

## UNDERSTANDING BEHAVIORAL ANTITRUST

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### ABSTRACT

*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—the Article examines the three classes of mistakes, their manifestation and their consequences in antitrust scholarship. Besides providing guidance to future behavioral antitrust scholarship, the 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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## INTRODUCTION

The behavioral approach<sup>1</sup> to antitrust law draws on a large body of empirical behavioral evidence to inform antitrust doctrine and policymaking.<sup>2</sup> In particular, behavioral antitrust focuses on findings

<sup>1</sup> 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 CAL. L. REV. 1051 (2000); Avishalom Tor, *The Methodology of the Behavioral Analysis of Law*, 4 HAIFA L. REV. 237 (2008) [hereinafter Tor, *Behavioral Methodology*].

<sup>2</sup> See 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.

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

Perhaps due to the dominance in antitrust of rationality-based law and economics<sup>4</sup>—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.<sup>5</sup> In fact, until a few years ago, antitrust discourse largely neglected those behaviorally-informed analyses offered by a small number of legal scholars.<sup>6</sup>

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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 this approach is “grounded in empirical observations of human behavior” 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, *Illustrating a Behaviorally-Informed Approach to Antitrust Law: The Case of Predatory Pricing*, 18 ANTITRUST 52 (2003) [hereinafter Tor, *Predatory Pricing*]; Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy*, 101 MICH. L. REV. 482 (2002) [hereinafter Tor, *Entry*].

<sup>3</sup> See 1 PHILLIP AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* (3d ed. 2006); HERBERT HOVENKAMP, *THE ANTITRUST ENTERPRISE* 134 (2005); KEITH N. HYLTON, *ANTITRUST LAW* 226 (2003); RICHARD A. POSNER, *ANTITRUST LAW* vii–x (2d. ed. 2001) (all discussing the centrality of the rationality assumption in antitrust); see also Christopher R. Leslie, *Rationality in Antitrust*, 158 U. PA. L. REV. 261 (2010) (examining the role of the rationality assumption in judicial doctrine).

<sup>4</sup> See, e.g., 1 AREEDA & HOVENKAMP, *supra* note 3, ¶113, at 140; 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 1, at 18–19; Tor, *Predatory Pricing*, *supra* note 2, at 52.

<sup>5</sup> 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) (describing many applications in legal fields other than antitrust 15 years ago); Cass R. Sunstein, *Behavioral Law and Economics: A Progress Report*, 1 AM. L. & ECON. REV. (1999) 115, 115 (describing a “flood” of behaviorally-oriented legal research already in 1999), with recent statements about behavioral antitrust, such as Luca Arnaudo, *The Quest for Behavioral Antitrust: Beyond the Label Battle, Towards a Cognitive Approach*, 1 DOVENSCHMIDT Q. manuscript at 6 (forthcoming 2012) (noting that “when considering the growing fortunes of BE, the process towards a behavioral antitrust . . . could have been expected to occur much faster”) (footnotes omitted); Stucke, *At the Gate*, *supra* note 2, at 514 (noting, quite colorfully, that “[w]hile tossed against the rocks elsewhere, within the quiet waters of antitrust these rational choice theories stand largely unchallenged.”).

<sup>6</sup> See, e.g., Arnaudo, *supra* note 5, at 6 (stating that “as a matter of fact, it is in the last few years that a massive behavioral takeover of antitrust studies has been experienced, whereas during the past decade there were only some isolated, although highly interesting, efforts made by pioneering scholars . . . .”); Max Huffman, *Neo Behavioralism?* 3 (December 23, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1730365> (noting that “[B]ehavioral Antitrust has the feel of being something quite new. The earliest article explicitly proposing a behavioral approach to antitrust was written in 2002.” (referencing Tor, *Entry*, *supra* note 2)). Early antitrust scholarship making use of behavioral evidence includes Aviram & Tor, *supra* note 2; Albert A. Foer, *What Do Business Schools Teach About Antitrust?: The Third Leg of the Antitrust Stool: What the Business Schools Have to Offer to Antitrust*, 47 N.Y.L. SCH. L.

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.<sup>7</sup> Antitrust journals dedicate issues to it,<sup>8</sup> and the professional

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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 1; Tor, *Entry*, *supra* note 2; Tor, *Predatory Pricing*, *supra* note 2; *see also* Philip Nelson et al., *Economists Roundtable*, 17 ANTITRUST ABA 8, 15-16 (2003) (an early discussion among prominent antitrust economists that briefly touches on the potential of behavioral economics to inform antitrust law).

<sup>7</sup> *See* Matthew Bennett et al., *What Does Behavioral Economics Mean for Competition Policy?*, 6 COMPETITION POL'Y INT'L 111, 118 (2010); Eliana Garces, *The Impact of Behavioral Economics on Consumer and Competition Policies*, 6 COMPETITION POL'Y INT'L 145 (2010); 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); Leslie, *supra* note 3; Amanda P. Reeves, *Behavioral Antitrust: Unanswered Questions on the Horizon*, ANTITRUST SOURCE, June 2010; Stucke, *At the Gate*, *supra* note 2; Maurice E. Stucke, *New Antitrust Realism*, GLOBAL COMPETITION POLICY, Jan. 2009 [hereinafter Stucke, *New Realism*]; Maurice E. Stucke, *Money, Is That What I Want?: Competition Policy and the Role of Behavioral Economics*, 50 SANTA CLARA L. REV. 893 (2010) [hereinafter Stucke, *Money*]; Maurice E. Stucke, *Reconsidering Competition*, 81 MISS. L.J. 107 (2011) [hereinafter Stucke, *Reconsidering*]; James C. Cooper & William E. Kovacic, *Behavioral Economics and Its Meaning for Antitrust Agency Decision Making*, 8 J. L. ECON. & POL'Y 779 (2012); Max Huffman, *Marrying Neo-Chicago with Behavioral Antitrust*, 78 ANTITRUST L. J. 105 (2012) [hereinafter Huffman, *Neo-Chicago with Behavioral Antitrust*]; Max Huffman & Daniel Heidtke, *Behavioral Exploitation and Antitrust in Consumer Subprime Mortgage Lending*, 4 WM. & MARY POL'Y REV. (2012); 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](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1641431); *see also* Mark Armstrong & Steffen Huck, *Behavioral Economics as Applied to Firms: A Primer*, 6 COMPETITION POL'Y INT'L 3 (Spring 2010); Douglas H. Ginsburg & Derek W. Moore, *The Future of Behavioral Economics in Antitrust Jurisprudence*, 6 COMPETITION POL'Y INT'L 89 (Spring 2010); Alison Oldale, *Behavioral Economics and Merger Analysis*, 6 COMPETITION POL'Y INT'L 139 (Spring 2010); Vivien Rose, *The Role of Behavioral Economics in Competition Law: A Judicial Perspective*, 6 COMPETITION POL'Y INT'L 103 (Spring 2010); Michael A. Salinger, *Behavioral Economics, Consumer Protection, and Antitrust*, 6 COMPETITION POL'Y INT'L 65 (Spring 2010); Maurice E. Stucke, *Is Intent Relevant?*, 8 J. L. ECON. & POL'Y 801 (2012); Maurice E. Stucke, *Behavioral Antitrust and Monopolization*, 8 J. COMPETITION L. & ECON. 545 (2012) [hereinafter Stucke, *Monopolization*]; Maurice E. Stucke, *Am I a Price-Fixer? A Behavioral Economics Analysis of Cartels*, in CRIMINALISING CARTELS: A CRITICAL INTERDISCIPLINARY STUDY OF AN INTERNATIONAL REGULATORY MOVEMENT (Caron Beaton-Wells & Ariel Ezrachi eds., 2011); Avishalom Tor & William J. Rinner, *Behavioral Antitrust: A New Approach to the Rule of Reason after Leegin*, 2011 U. ILL. L. REV. 805 (2011); Gregory 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*, CARDOZO L. REV. 1517 (2012); Maurice E. Stucke, *Greater International Convergence and the Behavioral Antitrust Gambit*, in INTERNATIONAL RESEARCH HANDBOOK ON COMPETITION LAW (Ariel Ezrachi ed., Edward Elgar Publishing forthcoming 2013) [hereinafter Stucke, *Gambit*]; Avishalom Tor, *The Market, the Firm, and Behavioral Antitrust*, in THE OXFORD HANDBOOK OF BEHAVIORAL LAW AND ECONOMICS (Doron Teichman & Eyal Zamir eds. forthcoming 2013)

