily demonstrable); Gayle W. Hill, *Group Versus Individual Performance: Are N + 1 Heads Better Than One?*, 91 PSYCHOL. BULL. 517, 535 (1982) (providing an extensive literature review finding across a variety of tasks that “group performance was generally qualitatively and quantitatively superior to the performance of the average individual” but that it was “often inferior to that of the best individual in a statistical aggregate and often inferior to the potential suggested in a statistical pooling model”); Norbert L. Kerr et al., *Bias in Judgment: Comparing Individuals and Groups*, 103 PSYCHOL. REV. 687 (1996) (reviewing the empirical literature on the relative susceptibility of individuals and groups to systematic judgmental biases and finding that there is no clear or general pattern); Norbert L. Kerr & R. Scott Tindale, *Group Performance and Decision Making*, 55 ANN. REV. PSYCHOL. 623 (2004) (reviewing some of the main findings in this area); John M. Levine & Richard L. Moreland, *Small Groups*, in 2 THE HANDBOOK OF SOCIAL PSYCHOLOGY, *supra* note 87, at 415, 438–39 (same). *But see* R. Scott Tindale et al., *Group Decision Making*, in THE SAGE HANDBOOK OF SOCIAL PSYCHOLOGY 381 (Michael A. Hogg & Joel Cooper eds., 2003) (reviewing a number of research strands in group research and arguing that they show the general superiority of groups, despite some unique biases and problems in their decision making). For

Moreover, beyond their limited capacity to ameliorate individuals' errors, some common characteristics of group decision making—most notably deliberation—can generate additional, group-level biases.³⁵⁹ Groups, for instance, may exhibit “groupthink,” promoting an erroneous consensus that does not reflect the information held by individual group members.³⁶⁰ Their deliberations, instead of leading to a superior integration

examples of specific studies comparing individuals and groups, see Linda Argote et al., *The Base-Rate Fallacy: Contrasting Processes and Outcomes of Group and Individual Judgment*, 46 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 296 (1990), finding that group discussion amplifies judgment by representativeness when individuating information is informative but also increases the normatively appropriate impact of base rates when information is not representative; Roger Buehler et al., *Collaborative Planning and Prediction: Does Group Discussion Affect Optimistic Biases in Time Estimation?*, 97 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 47 (2005), detailing studies showing an optimistic bias for both individual and group predictions, with the latter being more optimistic than those generated individually; Chip Heath & Rich Gonzalez, *Interaction with Others Increases Decision Confidence But Not Decision Quality: Evidence Against Information Collection Views of Interactive Decision Making*, 61 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 305 (1995), arguing that interaction with others in the decision-making process increases the decider's confidence but not his decision quality; L. Robin Keller et al., *An Examination of Ambiguity Aversion: Are Two Heads Better than One?*, 2 JUDGMENT & DECISION MAKING 390 (2007), finding that a majority of dyads exhibited greater ambiguity aversion than two individual subjects' average; Richard F. Martell & Mae R. Borg, *A Comparison of the Behavioral Rating Accuracy of Groups and Individuals*, 78 J. APPLIED PSYCHOL. 43 (1993), finding that groups' delayed ratings of the behavior of others were more accurate than those of individuals but demonstrated greater response bias; Paul W. Paese et al., *Framing Effects and Choice Shifts in Group Decision Making*, 56 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 149, 160–63 (1993), finding, *inter alia*, that groups can increase or decrease individual framing effects depending on how decisions are presented; and Glen Whyte, *Escalating Commitment in Individual and Group Decision Making: A Prospect Theory Approach*, 54 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 430 (1993), finding that groups exhibit more extreme escalation of commitment.

359. See Joyce Berg et al., *The Individual Versus the Aggregate*, in JUDGMENT AND DECISION-MAKING RESEARCH IN ACCOUNTING AND AUDITING 102 (Robert H. Ashton & Alison Hubbard Ashton eds., 1995) (developing a framework for comparing individual performance to group settings and providing evidence of, among other things, group-level biases and individual biases that extend to groups, concluding that the impact of aggregation on individual-level biases varies widely); Sunstein, *supra* note 357, at 984–86 (discussing the role of information and social influence in contributing to the failure of deliberation in groups to consistently produce rational outcomes). See generally BLACKWELL HANDBOOK OF SOCIAL PSYCHOLOGY: GROUP PROCESSES (Michael A. Hogg & R. Scott Tindale eds., 2001) (providing a collection of articles reviewing group processes that introduce additional complexity and phenomena beyond those found in individuals).

360. See, e.g., IRVING L. JANIS, GROUPTHINK (2d ed., rev. 1983) (providing the original development of the concept and its applications); Robert S. Baron, *So Right It's Wrong: Groupthink and the Ubiquitous Nature of Polarized Group Decision Making*, 37 ADVANCES EXPERIMENTAL SOC. PSYCHOL. 219 (2005) (reviewing thirty years of research and debate over Janis's groupthink model and concluding, *inter alia*, that groupthink-like phenomena are common in mundane, temporary, and even minimal groups, though not universally part of group decision making); James K. Esser, *Alive and Well After 25 Years: A Review of Groupthink Research*, 73 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 116 (1998) (providing a summary of empirical research on groupthink theory). See generally Robert J. MacCoun, *Comparing Micro and Macro Rationality*, in JUDGMENTS, DECISIONS, AND PUBLIC POLICY 116, 121–26 (Rajeev

of group members' information and perspectives, can cause group polarization so that the resulting collective view of the group is more extreme than the individual members' predeliberation tendencies.³⁶¹ Hence, while senior management's collective judgment and decision making can and will sometimes generate superior performance, there is little reason to believe they will approximate the predictions of rational models across the board.

Finally, corporate governance scholarship suggests that in reality corporate boards possess limited efficacy and often are dominated by CEOs and senior management.³⁶² Even with the gradual shift in recent years towards increased board power at the expense of management, corporate boards are unlikely to shape most senior management's significant, antitrust-relevant judgments and decisions.³⁶³

In sum, while the market behavior of firms and of the managers who make judgments and decisions on their behalf may approximate rational models in some cases, the empirical behavioral evidence reveals a more complex reality. Behavioral antitrust scholars who assume that firms replicate all (and only) individual-level deviations from strict rationality often will be wrong and so will those analysts who make the mirroring assumption that intra-firm processes guarantee strictly rational conduct.

Gowda & Jeffrey C. Fox eds., 2002) (reviewing variables that sometimes cause groups to exhibit less accurate judgments than individuals).

361. See, e.g., Daniel J. Isenberg, *Group Polarization: A Critical Review and Meta-Analysis*, 50 J. PERSONALITY & SOC. PSYCHOL. 1141 (1986) (examining polarization studies focusing on the two central accounts for this effect: social comparison and persuasive argumentation processes); see also Sunstein, *supra* note 357, at 984–1006 (reviewing biases that may be generated by group deliberation and dividing their underlying mechanisms into informational influences and social pressures).

362. See, e.g., LUCIAN BEBCHUK & JESSE FRIED, *PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION* (2004) (exploring the ways in which managerial power and influence have shaped the executive-compensation landscape); Iman Anabtawi, *Explaining Pay Without Performance: The Tournament Alternative*, 54 EMORY L.J. 1557, 1574–79 (2005) (analyzing the relationship between managerial power and boards' not entering into efficient contracts with managers); Sanjai Bhagat & Bernard Black, *The Non-Correlation Between Board Independence and Long-Term Firm Performance*, 27 J. CORP. L. 231, 263 (2002) (reporting data suggesting that greater board independence does not lead to greater firm performance). See generally Renée B. Adams et al., *The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey*, 48 J. ECON. LITERATURE 58 (2010) (reviewing theoretical models and empirical findings concerning the behavior and effectiveness of corporate boards of directors); Benjamin E. Hermalin & Michael S. Weisbach, *Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature*, FED. RES. BANK N.Y. ECON. POL'Y REV., Apr. 2003, at 7 (providing an earlier and an updated review of the relevant economic literature on board composition and actions and their effects on firm performance).

363. See, e.g., Tor & Rinner, *supra* note 7, at 851–52 (discussing the limited efficacy of boards in the RPM context).

IV. The Third Mistake: Confusing Bounded Rationality with Anticompetitiveness

Unlike the first two categories of mistakes—which primarily cause errors in scholars’ understanding of antitrust actors’ behavior—the third and last category of mistakes leads to errors in the normative evaluation of deviations from standard assumptions of rationality. Many commentators mistakenly equate deviations from these assumptions with privately or socially suboptimal behavior and even with anticompetitive outcomes that necessarily would justify antitrust scrutiny.³⁶⁴ This mistaken chain of inference leads analysts to embrace or reject the behavioral approach based on their respective antitrust policy predispositions rather than the merits of the evidence. In reality, however, many systematic deviations from strict rationality are of no antitrust concern: some are purely procompetitive or at least procompetitive on balance, and even some socially undesirable consequences of bounded rationality do not generate sufficient competitive harm to merit antitrust intervention.