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associations of practitioners and legal academics in the field devote panels at their meetings to discussing behavioral antitrust.<sup>9</sup> Perhaps most telling, even some enforcement agencies and officials now study and discuss the policy implications of this new approach.<sup>10</sup>

Some particularly enthusiastic proponents of behavioral antitrust depict it as an attractive wholesale alternative to the traditional economic approach to antitrust law.<sup>11</sup> Other supporters view the

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[hereinafter Tor, *The Market*].

<sup>8</sup> See, e.g., 6 COMPETITION POL'Y INT'L (Spring 2010) (specific articles cited *supra* note 7); 9 ANTITRUST SOURCE (June 2010) (same).

<sup>9</sup> See AM. ANTITRUST INST., *9th Annual Conference: The Next Antitrust Agenda* (June 18, 2008), available at <http://www.antitrustinstitute.org/content/9th-annual-conferencenext-antitrust-agenda> (last visited Mar. 15, 2012); AM. BAR ASS'N, *The 60<sup>th</sup> Antitrust Spring Meeting* (Mar. 28–30, 2012), available at [http://www.americanbar.org/calendar/2012/03/antitrust\\_law\\_2012springmeeting.html](http://www.americanbar.org/calendar/2012/03/antitrust_law_2012springmeeting.html) (last visited Mar. 15, 2012); BRITISH INST. OF INT'L & COMPARATIVE L., *2009 Competition Forum Meeting* (July 1, 2009), available at <http://www.biicl.org/clf/clfmeetings2009/> (last visited Mar. 15, 2012) (hosting a Competition Law Forum on behavioral economics in July 2009); THE ASS'N AM. L. SCH., *The 2012 Annual Conference of the American Association of Law Schools (AALS)* (Jan. 4–8, 2012), available at [http://www.aals.org/events\\_am2012.php](http://www.aals.org/events_am2012.php) (last visited Mar. 15, 2012). 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. See N.Y. UNIV. SCH. OF L., *Next Generation of Antitrust Scholarship Conference* (Jan. 29, 2010), available at <http://www.law.nyu.edu/conferences/nextgenantitrust/index.htm> (last visited Mar. 15, 2012).

<sup>10</sup> See Elizabeth M. Bailey, *Roundtable Interview with Joseph Farrell and Carl Shapiro*, 9 ANTITRUST SOURCE 1, 7–8 (Feb. 2010); Amelia Fletcher, Chief Economist, Office of Fair Trading (U.K.), Address at the European Commission Consumer Affairs Conference, *What Do Policy-Makers Need from Behavioural Economists?*, (Nov. 28, 2009), available at [http://ec.europa.eu/consumers/conferences/docs/AF\\_presentation\\_en.pdf](http://ec.europa.eu/consumers/conferences/docs/AF_presentation_en.pdf); see also Bennett et al., *supra* note 7; Oldale, *supra* note 7; J. Thomas Rosch, Comm'r, Fed. Trade Comm'n, Remarks at the Vienna Competition Conference, *Observations Regarding Issues that Lie Ahead*, (June 9, 2010), available at <http://www.ftc.gov/speeches/rosch/100609viennaremarks.pdf> [hereinafter Rosch, *Issues that Lie Ahead*]; J. Thomas Rosch, Comm'r, Fed. Trade Comm'n, 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), available at <http://www.ftc.gov/speeches/rosch/100106financial-products.pdf> [hereinafter Rosch, *Managing Irrationality*]; Press Release, European Union Comm'n for Consumers, Why Consumer Behave the Way They Do: Commissioner Kuneva Hosts High Level Conference on Behavioural Economics (Nov. 28, 2008), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1836&format=HTML&aged=0&language=EN&guiLanguage=en>; see also OFFICE OF FAIR TRADING, THE IMPACT OF PRICE FRAMES ON CONSUMER DECISION MAKING (2010), available at [http://www.oft.gov.uk/shared\\_of/economic\\_research/OFT1226.pdf](http://www.oft.gov.uk/shared_of/economic_research/OFT1226.pdf); ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, HEARING ON COMPETITION AND BEHAVIOURAL ECONOMICS (June 13, 2012) (materials available at [http://www.oecd.org/competition/abuse/workinprogress.htm#June\\_2012](http://www.oecd.org/competition/abuse/workinprogress.htm#June_2012)) (representatives of competition authorities from over 30 jurisdictions discussing behavioral economics and antitrust).

<sup>11</sup> See Stucke, *Gambit*, *supra* note 7, at 26–27 (viewing behavioral antitrust as an alternative to price theory and efficiency); Rosch, *Managing Irrationality*, *supra* note 10, at 8–9; see also Horton, *supra* note 7, at 473–75 (criticizing traditional antitrust law and economics from an evolutionary biology and behavioral perspectives and making the far-reaching assertion that

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.<sup>12</sup> 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.<sup>13</sup> In fact, certain detractors have gone so far as to argue that behavioral antitrust cannot possibly benefit the law.<sup>14</sup>

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 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

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“Homo economicus will become extinct [, a]s Homo sapiens replaces Homo economicus in antitrust analysis”). See also Werden et al., *supra* note 7, at 131, 132 (claiming, when criticizing it, that the behavioral approach would discard “the assumption of profit-maximization and neoclassical economic theory. . .”).

<sup>12</sup> See, e.g., Reeves & Stucke, *supra* note 2, at 1528; Stucke, *Reconsidering*, *supra* note 7, at 110; Stucke, *At the Gate*, *supra* note 2, at 513.

<sup>13</sup> Werden et al., *supra* note 7, at 132, 138 (discussing the limits of traditional economics in the merger context and noting 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.*” (emphasis added)); Wright & Stone, *supra* note 7. See also Rosch, *Managing Irrationality*, *supra* note 10, at 8–9 (discussing the claims made by traditional antitrust economists in resistance to behavioral antitrust).