A. Procompetitive Deviations

Some deviations from the assumptions of rationality clearly are procompetitive. Standard models in antitrust law and economics assume, for instance, that producers determine their behavior in the market based solely on the expected value of the different options available to them.³⁶⁵ Such producers, for instance, form and maintain cartels whenever the expected economic benefits of cartelization outweigh its expected economic costs.³⁶⁶ Cartels can be extremely profitable, and the probability of their detection still is quite low, although the advent of successful leniency

364. See, e.g., Cooper & Kovacic, *supra* note 7 at 800 (noting that “[m]uch work in the nascent field of behavioral antitrust prescribes expanded use of competition law to correct consumer harm that arises from biased firm behavior”); Ginsburg & Moore, *supra* note 7, at 96–98 (arguing that “BE could serve only to broaden, rather than to narrow[,] the meaning of the term ‘unfair’”); Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 106 (expressing the view that while “[l]ike foregoing antitrust economics movements, Behavioral Antitrust is on its face result-neutral, . . . as it has been discussed to date, it has a political slant. Until very recently, all of the writing advocating Behavioral Antitrust favored increased antitrust enforcement.”).

365. More precisely, although it is not material for the purposes of the present example, standard models assume that firms behave as to maximize risk-adjusted net present value. See, e.g., Tor, *Entry*, *supra* note 2, at 489–90 (discussing the net present value concept and its application to antitrust economics). For other general applications, see AREEDA & HOVENKAMP, *supra* note 3; RICHARD A. BREALEY ET AL., *PRINCIPLES OF CORPORATE FINANCE* 23, 101–05, 127–45, 801–05 (10th ed. 2011); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 34–35 (1988).

366. See generally John M. Connor, *Global Cartels Redux: The Lysine Antitrust Litigation*, in *THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY* 300, 305–06 (John E. Kwoka, Jr. & Lawrence J. White eds., 5th ed. 2009) (discussing the economics and law of cartels).

programs has increased it dramatically.³⁶⁷ So, with strictly rational managers, cartels would have been not only common—as they appear to be³⁶⁸—but ubiquitous.

Yet if some real managers are law abiding, or at least attribute some value to legal compliance beyond accounting for expected sanctions alone, the real incidence of cartelization is lower than it would have been in a world populated with strictly rational actors. Whether they are more law-abiding because of moral considerations, due to social norms, or for fear of the extralegal costs associated with criminal conviction, real-world, boundedly rational managers thus may act more procompetitively than standard antitrust models assume.

In principle, a similar outcome—of procompetitive deviations from the assumption of rationality—should occur whenever managers place some positive value on compliance with the antitrust laws beyond what the expected legal sanction merits. Such monopolists, for example, may avoid some profitable predatory actions toward weaker competitors. But the forces that contribute to legal compliance beyond that predicted by standard models are weaker in most areas of antitrust law beyond simple horizontal collusion, given the current dearth of bright-line rules that would make clear what conduct is illegal.³⁶⁹ When very little conduct clearly is illegal, neither moral intuitions nor social norms of legal compliance are likely to

367. See, e.g., Christopher R. Leslie, *Trust, Distrust, and Antitrust*, 82 TEXAS L. REV. 515, 642–43 (2004) (discussing the success of the Department of Justice’s leniency program); Nathan H. Miller, *Strategic Leniency and Cartel Enforcement*, 99 AM. ECON. REV. 750 (2009) (developing a model of cartel behavior that helps overcome the difficulty that active cartels are never observed in the data, testing it empirically, and finding evidence consistent with enhanced detection and deterrence following the introduction of the Department of Justice leniency program); Gordon J. Klein, *Cartel Destabilization and Leniency Programs: Empirical Evidence* (Ctr. for European Econ. Research, Discussion Paper No. 10-107, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1854426## (offering econometric estimations based on OECD data for 23 countries and a period of 20 years that show positive and significant effects of leniency programs on the competition intensity as measured by price–cost margins).

368. See Stucke, *At the Gate*, *supra* note 2, at 565–68 (noting the susceptibility of certain industries, even those with low entry barriers, to price fixing).

369. The lack of bright line rules is apparent, for instance, in monopolization law. See, e.g., Daniel A. Crane, *Rules Versus Standards in Antitrust Adjudication*, 64 WASH. & LEE L. REV. 49, 66 (2007) (“Monopolization law has always been more flexible and fact-sensitive. . . . Section 2 [of the Sherman Act] . . . contains no clear target [for adjudication] because all of a firm’s amorphous conduct may be relevant to answering the question whether it unlawfully monopolized.”); Tor, *supra* note 290, at 859 (explaining that “the common-law, open-ended monopolization standard of Section 2 incorporates no explicit rule-like elements”); see also William F. Adkinson, Jr. et al., *Enforcement of Section 2 of the Sherman Act: Theory and Practice* 16 (FTC & Dep’t of Justice Working Paper on Section 2 Hearings, 2008), available at <http://www.ftc.gov/os/sectiontwohearings/docs/section2overview.pdf> (“Section 2’s brief language offers little guidance in identifying prohibited conduct. Rather than defining its central concept—‘monopolize’—the statute leaves that task to the courts.” (footnote omitted)).

exert a pro-compliance influence.³⁷⁰ Similarly, the lack of criminal liability in practice for most categories of antitrust violations removes managerial concerns about those extralegal sanctions that follow criminal convictions.³⁷¹

Other nonstandard managerial preferences beyond valuing legal compliance can also generate procompetitive behavior. Oligopolistic coordination, for instance, is a common practice that causes significant competitive harm—much like the effect of explicit cartels—but is not prohibited by the antitrust laws.³⁷² Both theoretical models and experimental evidence suggest, however, that oligopolists that seek to protect and advance their market share, rather than simply to maximize profits, may find it harder to coordinate their behavior.³⁷³ Hence the common preference for a superior relative position sometimes will generate more competitive markets.³⁷⁴

More commonly, however, even while not purely procompetitive, deviations from the assumptions of rationality can still be procompetitive on balance. Managerial overconfidence is a case in point: we saw that firms may select overconfident managers for a variety of reasons, and these managers impact firm-level behavior.³⁷⁵ At times, managerial overconfidence leads to inefficient firm-level outcomes, as when it distorts investment or financing decisions.³⁷⁶ Other effects appear more positive, such as where firms with overconfident managers generate more innovative activity.³⁷⁷ Insofar as this increased innovative activity facilitates dynamic competition in the market more broadly, its procompetitive benefits may well outweigh the static efficiency losses generated by overconfidence-

370. See, e.g., Yuval Feldman & Alon Harel, *Social Norms, Self-Interest and Ambiguity of Legal Norms: An Experimental Analysis of the Rule vs. Standard Dilemma*, 4 REV. L. & ECON. 81 (2008) (offering experimental evidence that social norms of noncompliance, but not those of compliance, exert a significant effect on the level of compliance when more ambiguous legal standards (rather than bright-line rules) are concerned).

371. Cf. V.S. Khanna, *Corporate Criminal Liability: What Purpose Does It Serve?*, 109 HARV. L. REV. 1477, 1492 (1996) (arguing that corporate criminal liability has “more severe and, arguably, unique sanctions (such as stigma)] and a greater message-sending role than corporate civil liability”); Daniel S. Nagin, *Criminal Deterrence Research at the Outset of the Twenty-First Century*, 23 CRIME & JUST. 1, 19–22 (1998) (discussing evidence for the link between formal and informal criminal sanctions and referring to stigmatization as “the foundation of the deterrent effect”). See generally Uri Gneezy & Aldo Rustichini, *Incentives, Punishment, and Behavior*, in ADVANCES IN BEHAVIORAL ECONOMICS 572 (Colin F. Camerer et al. eds., 2004).

372. See POSNER, *supra* note 3, at 136–69; Louis Kaplow, *On the Meaning of Horizontal Agreements in Competition Law*, 99 CALIF. L. REV. 683 (2011).

373. See *supra* notes 117–21 and accompanying text.

374. See *supra* notes 117–21 and accompanying text.

375. See *supra* notes 334–38, 372 and accompanying text.

376. See Armstrong & Huck, *supra* note 7, at 26; Leslie, *supra* note 3, at 275–77; Tor, *Entry*, *supra* note 2, at 505–08.

377. Tor, *Entry*, *supra* note 2, at 540.

driven behavior.³⁷⁸ Moreover, although overconfidence can lead to excessive managerial risk taking, it may in fact bring managers' behavior closer to—rather than farther away from—rationality when managers are too risk averse for other reasons.³⁷⁹

Optimistic overconfidence may also have procompetitive-on-balance consequences in other market settings. The phenomenon of excess entry into manufacturing industries, for instance, is partly driven by the psychology of overconfidence.³⁸⁰ New entry is inefficient for those entrants who are making boundedly rational entry attempts with a negative net present value.³⁸¹ Moreover, excess entry typically is not procompetitive in the sense of exerting greater pressure on incumbents, notwithstanding the intuitive appeal of this proposition.³⁸² In the short term, overconfident entrants diminish the likelihood that other entrants will survive and prosper, with limited impact on incumbents.³⁸³ But even while generating static efficiency losses, overconfident entry may be beneficial on balance: From a dynamic perspective, entrants' efforts can help other market participants, including future entrants, to identify and develop new products and services or to exploit potential efficiencies.³⁸⁴ And while the ultimate balance of benefits and costs is not easily quantified, the beneficial, dynamic spillover effects of excess entry could well outweigh its static costs.³⁸⁵

378. *Id.* at 542.

379. *See, e.g.*, Gervais et al., *Capital Budgeting*, *supra* note 337, at 1749–50 (arguing that overconfidence can balance out managers' risk aversion); Richard H. Thaler, *Mental Accounting Matters*, 12 J. BEHAV. DECISION MAKING 183, 200–01 (1999) (detailing managers' propensity to suffer from "myopic loss aversion"); Tor, *Entry*, *supra* note 2, at 523 (discussing the incentives for managers to be overconfident but also pointing out that managers suffer professional and reputational effects if they fail); *see also* Daniel Kahneman & Dan Lovallo, *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking*, 39 MGMT. SCI. 17 (1993) (discussing factors that contribute to managers' overly cautious conduct yet overly optimistic attitudes).