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

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hypothetical assumptions.<sup>15</sup> 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.<sup>16</sup> 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 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 manifested<sup>17</sup>—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-view mistake, failing to consider the

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<sup>15</sup> See Reeves, *supra* note 7, at 2 (mistakenly stating that: “Behavioral 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.” (emphasis added)); see also Stucke, *Reconsidering*, *supra* note 7, at 15 (assuming, in turn, that firms, consumers, and the government exhibit constant and homogenous bounded rationality); Wright & Stone, *supra* note 7, at 1523, 1535, 1541-48 (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 2 (noting that behavioral antitrust “scholars replace the assumption of rationality with one of ‘bounded rationality’”). But see Stucke, *New Realism*, *supra* note 7, at 11 (citing Camerer, *infra* note 88, for the proposition that “[b]ehavioral economics at its core is empirical”).

<sup>16</sup> 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); Tor, *Behavioral Methodology*, *supra* note 1, at 301-04.

<sup>17</sup> See Tor, *Behavioral Methodology*, *supra* note 1, at 292-300.

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.<sup>18</sup> Other deviations may be costly to their perpetrators yet benefit other market participants or society at large.<sup>19</sup> Finally, only a subset of the remaining deviations from strict rationality is comprised of behaviors that are not merely inefficient but also properly of antitrust concern.<sup>20</sup>

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 and inherent limitations. One set of lessons concerns the value of case-specific evidence for both antitrust adjudication in the courts—in contrast with the doctrinal trends of recent decades—and agency enforcement actions—where such evidence is routinely evaluated, if based on sometime 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, the 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

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<sup>18</sup> See, e.g., Leslie, *supra* note 3, at 280–86 (2010) (noting that seemingly irrational behavior can make economic sense in the context of antitrust conspiracies and predatory business practices).

<sup>19</sup> 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).

<sup>20</sup> E.g. Tor & Rinner, *supra* note 7, at 845–63 (explaining that even efficiency-reducing RPM is only of antitrust concern under specific circumstances).



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the basic features of the relevant empirical evidence, and briefly reviews 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,<sup>21</sup> 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.<sup>22</sup> In contrast with its swift endorsement in most other legal fields, until a few years ago the behavioral approach found little traction in antitrust.<sup>23</sup> 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.<sup>24</sup>

This Part explains that neither the delayed reaction of antitrust scholarship to the behavioral approach nor the intensity of the current debate over it is mere happenstance.<sup>25</sup> To appreciate the forces that shape the antitrust community's reaction to behavioral antitrust, Part I.A outlines the role of the rationality assumption in antitrust, highlighting some of its concrete manifestations in legal doctrine and enforcement agency policies. Part 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 Parts 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. Part I.C. reviews some illustrative behavioral antitrust applications, while Part I.D. explains the

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<sup>21</sup> See, e.g., Langevoort, *supra* note 5; Sunstein, *supra* note 5 (both reviewing the already numerous behavioral applications in law approximately 15 years ago).

<sup>22</sup> See Tor, *Behavioral Methodology*, *supra* note 1.

<sup>23</sup> See *supra* note 6 (and accompanying text).

<sup>24</sup> See *supra* note 7 (and accompanying text).

<sup>25</sup> Cf. Salinger, *supra* note 7; Rosch, *Managing Irrationality*, *supra* note 10.

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.<sup>26</sup>

### 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.<sup>27</sup> 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.<sup>28</sup> Moreover, the microeconomic model of competition that the law relies on further assumes that consumers are rational actors as well.<sup>29</sup>

The rationality assumption is not merely an abstract postulate of antitrust economics, but has concrete legal manifestations throughout the field.<sup>30</sup> In *Brooke Group Ltd. v. Brown & Williamson Tobacco*

<sup>26</sup> Parts I.A, I.C., and III draw on and develop further this Author’s analysis in Tor, *The Market*, *supra* note 7,

<sup>27</sup> See, e.g., RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 3 (6th ed. 2003) (“The task of economics . . . is to explore the implications of assuming that man is a rational maximizer of his ends . . .” (footnotes 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; Tor, *Behavioral Methodology*, *supra* note 1, at 239–41 (briefly 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). For a typical exposition of the role of consumer rationality in economic analysis see, e.g., WILLIAM J. BAUMOL & ALAN S. BLINDER, *MICROECONOMICS: PRINCIPLES & POLICY* 85–98 (12th ed. 2012). See also Bennett et al., *supra* note 7, at 115–17 (providing an informal description of the role of consumers in antitrust’s model of market competition.)

<sup>28</sup> E.g., I AREEDA & HOVENKAMP, *supra* note 3, ¶113, at 140 (3d ed. 2006) (“As a general proposition business firms are (or must be assumed to be) profit maximizers . . .”); POSNER, *supra* note 27, 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 (2005) (“[E]ntire antitrust enterprise is dedicated to the proposition that firms behave rationally.”); Tor, *Entry*, *supra* note 2, at 488 (discussing the role of the rationality assumption in law and economics and providing further references); Werden et al., *supra* note 7, at 2–3 (“The tools of neoclassical economics now play a vital role in the analyses conducted by competition agencies and in the litigation of competition cases in the courts . . .”).

<sup>29</sup> See, e.g., Werden & Froeb, *Unilateral Competitive Effects of Horizontal Mergers*, in *HANDBOOK OF ANTITRUST ECONOMICS* 44, 66–70 (Paolo Buccirossi ed. 2008).

<sup>30</sup> Because this author and others already have discussed the role of the rationality assumption in antitrust doctrine at some length elsewhere, the present review 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; Tor & Rinner, *supra* note 7 (resale price maintenance). Note that the impact of the rationality assumption is not

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*Corp.*,<sup>31</sup> 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.<sup>32</sup> 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 rational prospect of recouping its losses from such below-cost predation.<sup>33</sup> The opinion emphasized that because “[r]ecoupment is the ultimate object of an unlawful predatory pricing scheme,”<sup>34</sup> a rational profit-maximizing firm will not engage in such predation unless the monopoly profits it expects to charge in the future—once the competition was driven out of the market—suffice to compensate for those losses inevitably generated by its present, below-cost, predatory sales.<sup>35</sup>

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

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limited to judicial doctrine, but also informs the enforcement policies of the antitrust agencies. See, e.g., U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES (2010) [hereinafter 2010 MERGER GUIDELINES], available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> (stating that “[i]n 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 (discussing ways in which the rationality assumption impacts merger policy at the FTC).

<sup>31</sup> 509 U.S. 209 (1993).

<sup>32</sup> See *id.* 224–25 (1993) (“[W]e have held in the Sherman Act § 2 context that it was not enough to inquire ‘whether the defendant has engaged in ‘unfair’ or ‘predatory’ tactics’; rather, we insisted that the plaintiff prove ‘a dangerous probability that [the defendant] would monopolize a particular market.’ (citing *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 459 (1993)); see also Leslie, *supra* note 3.

<sup>33</sup> See Tor, *Predatory Pricing*, *supra* note 2, at 55 & n.24.

<sup>34</sup> See *id.* at 55 & n.25.

<sup>35</sup> See *id.* at 55 & n.26. More precisely, rational predation must bear a positive, risk-adjusted, net present value, like any other rational investment activity.