380. *See* Tor, *Entry*, *supra* note 2, at 490–91, 504–08 (describing the high rate of negative net present value entry in the manufacturing industry and the phenomenon of overconfidence); Colin Camerer & Dan Lovallo, *Overconfidence and Excess Entry: An Experimental Approach*, 89 AM. ECON. REV. 306 (1999) (presenting experimental evidence of overconfident entry).

381. *See* Tor, *Entry*, *supra* note 2, at 489–90.

382. *See* Werden et al., *supra* note 7, at 130 (noting that evidence of non-profit-maximizing entry "could suggest that entry is a more potent competitive force than the profit-maximization assumption suggests, but proponents of behavioral antitrust argue that non-profit-maximizing entry almost certainly is unsuccessful," thus finding this behavioral research to be of no direct relevance); Wright & Stone, *supra* note 7, at 385.

383. Tor, *Entry*, *supra* note 2, at 491–92, 522–24 (finding that most new entrants simply replace preceding entrants, while larger, diversifying entrants tend to be less overconfident and to exert more significant pressure on incumbents).

384. *See id.* at 540–43 (describing the consequences of innovative entry for the market).

385. *See id.* at 545 (explaining that there are social costs and social benefits associated with the spillover effect).

B. Inefficient, Competitively Neutral Deviations

Some deviations from strict rationality generate clear efficiency losses but do not raise antitrust concern. For instance, when RPM is legal, some manufacturers use it excessively, even for significant periods of time.³⁸⁶ Boundedly rational RPM is inefficient and harmful for both the manufacturers exercising it and some of their retailers.³⁸⁷ Nevertheless, the behavioral analysis of the practice also shows it is unlikely to generate competitive harm unless it is pervasive in the market or exercised by firms with substantial market power.³⁸⁸

The impact of considerations of fairness offers another example of inefficient, yet not anticompetitive, deviations from the assumptions of rationality. Standard economic theory expects producers fully to exploit their market power, raising product prices or limiting the quantities they produce, to maximize profits.³⁸⁹ Yet both anecdotal evidence and controlled experimental tests suggest that firms do not always fully exploit their market power when it would have been rational to do so in a world populated solely by rational actors.³⁹⁰ For example, firms enjoying short-term market power due to some external shock—such as when hurricane damage causes a dramatic increase in the demand for certain products—often avoid raising prices to market-clearing levels.³⁹¹ Producers may not exploit their power fully because they believe that charging higher prices is unfair or due to concerns about long-term reputational harm when fairness-minded consumers react negatively to these price hikes.³⁹² Either way, such fairness-minded behavior not only deviates from the standard prediction in

386. See generally Tor & Rinner, *supra* note 7, at 819–39 (describing why boundedly rational manufacturers have tended to rely upon RPM).

387. See *id.* at 839–42 (describing studies showing that RPM is inefficient and has become less popular).

388. See *id.* at 857 (suggesting that firms lacking market power are less capable of causing competitive harm).

389. THE ANTITRUST REVOLUTION, *supra* note 366, at 8–10. On occasion, rational firms will not exploit their market power fully, such as when they want to make potential new entry less attractive or wish to avoid scrutiny by the enforcement agencies. See, e.g., Paul Milgrom & John Roberts, *Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis*, 50 *ECONOMETRICA* 443 (1982) (reviewing the early literature on limit pricing and providing a model showing that the practice is credible when potential entrants have incomplete information about incumbents' cost); see also PHILLIP AREEDA ET AL., *ANTITRUST ANALYSIS: PROBLEMS, TEXT, AND CASES* 488 (6th ed. 2004) (discussing unexploited market power).

390. See Kahneman et al., *supra* note 133 (offering a series of experimental demonstrations of how fairness impacts market choices, including the avoidance of fully exploiting short-term market power); see also Raymond F. Gorman & James B. Kehr, *Fairness as a Constraint on Profit Seeking: Comment*, 82 *AM. ECON. REV.* 355 (1992) (offering follow-up evidence with respect to business managers).

391. See Kahneman et al., *supra* note 133, at 738.

392. Bailey, *supra* note 81, at 6–7; see also Reeves & Stucke, *supra* note 2, at 1579–80 (suggesting that Merck did not sell a patented drug at monopoly prices due to potential adverse reputational effects).

antitrust economics but also causes a misallocation of social resources. In the face of a shortage, the market serves to match the limited available products or services with those consumers who place the highest value on them, as manifested by the prices they are willing to pay.³⁹³ When producers avoid raising prices, however, they effectively allocate their goods through an inefficient queue system, on a first-come basis.

The illustrations offered here thus suffice to show how boundedly rational decision behavior by producers and consumers can generate efficiency losses that still fall short of raising antitrust concerns.

C. *Normative Bias?*

In principle, the behavioral approach is normatively neutral, an empirically driven effort to offer antitrust law a better understanding of market behavior.³⁹⁴ Yet in practice, behavioral antitrust analyses currently more often promote a greater role for antitrust law, rather than a more limited one, due to the combined effects of the fundamental methodological error and the current, consistently prodefendant use of rationality assumptions in antitrust doctrine due to the Court's concerns regarding the costs and effects of antitrust litigation.³⁹⁵ This state of affairs is not inevitable, however, and a well-developed behavioral approach could offer an important set of tools for antitrust scholars irrespective of their policy predispositions.³⁹⁶

The fundamental methodological error contributes both directly and indirectly to the tendency of behavioral antitrust to support a more active role for antitrust law. Directly, because proponents who treat behavioral phenomena as broad assumptions instead of concrete evidence tend to overstate the anticompetitive harm of deviations from assumptions of rationality. In fact, however, we saw that boundedly rational behavior can be purely procompetitive or procompetitive on balance, and not even all of its inefficient manifestations call for antitrust intervention.³⁹⁷ Indirectly, since proponents who neglect the behavioral analysis of antitrust

393. This is true, of course, only under the common, if oft-criticized, economic approach that equates willingness to pay with utility, an approach that still underpins antitrust law's focus on protecting the competitive process.

394. Tor, *Behavioral Methodology*, *supra* note 1, at 314.

395. *See, e.g.*, *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993) (holding that a "reasonable expectation of recover[y]" must be present to sustain antitrust liability for predatory pricing because otherwise the investment would be irrational).

396. *Cf.* Tor, *Behavioral Methodology*, *supra* note 1, at 314–17 (explaining that the normatively neutral behavioral toolbox can serve different normative goals from efficiency to justice or fairness).

397. *See supra* subparts IV(A)–(B).

institutions naturally tend to focus on market participants' limitations,³⁹⁸ implicitly assuming that the enforcement agencies or the courts can and should respond to these limitations.³⁹⁹ This is not to say, of course, that the agencies or the courts can never offer effective responses to anticompetitive, boundedly rational behavior, only that the limits of these institutions also require consideration, as already explained.⁴⁰⁰

Nevertheless, the current tendency of much behavioral antitrust scholarship towards supporting more assertive doctrines is also a testament to the present state of antitrust law. The courts rely on assumptions of rationality to constrain antitrust claims in many areas, including monopolization, horizontal conspiracies, vertical price restraints, and more.⁴⁰¹ Against this backdrop, the exposure by the behavioral approach of situations where rationality assumptions miss the mark naturally tends to challenge those rationality-based doctrines that limit the reach of the antitrust laws.

The empirical behavioral evidence, however, should also be used to caution against antitrust intervention in appropriate cases. For one, Part III already noted that closer attention to the complex relationship between antitrust institutions and rationality exposes, *inter alia*, some limits of courts and enforcement agents that might otherwise go unnoticed.⁴⁰²

Furthermore, while behavioral findings generally will not immunize specific defendants against antitrust liability, because they do not guarantee that a given firm necessarily will act in a particular way, they can be marshaled by defendants as well as by plaintiffs. This can be illustrated by the Court's ruling that Kodak could have exercised power in the aftermarket for the sale of copier parts despite competition in the primary market for copiers.⁴⁰³ The behavioral approach recognizes the possibility of a sufficient proportion of boundedly rational consumers that would have provided Kodak with aftermarket power and justified the denial of summary judgment.⁴⁰⁴ At trial, however, Kodak could have argued that its aftermarket tying was procompetitive on balance. Kodak might have

398. See *supra* Part III (noting also that behavioral opponents often make a mirror-image mistake: assuming that behavioral phenomena are of no antitrust concern because of the institutional corrections provided by markets and firms).

399. See, e.g., Reeves & Stucke, *supra* note 2, at 1577-81 (surveying areas of antitrust policy that could be more strongly enforced using behavioral antitrust).

400. See *supra* notes 249-51 and accompanying text (briefly discussing the limits of antitrust enforcement institutions); see also Tor, *Entry, supra* note 2, at 546-47 (noting the insurmountable challenges that would face regulators who wished to identify and prevent overconfident entry).

401. See *supra* subpart I(A).

402. See Cooper & Kovacic, *supra* note 7 (examining the implications of some potential behavioral factors for agency decision making); Tor, *Entry, supra* note 2, at 546-47 (illustrating the limits enforcers face when regulating negative-expected-value entry).