<sup>36</sup> See *Brooke Group Ltd.*, 509 U.S. at 225; *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588–89 (1986) (“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 profit more than the losses suffered.”); see also 3A AREEDA & HOVENKAMP, *supra* note 3, ¶ 726a, at 57 (“No rational firm would bear the losses, difficulties, and possible legal troubles of trying to exclude or discipline rivals by predatory pricing unless it was [sic] reasonably confident of a payoff that exceeds the investment”).

<sup>37</sup> See sources cited *infra* note 39.

<sup>38</sup> See Tor, *Predatory Pricing*, *supra* note 2, at 55.

be rejected summarily in the presumably common case of unlikely recoupment.<sup>39</sup>

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 implausibly.<sup>40</sup> The same rationale also was applied by the Court more recently in *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*<sup>41</sup> to reject allegations of predatory bidding, because "a rational firm would not willingly suffer definite, short-run losses" without "a reasonable expectation" of recoupment.<sup>42</sup> More generally, the *Weyerhaeuser* Court noted that a "rational business will rarely make th[e] sacrifice" involved in such predation.<sup>43</sup>

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 a few years prior to *Brooke Group*, in *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*,<sup>44</sup> once the Court determined that the conspiracy would have required irrational behavior by the alleged conspirators.<sup>45</sup> In reaching this conclusion, *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 less likely for a cartel.<sup>46</sup>

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.<sup>47</sup> 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.<sup>48</sup>

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<sup>39</sup> See *id.* at 55 & n.27.

<sup>40</sup> See Leslie, *supra* note 3, at 272 ("[L]ower courts have reasoned that predatory pricing schemes are 'unlikely to be attempted by rational businessmen.'" (citing Stearns Airport Equip. Co. v. FMC Corp., 170 F.3d 518, 528 (5th Cir. 1999)). Leslie also offers a sampling of lower court opinions that have used summary judgment to dismiss hypothetically irrational allegations of predatory schemes. See Leslie, *supra* note 3, at 272 n.54 (citing Nat'l Parcel Servs., Inc. v. J.B. Hunt Logistics, Inc., 150 F.3d 970, 971 (8th Cir. 1998) and C.B. Trucking, Inc. v. Waste Mgmt., Inc., 944 F. Supp. 66, 69 (D. Mass. 1996), *aff'd*, 137 F.3d 41 (1st Cir. 1998) as examples.

<sup>41</sup> 549 U.S. 312 (2007).

<sup>42</sup> *Id.* at 319.

<sup>43</sup> *Id.* at 323.

<sup>44</sup> 475 U.S. 574 (1989).

<sup>45</sup> *Id.* at 588–90 (1989).

<sup>46</sup> See *id.*

<sup>47</sup> See *id.*; 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).

<sup>48</sup> See *supra* notes 35–38 & 40–42.

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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.<sup>49</sup> For instance, *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*<sup>50</sup> 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 (ROR) approach.<sup>51</sup> In reversing its older precedents, the Court surveyed an antitrust economics literature “replete with procompetitive justifications for a manufacturer’s use of resale price maintenance,”<sup>52</sup> based on the assumption of manufacturer rationality.<sup>53</sup>

*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.<sup>54</sup> 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. 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.<sup>55</sup>

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.<sup>56</sup> Furthermore, after noting the practice can 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,<sup>57</sup> all based on—and therefore limited by—the rationality

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<sup>49</sup> PHILLIP E AREEDA & HERBERT HOVENKAMP, FUNDAMENTALS OF ANTITRUST LAW §§ 16.01–09 (2011).

<sup>50</sup> 551 U.S. 877 (2007).

<sup>51</sup> Note that maximum RPM similarly was made subject to ROR analysis instead of *per se* condemnation a decade earlier in *State Oil Co. v. Khan*, 522 U.S. 3 (1997), partly based on the rationality assumption. See *Khan*, 522 U.S. at 17–18; see also Leslie, *supra* note 3, at 273 (discussing the role of the rationality assumption in *Khan*).

<sup>52</sup> *Leegin*, 551 U.S. at 880, 889, 907–08.

<sup>53</sup> See generally Tor & Rinner, *supra* note 7, at 812–15 (reviewing the main procompetitive accounts of RPM and showing they are based on the rationality assumption).

<sup>54</sup> *Leegin*, 551 U.S. at 880, 889, 907–08.

<sup>55</sup> See *id.*

<sup>56</sup> See Leslie, *supra* note 3, at 273.

<sup>57</sup> *Leegin*, 551 U.S. at 897 (majority opinion); see also Tor & Rinner, *supra* note 7, at 854–58

assumption.<sup>58</sup> *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,<sup>59</sup> such as when the agencies evaluate whether proposed mergers are likely substantially to lessen competition under Section 7 of the Clayton Act.<sup>60</sup> In particular, although the antitrust agencies seek to base their merger decisions on the best available case-specific evidence,<sup>61</sup> various elements of their analysis 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."<sup>62</sup> 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."<sup>63</sup> 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.<sup>64</sup>

In addition 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. The Court in *Eastman Kodak Co. v. Image Technical Services, Inc.*,<sup>65</sup> affirmed the denial of summary judgment to defendant on claims of Section 1 tying and Section 2 monopolization. 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.<sup>66</sup>

Conversely, the dissent argued that a competitive market in copiers

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(evaluating each of the factors enumerated by the Court in *Leegin*).

<sup>58</sup> See Tor & Rinner, *supra* note 7, at 854–58. For further detail see *infra* Part I.C..

<sup>59</sup> However, the Department of Justice does not appear 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 that partake in the leniency program. See Stucke, *At the Gate*, *supra* note 2, at 575-79 (noting the difference between the agencies' approach to criminal cartels and other enforcement policies).

<sup>60</sup> 15 U.S.C. §18.

<sup>61</sup> 2010 MERGER GUIDELINES *supra* note 29.

<sup>62</sup> *Id.* at § 7.

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at § 7.2; Elizabeth M. Bailey, *Interview with Alison Oldale, Deputy Director for Antitrust, Bureau of Economics, Federal Trade Commission*, ANTITRUST SOURCE, June 2012, at 7.

<sup>65</sup> 504 U.S. 451 (1992).

<sup>66</sup> *Id.* at 476-78.

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necessarily would prevent Kodak from exercising power in parts.<sup>67</sup> After all, if consumers who already possessed Kodak machines were “locked-in” because they must use compatible parts, any exploitation of the firm’s power would raise the price of parts. Yet such 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.<sup>68</sup> 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.<sup>69</sup>

It is thus clear that the assumption of consumer rationality plays a significant, if somewhat implicit, role in the disagreement between the opinions of the majority and the dissent.<sup>70</sup> 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.<sup>71</sup>

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 resale price maintenance have focused on the balance of its harms and benefits for strictly rational firms.<sup>72</sup> Interestingly, one argument for minimum RPM that manufacturers repeatedly advanced but economists summarily rejected is the “loss leader” concern.<sup>73</sup> 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’ losses on the former loss leaders.<sup>74</sup> Manufacturers oppose the use of their

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<sup>67</sup> *Id.* at 490-91 (Scalia, J., dissenting).

<sup>68</sup> *Id.* at 494-95 (Scalia, J., dissenting).

<sup>69</sup> *Id.* at 495 (Scalia, J., dissenting).

<sup>70</sup> For analyses of the merits of these respective positions see, for instance, Steve Salop, *The First Principles Approach to Antitrust, Kodak, and Antitrust at the Millennium*, 68 ANTITRUST L. J. 187 (2000); Carl Shapiro, *Aftermarkets and Consumer Welfare*, 63 ANTITRUST L. J. 483 (1995).

<sup>71</sup> *Cf.* Bennett et al., *supra* note 7, at 119 ; 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).

<sup>72</sup> Tor & Rinner, *supra* note 7, at 807.

<sup>73</sup> *Id.* at 813; *cf.* Howard P. Marvel, *The Resale Price Maintenance Controversy: Beyond the Conventional Wisdom*, 63 ANTITRUST L. J. 59, 73-77 (1994). *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).

<sup>74</sup> Tor & Rinner, *supra* note 7, at 813; Howard P. Marvel & Stephen McCafferty, *The Welfare Effects of Resale Price Maintenance*, 28, J. L. & ECON. 363, 375 (1985).

products as loss leaders despite the short term wholesale profits the practice generate, believing that frequent discounts diminish the reputation and value of both the specifically discounted products and the manufacturer's brand writ large.<sup>75</sup> However, even economists who favor RPM reject the loss leader argument, holding that discounting would not change rational consumer perceptions of the quality of standard goods.<sup>76</sup>

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.<sup>77</sup> Much like in other aspects of merger evaluation, however, the standard practice in demand estimation assumes consumer rationality regarding the choice among competing products and services.<sup>78</sup>

### 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 through entrepreneurs, managers and other business decision makers, to judges, juries, and enforcement officials.<sup>79</sup> To this end, behavioral antitrust draws on the extensive findings of behavioral decision research, the psychology of

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<sup>75</sup> See, e.g., AM. FAIR TRADE COUNCIL INC., RESALE PRICE MAINTENANCE BY MEANS OF FAIR TRADE LAW IN FORCE APRIL 1, 1942, at 3 (1942); see also *Leegin*, 551 U.S. at 833 (noting that one of the reasons *Leegin* stated for adopting its RPM policy was the "concern that discounting harmed Brighton's brand image and reputation").

<sup>76</sup> 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 (1996); Harvey Liebenstein, *Bandwagon, Snob and Veblen Effects in the Theory of Consumers' Demand*, 64 Q. J. ECON. 183 (1950). See also the sources *infra* n. 146 discussing empirical evidence for a persistent positive correlation between perceptions of price and quality.

<sup>77</sup> 2010 MERGER GUIDELINES § 6; PETER DAVIS & ELIANA GARCES, QUANTITATIVE TECHNIQUES FOR COMPETITION AND ANTITRUST ANALYSIS 401-35 (2009); Werden & Froeb *supra* note 28, at 66-70

<sup>78</sup> DAVIS & GARCES, *supra* note 76, at 491-99; Bennett, *supra* note 7, at 119; Werden & Froeb *supra*, at 66-70.

<sup>79</sup> See, e.g., Bennett et al., *supra* note 7, at 114-15 (discussing consumer or "demand side" behavior); Tor, *Entry*, *supra* note 2, at 534-36 (examining the entry judgments and decisions of entrepreneurs in manufacturing industries as well as those made by financiers with respect to the ventures of these entrants); Tor & Rinner, *supra* note 7, at 854 (analyzing managers' overestimation of their ability to control risks and the translation into riskier managerial 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 ("Judicial decisionmaking in antitrust cases employed little economic reasoning and arguably created antitrust liability in a manner that condemned efficient conduct."); Cooper & Kovacic, *supra* note 7 (discussing the implications of the "boundedly rational" assumption on enforcement agency decisions.).



judgment and decision making, and related disciplines.<sup>80</sup>

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.<sup>81</sup> 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.<sup>82</sup> 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 preferences,<sup>83</sup> but psychological research proves to entail far more complex processes.<sup>84</sup>

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.<sup>85</sup> Scholars compare intuitive judgments, for example, with the normative standards that probability theory offers for the formation and updating of beliefs.<sup>86</sup> Similarly, in the decision-making domain, researchers contrast the assumptions underlying the

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<sup>80</sup> See generally Tor, *Behavioral Methodology*, *supra* note 1, at 242.

<sup>81</sup> E.g., Nicholas Barberis & Richard H. 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 F. Camerer, *Individual Decision Making*, in HANDBOOK OF EXPERIMENTAL ECONOMICS 587 (John H. Kagel & Alvin E. Roth eds., 1995) (same).

<sup>82</sup> 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., 2002) [hereinafter Kahneman & Frederick, *Representativeness Revisited*]; see also RICHARD NISBETT & LEE ROSS, HUMAN INFERENCE (1980) (comparing intuitive inferences with the requirements of formal reasoning).

<sup>83</sup> See, e.g., MARK BLAUG, THE METHODOLOGY OF ECONOMICS 142–44 (2d ed. 1992) (providing a short, non-technical overview of revealed preferences theory).

<sup>84</sup> For a useful elaboration of the distinction between *judgment* and *decision making* see, e.g., Robyn M. Dawes, *Behavioral Decision making and Judgment*, in 1 HANDBOOK OF SOCIAL PSYCHOLOGY 497, at 497–99, 530–33 (Daniel T. Gilbert et al. eds., 4<sup>th</sup> Ed 1998). See also Daniel Kahneman, *Preface*, in CHOICES, VALUES, AND FRAMES ix–xi; 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) (making a similar distinction based on the conventions of behavioral decision research and discussing it at length). See generally CHOICES, VALUES, AND FRAMES (Daniel Kahneman & Amos Tversky eds., 2000).

<sup>85</sup> See Tor, *Behavioral Methodology*, *supra* note 1, at Part II.A–B (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 3, 4–6 (William M. Goldstein & Robin M. Hogarth eds., 1997).

<sup>86</sup> See, e.g., Dawes, *supra* note 83.

normative model of rational choice with actual choice behavior.<sup>87</sup>

By now, many of the most robust findings of behavioral decision research have been reviewed in the legal literature generally<sup>88</sup> and, albeit less extensively, in antitrust scholarship specifically as well.<sup>89</sup> 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.<sup>90</sup> 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.<sup>91</sup> These heuristic processes, which help real-world, “boundedly rational” decision makers economize on their limited cognitive resources,<sup>92</sup> also generate some costs. Cognitive heuristics, for instance, permit decision makers quickly to reach approximate judgments most of the time, with little conscious effort.<sup>93</sup> However, the same mental shortcuts also cause sometimes predictable and systematic errors known as “judgmental biases.”<sup>94</sup>

<sup>87</sup> See, e.g., Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *ECONOMETRICA* 263 (1979); Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, in *RATIONAL CHOICE* 670 (Robin M. Hogarth and Melvin W. Reder eds., 1986).

<sup>88</sup> E.g. Jolls et al., *supra* note 1; Korobkin & Ulen, *supra* note 1; Tor, *Behavioral Methodology*, *supra* note 1.

<sup>89</sup> E.g., Armstrong & Huck, *supra* note 7; Bennett et al., *supra* note 7; Reeves & Stucke, *supra* note 2; Tor, *Behavioural Approach*, *supra* note 1; Tor, *Entry*, *supra* note 2; Tor, *Predatory Pricing*, *supra* note 2; Tor & Rinner, *supra* note 7.