403. See *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 471 (1992).

404. See *supra* notes 66-74 and accompanying text (discussing the case in more detail).

needed to preserve its brand reputation with real-world, boundedly rational consumers who—unlike their hypothetical, rational counterparts—might have misattributed to the manufacturer problems with copiers that were serviced with non-Kodak parts.⁴⁰⁵ Assuming such evidence were available, combined with the finding of a competitive primary market for copiers, a behaviorally informed evaluation of *Kodak* might have favored the defendant rather than the plaintiffs.

V. Two Essential Lessons

The fundamental methodological error often leads astray scholars who try their hands at behavioral antitrust. Proponents and opponents who mistakenly treat concrete behavioral phenomena as broad hypothetical assumptions can fail to recognize the impact of variability and heterogeneity on market behavior or the complex effects of institutions on rationality in antitrust settings. They also tend to equate bounded rationality with anticompetitiveness although that frequently is not the case. Yet the alternative—namely a more careful, empirically driven behavioral analysis of antitrust law—is fraught with significant challenges. Some of these challenges are outside the scope of the present analysis because they are common to applications of behavioral findings to the law more generally,⁴⁰⁶ but this Part charts the essential lessons behavioral antitrust already can offer for both doctrine and enforcement policy.

A. *Lesson One: The Value of Case-Specific Evidence in Antitrust Adjudication and Enforcement*

Behavioral antitrust highlights the essential role of case-specific evidence in antitrust adjudication, in merger enforcement actions, and more generally in helping the courts and agencies account for boundedly rational market behavior that is systematic and predictable overall, yet variable, heterogeneous, and differently shaped by antitrust institutions in specific cases.

1. *Antitrust Adjudication.*—Plaintiffs should not be barred from introducing case-specific evidence in appropriate cases in areas such as conspiracy or monopolization.⁴⁰⁷ Courts rely on the rationality assumption

405. I thank Steve Salop for making this observation at our 60th ABA Section of Antitrust Law Spring Meeting panel on behavioral antitrust.

406. See generally Tor, *Behavioral Methodology*, *supra* note 1, at 291–314 (discussing gaps between the focus of behavioral decision researchers and the needs of legal scholarship).

407. See Leslie, *supra* note 3, at 341 (highlighting the need for a more fact-specific inquiry in antitrust cases); see also Reeves, *supra* note 7, at 8–9 (encouraging the agencies to delve into behavioral findings before the federal courts do so); Hal Singer & Andrew Card, *Lessons from Kahneman's Thinking, Fast and Slow: Does Behavioral Economics Have a Role in Antitrust*

to grant summary judgment for defendants unless plaintiffs can show that the alleged conduct could be rational given market conditions. *Matsushita* summarily rejected allegations of a predatory horizontal conspiracy under Section 1 once the Court determined that a conspiracy would have required irrational behavior by the alleged conspirators.⁴⁰⁸ Later on, *Brooke Group* applied similar reasoning to allegations of predatory pricing under Section 2, instituting the recoupment requirement.⁴⁰⁹ More recently, the same rationale was applied in *Weyerhaeuser* to reject predatory bidding allegations.⁴¹⁰

Yet the empirical evidence shows that horizontal conspiracies routinely take place where they could not have been sustained if market participants were strictly rational.⁴¹¹ Behavioral and experimental findings similarly show that dominant firms or monopolists may act in a predatory manner even when doing so would appear irrational under standard assumptions.⁴¹² Such conduct, in fact, can even be rational from the predator's perspective when actual and potential competitors know that market participants may be boundedly rational.⁴¹³

Horizontal conspiracies that are sustained by boundedly rational behavior are no less anticompetitive than strictly rational conspiracies, however. Boundedly rational predatory pricing similarly may harm competition even while benefiting consumers in the short term by offering them lower prices.⁴¹⁴ But the Court's approach dismisses cases of both horizontal conspiracy and predation at the summary judgment stage, before plaintiffs have the opportunity to present actual, case-specific evidence of the alleged anticompetitive conduct.⁴¹⁵

Importantly, the evidence showing that boundedly rational conduct not only exists in the market but sometimes generates anticompetitive effects does not imply that all theories of conspiracy or predation should suffice for

Analysis?, ANTITRUST SOURCE, Aug. 2012, art. 5 at 1, 8 (book review) (discussing the agencies' recent applications of behavioral economics to antitrust issues).

408. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588–90, 595–97 (1986).

409. *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224–25 (1993).

410. *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*, 549 U.S. 312, 318–20, 325–26 (2007).

411. See *supra* notes 111–13 and accompanying text.

412. See *supra* notes 128–31 and accompanying text.

413. See *supra* note 131 and accompanying text.

414. AREEDA & HOVENKAMP, *supra* note 36, ¶ 723a; Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. CHI. L. REV. 263, 266–67 (1981) (explaining that predatory pricing benefits consumers in the short term and may be difficult to distinguish from desirable, aggressive competition).

415. Notably, by lowering the expected sanction for boundedly rational conduct, the Court's restrictive approach also makes such collusive or predatory conduct more attractive to its perpetrators compared to "rational" collusion or predation.

antitrust plaintiffs routinely to proceed beyond summary judgment. Courts and scholars have rightly emphasized the significant social costs of antitrust litigation,⁴¹⁶ which is not only costly but in some cases also risks chilling the same aggressive competition in the marketplace that the antitrust laws seek to foster.⁴¹⁷

Instead, the behavioral lesson is that the law should ignore neither the potentially significant costs of boundedly rational and rationally anticompetitive conduct nor the costs of baseless antitrust litigation or erroneous judicial decisions. Behavioral antitrust militates for balancing those risks and costs of over- and underenforcement, sometimes referred to as type I versus type II errors in antitrust law.⁴¹⁸ However, unlike familiar calls for curbing antitrust complaints to avoid risking overenforcement,⁴¹⁹ behavioral antitrust also recognizes the risks and costs of underenforcement in some real-world markets, where such a risk would not have existed in a hypothetical world populated solely by perfectly rational market participants.

Future behavioral antitrust research will need to flesh out in greater detail and precision the balance of over- and underenforcement costs in key antitrust areas. Besides evaluating the familiar effects of the antitrust laws, such analyses will have to factor in the likelihood of both procompetitive

416. See *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 557–58 (2007) (citing *Asahi Glass Co. v. Pentech Pharms., Inc.*, 289 F. Supp. 2d 986, 995 (N.D. Ill. 2003) (Posner, J., sitting by designation)) (describing the costly nature of discovery in antitrust suits as a justification for increased scrutiny at the motion to dismiss stage); *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 594 (1986) (“[C]utting prices in order to increase business often is the very essence of competition. Thus, mistaken inferences in cases such as this one are especially costly, because they chill the very conduct the antitrust laws are designed to protect.”); Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEXAS L. REV. 1, 4 (1984) (“Antitrust is costly. The judges act with imperfect information about the effects of the practices at stake. The costs of action and information are the limits of antitrust.”).

417. See *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 414 (2004) (emphasizing the slight benefit of antitrust enforcement as compared with the social cost of a “false positive[.]”); *Matsushita*, 475 U.S. at 594 (stating that the mistaken enforcement of antitrust laws can reduce the very competition they are designed to foster); Easterbrook, *supra* note 416, at 4–5 (contending that strict antitrust enforcement has proven very costly by reducing the strategies available to firms).

418. See, e.g., Paul L. Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J.L. ECON. & ORG. 95, 97–100 (2002) (discussing the balancing of type I and type II errors in antitrust analysis). See generally Bruce D. Abramson, *Analyzing Antitrust Analysis: The Roles of Fact and Economic Theory in Summary Judgment Adjudication*, 69 ANTITRUST L.J. 303 (2001) (drawing on this framework to consider the relationship between case-specific evidence and economic theory at the summary judgment stage).

419. See, e.g., Easterbrook, *supra* note 416, at 34–39 (arguing that certain types of antitrust actions either should not be brought at all or are inherently suspect); Joshua D. Wright, *Overshot the Mark? A Simple Explanation of the Chicago School’s Influence on Antitrust*, 5 COMPETITION POL’Y INT’L 1, 11–12 (2009) (arguing that error costs are an important component of the Chicago School’s approach to antitrust and explaining that the overenforcement concern “begins with the presumption that the costs of false convictions in the antitrust context are likely to be significantly larger than the costs of false acquittals”).

and anticompetitive conduct that behavioral forces may enable or even fuel, at least where such conduct is capable of generating substantial benefit or harm to competition.

2. *Merger Enforcement Practices.*—Even the antitrust agencies, which already seek and rely on case-specific evidence in enforcement actions, should reevaluate and adjust some of their merger practices in light of behavioral antitrust. Specifically, the behavioral approach at times can help identify and assess case-specific merger evidence.⁴²⁰ The outcomes of merger investigations depend significantly on both the type of evidence the agencies choose to examine and their interpretation of the evidence they collect. At present, however, the process of evidence generation and interpretation is based in part—both implicitly and explicitly—on assumptions of rationality that occasionally may lead to erroneous merger enforcement outcomes.

Merger investigations frequently use a “hypothetical monopolist” test to delineate the boundaries of the relevant product market, which determine both the merging parties’ market shares and other concentration measures that help predict the likely effects of the merger.⁴²¹ As the *2010 Horizontal Merger Guidelines* explain, “[m]arket definition focuses solely on demand substitution factors, i.e., on customers’ ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.”⁴²² The hypothetical monopolist test focuses on demand substitution, asking how consumers of the product in question would react to a small but significant and nontransitory increase in price (or, a

420. See, e.g., Bennett et al., *supra* note 7, at 124–25 (noting that while deviations from rationality might not significantly affect merger analysis, “there may still be some subtle implications of supply-side biases for mergers which merit further consideration”); Werden et al., *supra* note 7, at 137 (arguing that assessments of mergers should continue to rely solely on neoclassical economics but that these analyses might sometimes be enriched by integrating behavioral insights into demand models).