<sup>90</sup> The distinction between risk and uncertainty was originally made in FRANK 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 AND HOWARD RAIFFA, *GAMES AND DECISIONS* 13 (reprint 1989).

<sup>91</sup> See Tor, *Behavioral Methodology*, *supra* note 1, at 249–50.

<sup>92</sup> See Tor, *Behavioral Methodology*, *supra* note 1 (offering a brief discussion of the development of the concept of bounded rationality); Cf. 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://www.globalsepri.org/UploadPhotos/2008912173543855.pdf>.

<sup>93</sup> See, e.g., Kahneman & Frederick, *Representativeness Revisited*, *supra* note 81, at 58 (“[P]eople...are often content to trust a plausible judgment that quickly comes to mind.”).

<sup>94</sup> See, e.g., Kahneman & Frederick, *Representativeness Revisited*, *supra* note 81, at 51. See also

Based on the beliefs they form through judgment,<sup>95</sup> 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, make enforcement and policy decisions, and more. For the hypothetical rational actor, decision making is a straightforward matter, a mere revelation of preexisting, well-ordered, preferences<sup>96</sup> that always maximizes subjective expected utility (SEU).<sup>97</sup> 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. Risk-neutral decision makers choose the option with the highest expected value,<sup>98</sup> risk-averse ones discount the expected value of risky or uncertain prospects to account for the risk involved, while risk-seeking actors find risky prospects more attractive than their mere expected value indicates.<sup>99</sup>

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. While they may be risk averse under limited circumstances, rational managers would never make for their firms risk-seeking decisions—which by definition have a negative expected value and are

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Rachlinski, *supra* note 16, at 755–56 (2000) (noting people typically are unaware of using heuristics); Tor, *Behavioral Methodology*, *supra* note 1, at 245.

<sup>95</sup> 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.

<sup>96</sup> The notion that choices “reveal” people’s preferences originated with Paul A. Samuelson, *A Note on the Theory of Consumer’s Behavior*, 5 *ECONOMICA* 61 (1938) and Paul A. Samuelson, *A Note on the Theory of Consumer’s Behavior: An Addendum*, 5 *ECONOMICA* 353 (1938), and received much attention and development since. For one short and highly readable discussion of the concept and its appeal, see Amartya Sen, *Behaviour and the Concept of Preference*, 40 *ECONOMICA* 241, 241–44 (1973).

<sup>97</sup> *E.g.*, BLAUG, *supra* note 82, at 229–30 (stating that “some regard the most characteristic feature of neoclassical economics . . . [is] 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,” and explaining the concept further (emphasis added)). The axiomatization of SEU was formalized by JOHN VON NEUMANN & OSKAR MORGENSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* 617–28 (1947) (an appendix) and LEONARD L. SAVAGE, *THE FOUNDATIONS OF STATISTICS* (1954) (developing the notion of personal, subjective probability and tying it with expected utility). For a discussion of rational choice theory in law, see Korobkin & Ulen, *supra* note 1, at 1060–66.

<sup>98</sup> *E.g.*, an individual’s preference toward a 50% chance of receiving \$101, for instance, to the certain receipt of \$50.

<sup>99</sup> *See e.g.*, VON NEUMANN & MORGENSTERN, *supra* note 97, at 629 (noting specifically their axiomatization of EU does not require a specific risk attitude); *see also* ROBIN HOGARTH, *JUDGEMENT AND CHOICE* 89–90 (2d ed. 1987) (describing these different utility functions and their interpretation).

therefore deemed irrational market behavior.<sup>100</sup>

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 model of rational choice in important respects. 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.<sup>101</sup>

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.<sup>102</sup>

### 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.<sup>103</sup> 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

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<sup>100</sup> See 1 AREEDA & HOVENKAMP, *supra* note 3, ¶113, at 140 (“[F]irms are (or must be assumed to be) profit maximizers . . . .”); 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 . . . assumption that firms seek to maximize profits.” (footnote omitted)). *But see infra* Part 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).

<sup>101</sup> The literature in this area is voluminous. See generally CHOICES, VALUES, AND FRAMES, *supra* note 83 (an important collection of articles in this area); Dawes, *supra* note 83, 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.

<sup>102</sup> 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. *Contrast* Stucke, *Monopolization*, *supra* note 7, at 552–53 (denoting as behavioral certain non-behavioral aspects of network effects and learning processes).

<sup>103</sup> See sources cited *supra* notes 6–14 and accompanying text.

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further argue that these deviations warrant changes in enforcement policy or antitrust doctrine. This section 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 stable than traditional antitrust theories suggest.<sup>104</sup> 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.<sup>105</sup> These ubiquitous real-world cartels, both domestic and global in scope, spanned markets with large numbers of competitors, relatively low entry barriers, non-homogenous products with complex pricing and cost structures, and other characteristics that make cartelization unlikely for strictly rational actors.<sup>106</sup>

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.<sup>107</sup> Other researchers point to additional, non-social phenomena, such as managers' aspiration to obtain merely satisfactory—rather than

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<sup>104</sup> See Armstrong & Huck, *supra* note 7, at 20-22 (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; Stucke, *At the Gate*, *supra* note 2, at 568-69; Marie Goppelsroeder, *Entry in Collusive Markets: An Experimental Study* 26-29 (Amsterdam Ctr. for Law & Econ., Working Paper No. 2009-05, 2008) available at <http://ssrn.com/abstract=1368728>; see also Christoph Engel & Lilia Zhurakhovska, *Oligopoly as a Socially Embedded Dilemma: An Experiment*, Max Planck Institute for Research on Collective Goods, Nov. 2011, available at [http://www.coll.mpg.de/pdf\\_dat/2011\\_01online.pdf](http://www.coll.mpg.de/pdf_dat/2011_01online.pdf).

<sup>105</sup> See 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 1563-6 (noting that the citric acid, lysine, liquid crystal display panels, air transportation, Dynamic Random Access Memory, and graphite electrodes cartels 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).

<sup>106</sup> More precisely, these factors diminish the likelihood of cartelization in rationality-based models only under some common specifications. See, e.g., Margaret C. Levenstein and Valerie Y. Suslow, *What Determines Cartel Success?*, 44 J. ECON. LITERATURE 43, 45-46 (2006); George J. Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44 (1964).

<sup>107</sup> See, e.g., Armstrong & Huck, *supra* note 7, at 21-22; Bennett et al., *supra* note 7, at 124; Leslie, *supra* note 3, at 280-81.

maximal—profitability.<sup>108</sup> Firms whose managers exhibit such preferences find the potential for more secure profits through cartelization more attractive than the profit-maximizing firm does.<sup>109</sup>

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 a less collusive, more competitive market behavior.<sup>110</sup> Similarly, the broader behavioral literature makes clear that individuals' concern for relative—as opposed to absolute—outcomes is ubiquitous,<sup>111</sup> particularly common in competitive settings,<sup>112</sup> and evidenced in managerial behavior.<sup>113</sup> Yet the concern for relative outcomes, if manifested by

<sup>108</sup> HERBERT A. SIMON, *ADMINISTRATIVE BEHAVIOR: A STUDY OF DECISION-MAKING PROCESSES IN ADMINISTRATIVE ORGANIZATION* 270-75 (3rd ed. 1976); M. Cyert & James G. March, *Organizational Factors in the Theory of Oligopoly*, 70 Q. J. ECON. 44, 44-64 (1956); Huw David Dixon, *Keeping up with the Joneses: Competition and the Evolution of Collusion*, 43 J. ECON. BEHAV. ORG. 223 (2000); Jörg Oechssler, *Cooperation as a Result of Learning with Aspiration Levels*, 49 J. ECON. BEHAV. ORG. 405 (2002).