421. 2010 MERGER GUIDELINES, *supra* note 30, § 4.1. Note that although the structure of these recent guidelines and their emphasis on direct evidence of competitive effects indicates that market definition, and therefore the hypothetical monopolist test, are less central to merger investigations than they previously were, they still play an important role in practice. See Directorate for Fin. & Enter. Affairs Competition Comm., OECD, *Roundtable on Market Definition*, at 11–14, OECD Doc. DAF/COMP(2012)19 (Oct. 11, 2012), available at <http://www.oecd.org/daf/competition/Marketdefinition2012.pdf> (discussing the central role of market definition in competition analysis but noting that in reaction to its specific drawbacks, jurisdictions are implementing new tools and approaches to overcome its limitations in particular cases); see also Baker, *supra* note 186, at 129–31 (surveying the reasons for defining markets in antitrust law). For opposing viewpoints regarding the appropriate role of market definition, see generally Kaplow, *supra* note 186, criticizing, severely, the dominant market definition/market share paradigm, and Werden, *An Answer to Professor Kaplow*, *supra* note 187, arguing that market definition still fulfills a central role in merger enforcement.

422. 2010 MERGER GUIDELINES, *supra* note 30, § 4.

SSNIP).⁴²³ The test “requires that a product market contain enough substitute products so that it could be subject to post-merger exercise of market power significantly exceeding that existing absent the merger.”⁴²⁴

Customer surveys are one common method of data collection for purposes of predicting consumer demand substitution away from the hypothetical monopolist.⁴²⁵ Yet scholars have noted that the surveys designed by the agencies may not take into account the possible impact of framing effects on consumers⁴²⁶: consumers exhibiting framing effects would react more strongly to price increases for the focal product they are surveyed about than to price reductions in substitute products, notwithstanding the analytical equivalence of the two possibilities.⁴²⁷ In the presence of framing effects, therefore, the survey might overestimate consumers’ willingness to switch away from the focal product, suggesting overbroad product markets that underestimate the market share and potentially the power of the focal product.⁴²⁸ A behaviorally informed approach to customer surveys would consider instead the possible effects of framing on survey outcomes in order to reduce the likelihood of bias in determinations of product market boundaries.

The potential impact of new entry again illustrates how behavioral antitrust directs merger evaluation to pay particular attention to case-specific evidence. Entry plays a role in the *Guidelines*’ merger analysis at two distinct stages: First, “rapid entrants”—“[f]irms that are not current producers in a relevant market, but that would very likely provide rapid supply responses with direct competitive impact in the event of a SSNIP, without incurring significant sunk costs”—are included as current market participants.⁴²⁹ The behavioral approach supports the *Guidelines*’ inclusion of rapid entrants in the market since firms that can enter without incurring

423. *Id.* § 4.1.1.

424. *Id.*

425. See Stephen Hurley, *The Use of Surveys in Merger and Competition Analysis*, 7 J. COMPETITION L. & ECON. 45 (2011) (discussing the potential and limitations of surveys in merger enforcement); Graeme Reynolds & Chris Walters, *The Use of Customer Surveys for Market Definition and the Competitive Assessment of Horizontal Mergers*, 4 J. COMPETITION L. & ECON. 411 (2008) (discussing the prevalent use of customer surveys in the U.K.’s merger enforcement process); Darren S. Tucker et al., *The Customer is Sometimes Right: The Role of Customer Views in Merger Investigations*, 3 J. COMPETITION L. & ECON. 551, 576 (2007) (arguing that customers can provide important information regarding several merger issues including, *inter alia*, demand substitution). Note that the reliance on surveys would be more likely where more direct evidence of consumer behavior, such as point-of-sale scanner data for consumer goods, is not available.

426. This is apart from other shortcomings of surveys relying on consumers’ predictions of their likely reactions to hypothetical changes in the market.

427. See Reeves & Stucke, *supra* note 2, at 1533–35 (discussing framing as an explanation for this phenomenon).

428. See Baker, *supra* note 186, at 148–66 (explaining how broadly defined markets underestimate participants’ market shares and vice versa when markets are defined too narrowly).

429. 2010 MERGER GUIDELINES, *supra* note 30, § 5.1.

significant sunk costs typically already are operating in related markets, and their identification necessarily will be based on case-specific evidence. Moreover, the behavioral analysis of entry also shows why such entrants tend to be more successful and to provide more effective competitive discipline of incumbents.⁴³⁰

At the second stage, on the other hand, the *Guidelines* consider potential future entry into the market as a factor that may alleviate concerns regarding the adverse competitive effects of an otherwise harmful merger.⁴³¹ In this respect, merger evaluations ask whether “entry would be timely, likely, and sufficient in its magnitude, character, and scope to deter or counteract the competitive effects of concern.”⁴³² The behavioral approach reveals, however, that rationality-based models understate the likelihood of entry and sometimes overstate its competitive effects.⁴³³ Start-up entry, in particular, is more likely in many markets than traditional models predict but fails at very high rates, while diversifying entry is less common but tends to fare somewhat better over time.⁴³⁴ When seeking to predict the occurrence and impact of potential future entry on the adverse competitive effects of mergers, however, the *Guidelines* do not distinguish explicitly between entry per se and successful entry more specifically.⁴³⁵

In principle, the *Guidelines* leave the agencies room to focus on entry that is more likely to be effective, through the requirement that the prospective entry also be “sufficient.”⁴³⁶ The sufficiency requirement, however, focuses on specific circumstances that limit the efficacy of successful entry—such as greater product differentiation, entrants’ limited capabilities, or reputational barriers to expansion—rather than those making entry less likely to succeed altogether.⁴³⁷ Yet the *Guidelines* also mention in passing the possibility that entry will not be sufficient if it occurs at such a smaller scale, compared to the merging parties, so that the potential

430. See Tor, *Entry*, *supra* note 2, at 494–96 (reviewing evidence for the superior performance of diversifying entrants compared to start-ups); *id.* at 520–31 (explaining the behavioral factors that make diversifying entrants less biased regarding their entry prospects than start-ups are).

431. 2010 MERGER GUIDELINES, *supra* note 30, § 9.

432. *Id.*

433. See Tor, *Entry*, *supra* note 2, at 548–49.

434. See *supra* notes 166–83 and accompanying text.

435. The *Guidelines* allow for circumstances in which “[e]ntry may . . . be insufficient due to constraints that limit entrants’ competitive effectiveness, such as limitations on the capabilities of the firms best placed to enter or reputational barriers to rapid expansion by new entrants.” 2010 MERGER GUIDELINES, *supra* note 30, § 9.3. But this allowance applies only in limited circumstances.

436. *Id.* § 9.

437. *Id.* § 9.3.

entrants will be at a significant competitive disadvantage.⁴³⁸ Without speaking directly to it, this aspect of sufficiency could help account for the systematically different impact of start-up entrants and diversifying entrants, which tend to enter at a smaller versus larger scale, respectively.⁴³⁹

The *Guidelines* also offer a potential role for case-specific evidence here, noting that “[t]he Agencies consider the actual history of entry into the relevant market and give substantial weight to this evidence.”⁴⁴⁰ The *Guidelines* even explain that the “[l]ack of successful and effective entry in the face of non-transitory increases in the margins earned on products in the relevant market tends to suggest that successful entry is slow or difficult.”⁴⁴¹ Nonetheless, the *Guidelines* do fall short of explaining how market-specific evidence could be used to determine whether entry that is otherwise potentially timely, likely, and sufficient will also be successful and effective. This seeming shortcoming may prove problematic only in a limited number of cases, however, since the agencies in practice are quite skeptical of entry as a counterweight to the adverse competitive effects of mergers.⁴⁴²

Finally, besides pointing to the essential role of case-specific evidence in achieving more accurate market definitions or assessments of entry effects, behavioral antitrust also highlights some otherwise unrecognized difficulties in the agencies’ interpretation of quantitative market data in merger analysis.⁴⁴³ Some commentators argue that merger enforcement

438. *Id.* (“Entry by a single firm that will replicate at least the scale and strength of one of the merging firms is sufficient. Entry by one or more firms operating at a smaller scale may be sufficient if such firms are not at a significant competitive disadvantage.”).

439. Tor, *Entry*, *supra* note 2, at 495–96 (noting that start-up entrants start out well behind diversifying entrants and their market share only decreases over time).

440. 2010 MERGER GUIDELINES, *supra* note 30, § 9.

441. *Id.*; see also U.S. DEP’T OF JUSTICE & FTC, COMMENTARY ON THE HORIZONTAL MERGER GUIDELINES 38 (2006) [hereinafter COMMENTARY], available at <http://www.justice.gov/atr/public/guidelines/215247.htm> (noting, in a published commentary on the preceding merger guidelines, that “[i]f a merger does attract entry, that entry still may be insufficient to deter or fully counteract the merger’s anticompetitive effect, or the entrant may take so long to achieve market significance that the merger nevertheless produces sustained anticompetitive effects”).

442. See Werden et al., *supra* note 7, at 130 (discussing COMMENTARY, *supra* note 441, as well as a theoretical model that suggests the limited efficacy of entry in disciplining post-merger unilateral effects).

443. In practice the more sophisticated empirical methods that are an increasingly important component of the agencies’ merger review process play a much smaller role in the courts. *E.g.*, Malcolm B. Coate & Jeffrey H. Fischer, *Why Can’t We All Just Get Along? Structural Modeling and Natural Experiments in Merger Analysis*, 8 EUR. COMPETITION J. 41, 53–70 (2012) (reviewing these advanced methods and noting their limited role in litigated merger cases). On the other hand, the agencies’ greater acceptance of these approaches is manifested by the greater emphasis in Section 2 of the 2010 *Guidelines* on direct and quantitative evidence of merger effects compared to the centrality of indirect inferences from market definition, market share, and concentration measures in the preceding 1992 *Horizontal Merger Guidelines*. Compare 2010

need not be concerned with behavioral findings because it is based on real-world data on demand in the market.⁴⁴⁴ This argument seems to refer in particular to simulation models that predict merger outcomes using an economic model of demand, supply, and competition in the market,⁴⁴⁵ though it is relevant to other empirical methods that predict merger effects based in part on demand estimation.⁴⁴⁶ As explained earlier, simulation and other structural models primarily are relevant for merger categories in which sufficient quantitative data is available—typically from point-of-sale scanners or similar sources—such as those taking place between suppliers of consumer goods.⁴⁴⁷ Yet in addition to the limitations of this methodology that economists already have noted,⁴⁴⁸ behavioral antitrust suggests a further need for caution in interpreting the outcomes of simulation models to guide merger evaluations. Even where a model correctly predicts price effects, for instance, it does not resolve the more fundamental challenge of systematic consumer bias. Consumer demand that is shaped in part by systematic bias, however, may not reflect consumers' true preferences accurately and therefore may offer a biased estimate of merger welfare effects.⁴⁴⁹

MERGER GUIDELINES, *supra* note 30, § 2, with U.S. DEP'T OF JUSTICE & FTC, HORIZONTAL MERGER GUIDELINES § 1 (1992), available at <http://www.justice.gov/atr/public/guidelines/hmg.pdf>.

444. See, e.g., Werden et al., *supra* note 7, at 136 (arguing that “[i]n estimating the parameters of the demand system from data on actual choices, merger assessment accounts for the actual decisions made in the marketplace, normally with high-frequency aggregate data collected at the point of sale” even while conceding that behavioral deviation can complicate demand estimation); *supra* section III(A)(1) (examining this argument when considering whether and when market institutions promote demand-side rationality).

445. For a discussion of the main approaches to merger simulation and some of their limitations see, for example, Budzinski & Ruhmer, *supra* note 81; Coate & Fischer, *supra* note 443; Aviv Nevo & Michael D. Whinston, *Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference*, J. ECON. PERSP., Spring 2010, at 69; and Daniel L. Rubinfeld, *Current Issues in Antitrust Analysis*, in COMPETITION POLICY AND THE ECONOMIC APPROACH: FOUNDATIONS AND LIMITATIONS 81, 88–91 (Josef Drexel et al. eds., 2011).

446. DAVIS & GARCÉS, *supra* note 80, § 9.4.

447. See Coate & Fischer, *supra* note 443, at 61–62 (noting the limited usefulness of structural models when empirical support is lacking).

448. See Budzinski & Ruhmer, *supra* note 81, at 304–14 (reviewing “problems that have occurred in [merger analysis] in the literature as well as in the actual case proceedings”); Coate & Fischer, *supra* note 443, at 61–62; Nevo & Whinston, *supra* note 445, at 72–77 (analyzing the criticisms levied against merger simulations such as how to define “similar” mergers and the hazards of failing to account for changes in industry circumstances over time); Rubinfeld, *supra* note 445 (discussing trade-offs involved in several merger simulation methods); see also Craig Peters, *Evaluating the Performance of Merger Simulation: Evidence from the U.S. Airline Industry*, 49 J.L. & ECON. 627, 647 (2006) (finding, in a set of airline mergers, that standard, unilateral-effects simulations did not accurately forecast price effects); sources cited *supra* note 81 (explaining the limits of some common methods of demand estimation that rely on the assumption of consumer rationality).

449. See *supra* notes 270–71 and accompanying text, which also discuss the broader challenge consumer bias poses for antitrust policy.

3. *Accounting for Behavioral Irregularities in Specific Cases.*—Behavioral variability, heterogeneity, and institutional effects indicate that courts and agencies also need to avoid the fundamental methodological error when evaluating allegations of anticompetitive effects in specific cases.⁴⁵⁰ Specifically, courts and agencies cannot automatically assume—without adducing evidence for the conduct or effects that constitute the relevant violation of the antitrust laws—that market participants will exhibit any particular deviation from rationality in a given instance.⁴⁵¹ They cannot assume defendants’ conduct had an anticompetitive effect for behavioral reasons, nor can they assume that bounded rationality prevented competitive harm, without accounting for behavioral irregularities.

Unlike those scholars who fall prey to the fundamental methodological error, however, attention to behavioral irregularities should come naturally to courts and agencies that primarily evaluate specific instances of potentially anticompetitive behavior.⁴⁵² After all, when evaluating the merits of antitrust cases, these decision makers must determine whether the particular conduct of a particular defendant violated the antitrust laws, not how market participants generally behave.⁴⁵³

The risk of failing to account for behavioral irregularities is small where the antitrust laws do not require an evaluation of the competitive effects of the alleged conduct. Criminal prosecutions of cartels are a primary example here since these horizontal restraints are per se illegal.⁴⁵⁴ When courts face evidence of cartelization they need not examine whether market behavior and outcomes comport with rationality or bounded rationality.⁴⁵⁵

In most areas of antitrust law, however, defendants’ conduct is judged under a rule of reason, which requires the courts, in principle, to evaluate its

450. See *supra* subpart I(D).

451. See Christopher R. Leslie, *Can Antitrust Law Incorporate Insights from Behavioral Economics?*, 92 TEXAS L. REV. SEE ALSO (forthcoming 2014) (manuscript at 7) (on file with the Texas Law Review) (“Theory deals in aggregates; litigation deals with individual episodes of anticompetitive behavior.”).

452. Insofar as the Court is tasked with formulating broader antitrust doctrines and the agencies need to offer guidance, both sets of institutions must consider the effects of behavioral irregularities as well. See *infra* subpart V(B).

453. Leslie, *supra* note 451 (manuscript at 9–10).

454. See, e.g., *Texaco Inc. v. Dagher*, 547 U.S. 1, 5 (2006) (noting that “horizontal price-fixing agreements[] fall into the category of arrangements that are per se unlawful”); see also *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) (referring to collusion as the “supreme evil of antitrust”); *Palmer v. BRG of Ga., Inc.*, 498 U.S. 46, 49–50 (1990) (per curiam) (applying per se illegality to the division of markets between competitors).

455. See 7 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* ¶ 1500 (3d ed. 2010) (noting that price-fixing is per se unlawful).

competitive effects.⁴⁵⁶ Yet in practice, the dramatic majority of rule of reason cases are disposed of due to the plaintiff's failure to make the case that the defendant's conduct generated the requisite anticompetitive effects.⁴⁵⁷ Since the rule of reason requires courts to consider anticompetitive effects, however, they should be able to avoid the fundamental methodological error.

The Court's recent adoption of a rule of reason approach to RPM⁴⁵⁸ is a case in point. The behavioral approach revealed that manufacturers excessively rely on RPM to control the resale prices of their products.⁴⁵⁹ Yet further analysis supported *Leegin's* discarding of the long-standing but outdated per se rule and offered behaviorally informed foundations for a structured rule of reason in this area.⁴⁶⁰ Behavioral antitrust did not suggest, however, that courts rely on the behavioral evidence to assume that RPM is always anticompetitive, or even just inefficient—a move that would have led courts falsely to declare the practice illegal in some cases where its effects are benign or even procompetitive.⁴⁶¹ Instead, the behavioral approach sought to account for behavioral irregularities, fashioning a structured rule for markets inhabited by rationally anticompetitive and procompetitive, as well as by boundedly rational, inefficient, and sometimes anticompetitive, instances of RPM.⁴⁶² Under this approach, courts would seek case-specific evidence that sheds light on the nature of defendants' RPM and its competitive effects, assigning liability only to cases in which the practice—rational or boundedly rational—is anticompetitive.⁴⁶³

Monopolization by predatory pricing offers another familiar example of how courts can account for behavioral irregularities. Behavioral findings

456. See, e.g., *Dagher*, 547 U.S. at 5 (applying the rule of reason presumptively). The various rule of reason approaches still require the courts to determine the effects of the conduct in question. See generally Andrew I. Gavil, *Moving Beyond Caricature and Characterization: The Modern Rule of Reason in Practice*, 85 S. CAL. L. REV. 733 (2012) (providing a survey of the current rule of reason doctrine).

457. See Michael A. Carrier, *The Real Rule of Reason: Bridging the Disconnect*, 1999 BYU L. REV. 1265, 1267–68 [hereinafter Carrier, *The Real Rule of Reason*] (finding that in 96% of rule of reason cases courts do not conduct the balancing test contemplated by the rule); Michael A. Carrier, *The Rule of Reason: An Empirical Update for the 21st Century*, 16 GEO. MASON L. REV. 827, 828 (2009) [hereinafter Carrier, *An Empirical Update*] (finding that 97% of reported cases are disposed of based on the plaintiff's failure to prove anticompetitive effects).

458. *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 882 (2007).

459. Tor & Rinner, *supra* note 7, at 834.

460. *Id.* at 854–55.