<sup>109</sup> Note that a similar result may obtain in the familiar case where rational, yet risk averse, managers who pursue their self-interest believe that the expected outcomes of cartelization to be more stable and less risky than competition to maximize profits and, which diverge from what is optimal for the firm. See, e.g., Henry Hansmann & Reinier Kraakman, *What is Corporate Law?* in *THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH* 1, 2-3 (REINIER KRAAKMAN ET AL. EDS. 200?) (briefly introducing 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).

<sup>110</sup> See Steffen Huck, Hans-Theo Normann, & Jörg Oechssler, *Learning in Cournot Oligopoly – An Experiment*, 109 ECON. J. C80 (1999); Steffen Huck, Hans-Theo Normann, & Jörg Oechssler, *Does Information about Competitors' Actions Increase or Decrease Competition in Experimental Oligopoly Markets?*, 18 INT'L J. INDUS. ORG. 39 (2000); Theo Offerman, Jan Potters, & Joep Sonnemans, *Imitation and Belief Learning in an Oligopoly Experiment*, 69 REV. ECON. STUD. 973 (2002).

<sup>111</sup> 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." Jerry Suls & Ladd Wheeler, *A Selective History of Classic and Neo-Social Comparison Theory* in *HANDBOOK OF SOCIAL COMPARISON: THEORY AND RESEARCH* 3, 15 (Jerry Suls & Ladd Wheeler Eds. 2000). See also Andrew E. Clarke, Paul Frijters, & Michael A. Shields, *Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles*, 46 J. ECON. LIT. 95, 95-144 (2008).

<sup>112</sup> See, e.g., Stephan M. Garcia, Avishalom Tor, & Tyrone M. Schiff, *The Psychology of Competition: A Social Comparison Perspective*, 8 PERSP. ON PSYCHOL. SCI. 634 (2013) (discussing the evidence for concerns about relative outcomes in competitive situations).

<sup>113</sup> See Armstrong & Huck, *supra* note 7, at 18 (citing Andrew E. Clarke, Paul Frijters, & Michael A. Shields, *Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles*, 46 J. ECON. LITERATURE 95, 95-144 (2008); Robert Gibbons & Kevin J. Murphy, *Relative Performance Evaluation for Chief Executive Officers*, 43 INDUS. & LAB REL. REV. 30S, 30S-51S (1990)).

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managers when making decisions on behalf of their firms, can sometimes destabilize cartels and make markets more competitive.<sup>114</sup>

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.<sup>115</sup> 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.<sup>116</sup> At the same time, established collaborative or collusive arrangements are more stable as well than they would have been if the parties were strictly rational actors.<sup>117</sup>

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.<sup>118</sup> Managers’ risk attitudes also can lead them to overestimate the value of extant arrangements and underestimate the benefits of alternative courses of interaction with rivals.<sup>119</sup> 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.<sup>120</sup>

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

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<sup>114</sup> Armstrong & Huck, *supra* note 7, at 19. Concerns for relative position can also have the opposite effect of reinforcing cartelization, under some specifications. *See, e.g., id.* at 19.

<sup>115</sup> Aviram & Tor, *supra* note 2, at 247-63.

<sup>116</sup> *Id.* (noting that uncertainty, social norms, managerial risk percepts, the illusion of control, and status quo bias impact market participants’ judgments of information sharing).

<sup>117</sup> *Id.*

<sup>118</sup> Aviram & Tor, *supra* note 2, at 250-54 (noting that managers’ aversion to seemingly uncontrolled risks erects an additional barrier to collaboration with rivals); Margaret Blair & Lynn A. Stout, *Trust, Trustworthiness, and the Behavioral Foundations of Corporate Law*, 149 U. PA. L. REV. 1735, 1774-75 (2001); Dan M. Kahan, *Gentle Nudges vs. Hard Shoves: Solving the Sticky Norms Problem*, 67 U. CHI. L. REV. 607 (2000); Jeffrey J. Rachlinski, *The Limits of Social Norms*, 74 CHI.-KENT L. REV. 1537, 1551-54 (2000).

<sup>119</sup> Aviram & Tor, *supra* note 2, at 254-57.

<sup>120</sup> *Id.* at 257-63.

is therefore irrational according to the standard account.<sup>121</sup> 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.<sup>122</sup> Some scholars further offer evidence from antitrust cases of predatory behavior that appears irrational,<sup>123</sup> 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.<sup>124</sup>

At the same time, some analysts suggest that traditional models can overstate the harm from substantial market power.<sup>125</sup> According to this argument, real firms sometimes avoid fully exploiting their market power, charging prices they deem “fair” instead of maximizing profits.<sup>126</sup> 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 reputation for offering low prices or to avoid negative reactions by consumers to prices the latter perceive as “unfair.”<sup>127</sup>

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 finding would have been impossible if consumers were all perfectly rational, incorporating the expected costs of parts over the copier lifetime into the original

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<sup>121</sup> See 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.

<sup>122</sup> Tor, *Predatory Pricing*, *supra* note 2, at 55–56; Christoph Engel, *An Experimental Contribution to the Revision of the Guidelines on Research and Development Agreements*, Max Planck Institute for Research on Collective Goods, December 2010, available at [http://www.coll.mpg.de/pdf\\_dat/2010\\_48online.pdf](http://www.coll.mpg.de/pdf_dat/2010_48online.pdf).

<sup>123</sup> Leslie, *supra* note 3, at 274–84.

<sup>124</sup> See Armstrong & Huck, *supra* note 7, at 30–31; Horton, *supra* note 7, at 505; Leslie, *supra* note 3, at 297–301. See also Aaron Edlin, *Predatory Pricing*, in RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW 144, 151–53 (Einer R. 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.”)

<sup>125</sup> See Elizabeth M. Bailey, *Behavioral Economics: Implications for Antitrust Practitioners*, ANTITRUST SOURCE, June 2010, at 1, 5–7; Engel, *supra* note 121, at 6.

<sup>126</sup> See Bailey, *supra* note 124, at 5–7; Engel, *supra* note 121, at 6; Daniel Kahneman, Jack L. Knetsch & Richard H. Thaler, *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 AM. ECON. REV. 728–41 (1986).

<sup>127</sup> See Bailey, *supra* note 124, at 5–7; Engel, *supra* note 121, at 6; Kahneman et al., *supra* note 125, at 728–41.



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purchase price of the machine.<sup>128</sup>

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.<sup>129</sup> Kodak's actual aftermarket power depended on the proportion of myopic consumers (who did not take future costs effectively into account) versus 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.<sup>130</sup>

The ultimate welfare loss from the exercise of aftermarket power in this and similar situations therefore depends, first, on the relative proportions of sophisticated and 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 under-consumption in the latter.<sup>131</sup> Hence even firms facing more competitive conditions—such as Kodak did in the copier market—may benefit from exploiting boundedly rational consumers.<sup>132</sup>

In the area of vertical restraints of trade, antitrust scholars argued that product bundling and tying may exert more powerful effects on consumer behavior than traditional models acknowledge.<sup>133</sup> 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.<sup>134</sup> Dominant firms

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<sup>128</sup> See *supra* notes 65-71 (discussing the role of the rationality assumption in *Kodak*).