461. See *id.* at 855 (“At times, [RPM] generates significant consumer harm, while in other instances RPM may be used excessively but cause only limited consumer harm. Yet on other occasions, the practice reflects those rational pro- or anticompetitive calculations assumed by its past analyses.”).

462. See *id.* at 858–64 (proposing a new rule of reason analysis that takes into account the behavioral evidence).

463. *Id.*

suggest that some monopolists may engage in predation that would not have been rational in a world populated only by strictly rational actors.⁴⁶⁴ But courts must account for behavioral irregularity—namely, the possibility that some monopolists engage, successfully or unsuccessfully, in boundedly rational predation while at other times monopolists act rationally. Hence courts should neither assume that predatory pricing allegations are never credible when recoupment would have been unlikely in a strictly rational world nor that such predation is always credible or likely, taking care instead to evaluate the evidence in the specific case.⁴⁶⁵

In the merger area, due to the parties' strong incentives to overstate future efficiencies, as well as their tendency otherwise to overestimate them, and given the evidence of the high frequency of unsuccessful mergers, the agencies should not simply assume that proffered merger efficiencies will materialize in fact.⁴⁶⁶ At the same time, however, because some mergers do generate meaningful efficiencies, a blanket assumption that the parties' arguments are overstated would be unwarranted as well. Arguably, the agencies' traditional skepticism towards efficiency claims is appropriate, though currently it is based on considerations other than the contribution of behavioral forces to biased predictions.⁴⁶⁷ To determine how behavioral factors should be accounted for when they evaluate efficiency claims, the agencies would need further to identify specific market and firm factors that facilitate or inhibit biases in managerial predictions of future efficiencies.

Similarly, some empirical evidence indicates that, in contrast to the standard, rationality-based assumption, fixed and sunk costs may affect firms' pricing decisions.⁴⁶⁸ Firms that take into account fixed costs, however, are more likely than traditional models predict to reduce product prices following a merger that achieves such cost reductions.⁴⁶⁹ Some commentators point to this evidence as favoring a less critical approach

464. See Leslie, *supra* note 3, at 284–85, 319–24 (attacking the use of the rationality assumption in predatory pricing cases). See generally Tor, *Predatory Pricing*, *supra* note 2 (arguing that more predatory pricing occurs than neoclassical economics would predict).

465. Further research could be helpful in identifying circumstances that make boundedly rational predation more or less likely and for fashioning appropriate hurdles for plaintiffs to overcome to reach trial. See *infra* subpart V(B).

466. See, e.g., Stucke, *Reconsidering*, *supra* note 7, at 155 & n.210 (discussing overconfidence in the merger context and noting the high frequency of failed mergers).

467. See, e.g., Reeves & Stucke, *supra* note 2, at 1560–63 (challenging the assumption that mergers are consummated to generate significant efficiencies); Werden et al., *supra* note 7, at 130 (noting that agency skepticism is consistent with analysis showing that mergers “rarely create a significant profit incentive for entry”).

468. Bennett et al., *supra* note 7, at 124–25; Werden et al., *supra* note 7, at 130–31.

469. Cf. Bennett et al., *supra* note 7, at 125 (questioning the assumption that sunk costs would not affect pricing decisions in mergers).

towards claims of merger efficiencies.⁴⁷⁰ Yet this argument again manifests the fundamental attribution error: some merging parties will indeed take into account fixed-cost reductions in their post-merger prices, reducing some of the merger's anticompetitive effects, while other firms will ignore these costs in the short term, as traditional models assume. Consequently, in this case as well, a blanket approach that always assumes or ignores fixed-cost effects is likely to miss the mark. Instead, case-specific evidence about the parties' track record with respect to fixed-cost changes, customer expectations, and so on would be more informative for agency predictions of whether such cost savings will be passed on.

B. Lesson Two: Accounting for Behavioral Regularities in Antitrust Law

Beyond highlighting the need to account for behavioral irregularities in antitrust adjudication and merger-enforcement practices, the behavioral approach also offers important lessons for the design of the antitrust laws. For some commentators, the complex reality of market behavior seems sufficiently overwhelming to justify a conscious reliance on radically simplified assumptions of rationality throughout antitrust law without exception.⁴⁷¹ But willful ignorance of systematic, predictable deviations from strict rationality can produce antitrust doctrines and policies that harm, rather than benefit, competition. At the same time, care also must be taken to avoid the fundamental methodological error when formulating behaviorally informed antitrust doctrine. Instead, the regularities identified by the behavioral approach can advance antitrust law in a number of distinct ways: First, behavioral regularities can help guide the choice among competing antitrust rules in different areas.⁴⁷² Second, a better understanding of such regularities can assist in structuring these rules to promote rather than retard competition. And, finally, behavioral regularities sometimes may be carefully and usefully generalized as stylized observations, which economic models can incorporate when seeking to predict and explain market outcomes.

For those manifesting the fundamental methodological error, behavioral antitrust may appear to provide clear, general policy implications. After all, if one assumes that all market participants—or at least all actors of a given class of participants—are always and equally biased, the necessary modifications of antitrust doctrine seem

470. See, e.g., Werden et al., *supra* note 7, at 130–31 (citing commentators who suggest that merger efficiencies should be given more weight in light of behavioral-research findings).

471. See, e.g., Ginsburg & Moore, *supra* note 7, at 96–98 (concluding that judges are unlikely to rely on behavioral research because “the central theme of the discipline[,] . . . rather than foreclosing possibilities, opens them up and thereby increases the degrees of freedom with which a court may pursue personal, idiosyncratic goals”).

472. Importantly, the rules advocated by the behavioral approach can be either simple or complex, irrespective of the complexity of the market behavior they address.

straightforward. For example, if one were to assume that manufacturers always impose RPM excessively on their retailers when the practice is legal, the law would be justified in reverting to the rule of per se illegality that *Leegin* discarded.⁴⁷³ Universally excessive RPM would be either anticompetitive—for traditional or behavioral reasons—or a competitively neutral yet socially costly, systematic mistake on the part of manufacturers that harms them and some of their retailers. If this were the case, per se illegality would have benefited competition, risking no chilling of efficient vertical arrangements—which are absent in this case by assumption—and providing the great benefits and cost savings to business and the legal system that flow from clear and simple, bright-line antitrust rules.⁴⁷⁴

In reality, of course, the behavioral evidence on RPM revealed only a strong tendency of some manufacturers to employ this practice excessively.⁴⁷⁵ Yet excessive, boundedly rational uses of this vertical arrangement can coexist with rational, anticompetitive ones as well as with beneficial, procompetitive arrangements that promote the provision of output-increasing dealer services.⁴⁷⁶ Once the heterogeneity and variability of market behavior are taken into account, behavioral regularities advocate for a different rule from the one supported by assumed universal bias, justifying a rule of reason approach to RPM.⁴⁷⁷ Per se illegality, which initially appeared attractive, turns out to be inappropriate in the face of a behavioral regularity that falls short of universality.⁴⁷⁸

Besides tipping the scales in favor of one candidate rule over another, the behavioral approach can assist in a more nuanced structuring of the chosen rule. This contribution is particularly important since current-day antitrust applies a rule of reason analysis in areas ranging from many horizontal restraints through nearly all vertical ones, to monopolization, and

473. See *supra* notes 145, 229 and accompanying text (describing the tendency of some manufacturers to excessively impose RPM).

474. See generally *Atl. Richfield Co. v. USA Petroleum Co.*, 495 U.S. 328, 342 (1990) (“The per se rule is a presumption of unreasonableness based on ‘business certainty and litigation efficiency.’” (quoting *Arizona v. Maricopa Cnty. Med. Soc’y*, 457 U.S. 332, 344 (1982))); *Maricopa Cnty.*, 457 U.S. at 343–44 (“The costs of judging business practices under the rule of reason, however, have been reduced by the recognition of per se rules.”); AREEDA & HOVENKAMP, *supra* note 455, ¶ 1510a (“The root meaning of ‘per se illegality’ is that courts refuse to consider one or more factors that would ordinarily bear on the reasonableness of challenged conduct.”); Richard A. Posner, *The Next Step in the Antitrust Treatment of Restricted Distribution: Per Se Legality*, 48 U. CHI. L. REV. 6 (1981) (advocating for the benefits of per se legality in vertical restraints).

475. See Tor & Rinner, *supra* note 7, at 839–47 (finding that some manufacturers will overuse RPM for extensive periods of time when there are no legal constraints).

476. See *id.* at 859–62 (arguing that behavioral antitrust supports the view that neither the plaintiff nor the prodefendant visions of RPM are entirely correct).

477. See *id.* at 860–62 (arguing for an improved rule of reason approach to RPM).

478. The behavioral account also makes clear that the per se legality that some advocate for RPM is equally inappropriate. See generally Posner, *supra* note 476 (arguing for per se legality of vertical restraints).

more.⁴⁷⁹ In each of these areas, antitrust courts are required to determine whether a particular form of market conduct is on balance pro- or anticompetitive in every case.

Because open-ended inquiries under the rule of reason are notoriously difficult to implement, courts have long sought to structure them. Frequently they require plaintiffs to make some initial showing—most notably a clearly defined market where the allegedly anticompetitive conduct took place—without which the case will not proceed beyond summary judgment.⁴⁸⁰ In other cases, courts have established elaborate structures that require plaintiffs and defendants in turn to bear the burden of proving different elements of the case.⁴⁸¹ The specific structure of the rule of reason significantly impacts antitrust plaintiffs' likelihood of success. Private plaintiffs routinely flounder, for instance, when required by courts to offer a market definition before proceeding with other evidence of anticompetitive effects, as the case has been with allegations of vertical nonprice restraints under Section 1 of the Sherman Act since *Sylvania*.⁴⁸²

Behavioral antitrust sometimes can guide the all-important structuring of the rule of reason to insure that plaintiffs' antitrust actions will face appropriate hurdles—neither insufficient nor excessive—based on a better understanding of market behavior. To continue with the RPM illustration,

479. See, e.g., *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 899, 907 (2007) (overruling *Dr. Miles Med. Co. v. John D. Park & Sons Co.*, 220 U.S. 373 (1911) and holding that minimum RPM should be evaluated under the rule of reason); *State Oil Co. v. Khan*, 522 U.S. 3, 22 (1997) (overruling *Albrecht v. Herald Co.*, 390 U.S. 145 (1968), and holding that maximum RPM should be evaluated under the rule of reason); *Cont'l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 58–59 (1977) (overruling *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967), and holding that vertical nonprice restraints should be evaluated under the rule of reason); *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1, 60–66 (1911) (adopting and announcing the rule of reason).

480. See *Leegin*, 551 U.S. at 885–86 (“Whether the businesses involved have market power is a further, significant consideration.”); *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 459 (1993) (holding that a plaintiff must prove a dangerous probability that the defendant would monopolize a particular market to prevail in a Section 2 attempted monopolization claim). The Court even uses market power as a screening mechanism in cases judged under a per se rule. See *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 13–14 (1984) (“[W]e have condemned tying arrangements when the seller has some special ability—usually called ‘market power’—to force a purchaser to do something that he would not do in a competitive market.”).

481. See, e.g., *Polygram Holding, Inc. v. FTC*, 416 F.3d 29, 35–39 (D.C. Cir. 2005) (upholding the FTC’s order in the “Three Tenors” case and applying a burden-shifting framework to a horizontal-restraint claim); *United States v. Microsoft Corp.*, 253 F.3d 34, 58–59 (D.C. Cir. 2001) (applying a burden-shifting structure in a rule of reason inquiry for alleged monopolization under Section 2 of the Sherman Act).

482. *Cont'l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977); see also Carrier, *An Empirical Update*, *supra* note 457, at 834–36 (describing the challenges of burden-shifting tests applied by each circuit); Carrier, *The Real Rule of Reason*, *supra* note 457, at 1268 (summarizing the burden-shifting exercise and its demands on plaintiffs); Douglas H. Ginsburg, *Vertical Restraints: De Facto Legality Under the Rule of Reason*, 60 ANTITRUST L.J. 67, 71 (1991) (showing very low percentages of success for plaintiffs under the *Sylvania* rule).

the *Leegin* Court explicitly acknowledged the need for structuring its new rule of reason for the practice, suggesting that lower courts may “devise rules over time for offering proof, or even presumptions where justified, to make the rule of reason a fair and efficient way to prohibit anticompetitive restraints and to promote procompetitive ones.”⁴⁸³ Following *Leegin*’s call, and occasionally even prior to it, courts, enforcement agencies, and scholars offered a variety of structured rule of reason approaches to RPM.⁴⁸⁴ Notwithstanding their many fundamental differences, these approaches all sought to distinguish rationally procompetitive instances of the practice from its rationally anticompetitive uses.⁴⁸⁵ None of the proposed structures, however, accounted for the behavioral regularity of boundedly rational manufacturers excessively employing RPM that is neither pro- nor anticompetitive, as traditionally understood.⁴⁸⁶

In contrast, when structuring the rule of reason, behavioral antitrust takes into account the incidence and market effects of boundedly rational RPM as well as the possibility of rationally pro- and anticompetitive uses of the practice. These factors suggest that plaintiffs should be required first to make their prima facie case in one of two ways: They could directly show that the defendant’s output decreased following the employment of RPM, which indicates that the practice was anticompetitive or boundedly rational and excessive.⁴⁸⁷ Alternatively, they could offer indirect evidence of the dangers of the practice in the specific case by establishing the presence of factors like those cited by the *Leegin* Court, especially the prevalence of RPM in the industry, concentration, or market power at either manufacture or retail.⁴⁸⁸ Thus, where a plaintiff makes either prima facie case:

[T]he defendant should be allowed to rebut . . . show[ing] not only that the practice sought to address a real business problem—such as free riding—but also that the problem generated measurable harm to the manufacturer. Defendants would also have to show, moreover, that less restrictive means for addressing this problem were significantly more costly or less effective. Otherwise . . . manufacturers could routinely proclaim the various theoretical harms of price-cutting . . . without [offering specific evidence].⁴⁸⁹

Last, beyond assisting in choosing and fashioning more effective antitrust rules, behavioral regularities can be used as stylized facts, allowing economists to develop more accurate models and predictions of market

483. 551 U.S. at 898–99.

484. See Tor & Rinner, *supra* note 7, at 858 & nn.309–11, 859 & n.312 (providing examples for rule of reason structures in judicial and agency decisions as well in academic commentary).

485. See *id.* at 859.

486. See *id.*

487. *Id.* at 862.

488. *Id.*

489. *Id.* (footnote omitted).

behavior.⁴⁹⁰ Although such models must ignore some behavioral irregularities and should therefore be used with care, they can complement more nuanced analyses. The potential contribution of such models is illustrated by the extensive research already employing them in other fields that study market behavior, like behavioral finance. Economists drawing on behaviorally informed models have offered both theoretical and empirical insights into firms' dividend policies, IPOs, mergers and acquisitions activity, and financing and investment decisions, to name but a few key areas.⁴⁹¹ In antitrust, empirical studies similarly could compare the predictive power of behaviorally informed models to that of traditional, rationality-based ones. In cases where they are shown to offer better predictions, specific stylized behavioral models also could be used by the agencies and the parties before them when assessing the competitive effects of mergers as well. Although promising within their inherent constraints, however, formal models based on stylized behavioral facts are only beginning to develop in industrial organization—the economic field most directly relevant for antitrust—and to date this new literature primarily focuses on the reactions of rational firms to consumer limitations and bias.⁴⁹²

Conclusion

This Article finds that behavioral antitrust can advance the law by offering a better understanding of the behavior of antitrust actors, though the approach still is nascent. The recent outpour of interest from the antitrust community—with scholars, practitioners, enforcement officials, and judges joining the behavioral antitrust fray—is a clear indication of both the significance of this new approach and the concerns over its future impact on the field. The Article showed that the behavioral approach is

490. Cf. Jolls et al., *supra* note 1, at 1475 (making a similar point with respect to behavioral law and economics more generally).

491. See, e.g., BEHAVIORAL FINANCE, *supra* note 189 (offering a series of reviews in these and other areas of behavioral finance that discuss both theoretical and empirical findings in the field, many of which rely on stylized models); see also Malcolm Baker & Jeffrey Wurgler, *Behavioral Corporate Finance: An Updated Survey*, in 2A HANDBOOK OF THE ECONOMICS OF FINANCE: CORPORATE FINANCE 357 (George M. Constantinides et al. eds., 2013) (providing a more recent general survey of the field).

492. See, e.g., STEFFEN HUCK ET AL., OFFICE OF FAIR TRADING, CONSUMER BEHAVIORAL BIASES IN COMPETITION: A SURVEY (2011) (U.K.), available at http://www.of.gov.uk/shared_of/research/OFT1324.pdf (reviewing both empirical and theoretical literature on behavioral economics and examining the influence of consumer behavioral biases on firm decisions); RAN SPIEGLER, BOUNDED RATIONALITY AND INDUSTRIAL ORGANIZATION (2011) (summarizing and synthesizing recent theoretical developments in models that incorporate some behaviorally informed stylized facts with respect to consumer behavior and rational firms' strategic responses to it); Armstrong & Huck, *supra* note 7 (discussing some research of this nature); Ellison, *supra* note 95 (reviewing much of the new industrial organizational literature that draws on stylized behaviorally informed models).

poised to advance antitrust law and policy in myriad ways but can and should only supplement, not substitute for, the apparatus of standard antitrust law and economics.

As behavioral antitrust continues to develop, proponents and critics alike must beware the common pitfalls associated with the fundamental methodological error. Without a better appreciation of the empirically driven nature of the behavioral approach, analysts will continue to confuse concrete behavioral phenomena with broad hypothetical assumptions, repeatedly making the three classes of mistakes examined in this Article. Some will fail to appreciate that human judgment and decision behavior is variable and heterogeneous, neither constant nor uniform. Others will ignore the various ways in which antitrust institutions facilitate behavior that resembles the assumptions of rationality to greater or lesser degrees. And many commentators will continue to conflate bounded rationality with an automatic license for more assertive antitrust policies.

Scholars should recognize instead that both the unique contribution of behavioral antitrust and its inherent limitations manifest the fundamentally empirical character of this approach. A greater attention to the specific contours of the behavioral evidence generally and its likely manifestation in antitrust settings in particular, combined with a continued effort to generate further antitrust-relevant findings, will go a long way towards helping the antitrust community overcome the fundamental methodological error in behavioral antitrust.

Finally, beyond providing a better understanding of the nature of behavioral antitrust, this Article discussed two essential sets of lessons this new approach offers for doctrine and policy even now. One concerned the important function of case-specific evidence in both antitrust adjudication in the courts and agency enforcement actions. The other showed how antitrust doctrine can incorporate the evidence of systematic and predictable behavioral regularities in the market that still fall short of universal propositions. If followed, these essential lessons already can promote significantly the antitrust laws' mission of protecting competition.