<sup>129</sup> *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 485-86 (1992).

<sup>130</sup> See Bennett et al., *supra* note 7, at 119.

<sup>131</sup> *Id.* at 119 n.25 (discussing the effects of aftermarket exploitation).

<sup>132</sup> Bar-Gill, *Competition and Consumer Protection: A Behavioral Economics Account*, in THE PROS AND CONS OF CONSUMER PROTECTION 12, 14, 25-27 (Swedish Competition Authority, 2012); OFFICE OF FAIR TRADING, THE IMPACT OF PRICE FRAMES ON CONSUMER DECISION MAKING 6 (May 2010); Bennett et al., *supra* note 7, at 121; Petit & Neyrinck, *supra* note 7, at 9-10.

<sup>133</sup> See Bennett et al., *supra* note 7, at 121-22; Petit & Neyrinck, *supra* note 7, at 8-11; see also Salinger, *supra* note 7, at 72; Stucke, *Monopolization*, *supra* note 7, at 564-67.

<sup>134</sup> See Bennett et al., *supra* note 7, at 121; Stefano DellaVigna, *Psychology and Economics: Evidence from the Field*, 47 J. ECON. LITERATURE 315, 322-23; Petit & Neyrinck, *supra* note 7, at 9-10; Salinger *supra* note 7, at 76; Stucke, *Monopolization*, *supra* note 7, at 564-67.

thus can use bundling, tying and similar devices more effectively to foreclose competition than would be the case if consumers were strictly rational.<sup>135</sup> 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.<sup>136</sup>

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.<sup>137</sup> Yet multiproduct firms with a smaller 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.<sup>138</sup>

In the case of vertical price restraints, both the historical evidence and the behavioral literature reveal that some manufacturers excessively impose resale price maintenance (RPM), when it is legal, on their retailers.<sup>139</sup> 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.<sup>140</sup> Loss aversion and fairness-driven behavior further make manufacturers averse to price-cutting,<sup>141</sup> and they also find the direct price control offered by RPM an excessively attractive

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<sup>135</sup> See Bennett et al., *supra* note 7, at 121; DellaVigna, *supra* note 133, at 322-23; Petit & Neyrinck, *supra* note 7, at 9-10; Stucke, *Monopolization*, *supra* note 7, at 564-67; 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).

<sup>136</sup> See Martin Beckenkam & Frank P. Maier-Rigaud, *An Experiment of Article 82 Rebate Schemes*, 2 COMP. L. REV. 1 (Supp. I, 2006); Alexander Morell, Andreas Glöckner & Emanuel Towfigh, *Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers – Experimental Evidence*, Max Planck Institute for Research on Collective Goods, July 2009, available at [http://www.coll.mpg.de/pdf\\_dat/2009\\_23online.pdf](http://www.coll.mpg.de/pdf_dat/2009_23online.pdf); see also Economides & Lianos, *supra* note 134, at 544.

<sup>137</sup> See Bennett et al., *supra* note 7, at 118; Petit & Neyrinck, *supra* note 7, at 8-10; Stucke, *Monopolization*, *supra* note 7, at 564-67.

<sup>138</sup> But see Bennett et al., at 119 (noting only the potential hindrance to dynamic competition bounded rationality of consumers poses but neglecting its potentially procompetitive effects).

<sup>139</sup> Tor & Rinner, *supra* note 7, at 839-47.

<sup>140</sup> *Id.* at 822-29. But see *infra* note 145 and the accompanying text (discussing evidence for the effect of loss-leader practices on perceptions of the quality of manufacturers' products).

<sup>141</sup> *Id.* at 829-33.

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response to price-cutting.<sup>142</sup> Moreover, resale price maintenance makes it particularly difficult for manufacturers to learn from experience whether it is in fact an efficient practice for their distribution system.<sup>143</sup> 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 that it also harms the competitive process, such as when it is employed by firms with market power or pervasive in an industry.<sup>144</sup>

Besides 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.<sup>145</sup> 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.<sup>146</sup> Thus even while showing that manufacturers tend to use RPM excessively, 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.<sup>147</sup> Empirical

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<sup>142</sup> *Id.* at 833-39.

<sup>143</sup> *Id.* at 842-47.

<sup>144</sup> *See id.* at 839-54.

<sup>145</sup> *Id.* at 813. *Cf.* Howard P. Marvel, *The Resale Price Maintenance Controversy: Beyond the Conventional Wisdom*, 63 ANTITRUST L. J. 59, 73-77 (1994).

<sup>146</sup> *See generally* Valarie A. Zeithaml, *Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence*, 52 J. MARKETING 2 (1988) ("Price reliance is a general tendency in some consumers to depend on price as a cue to quality."); Donald R. Lichtenstein, Nancy M. Ridgway & Richard G. Netemeyer, *Price Perceptions and Consumer Shopping Behavior: A Field Study*, 30 J. MARKETING RES. 234 (1993) (describing "a positive association between price and perceived quality").

<sup>147</sup> *See* Horton, *supra* note 7, at 493, 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

studies found, for one, that mergers often diminish the market value of the acquiring firm,<sup>148</sup> and behavioral research long has suggested that some excess merger activity is driven by the optimistic overconfidence of managers.<sup>149</sup> Related, a number of scholars contend that merger-specific efficiencies—which parties routinely proffer in accordance to the horizontal merger guidelines in support of transactions that raise competitive concerns<sup>150</sup>—are not only difficult to substantiate but often fail to materialize.<sup>151</sup>

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 those mergers “substantially likely to lessen competition.”<sup>152</sup> They also aver that the agencies already are skeptical regarding claims of merger-specific efficiencies.<sup>153</sup> Others counter that the evidence of prevalent inefficient mergers justifies a closer scrutiny by the agencies of transactions with potentially anticompetitive effects.<sup>154</sup> After all, merger policy seeks to balance the uncertain prospects of over- and under-enforcement—that is, the risk of blocking efficient mergers versus the risk of allowing the consummation of

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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).

<sup>148</sup> See 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., Edward Elgar 2003); Sara B. Moeller, Frederik P Schlingemann & René M. Stulz, *Wealth Destruction on a Massive Scale? A Study of Acquiring-Firm Returns in the Recent Merger Wave*, 60 J. FIN. 757 (2005); 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).

<sup>149</sup> Richard Roll, *The Hubris Hypothesis of Corporate Takeovers*, 59 J. BUS. 197 (1986). The agency problems generated by rational, self-interested managerial behavior can similarly lead to excess, inefficient, merger activity.

<sup>150</sup> See 2010 MERGER GUIDELINES, *supra* note 29, at § 10.

<sup>151</sup> 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 146, at 875-76; Weber & Camerer, *supra* note 146, at 400-01.

<sup>152</sup> Clayton Act § 7, 15 U.S.C. § 18 (2000).

<sup>153</sup> See Oldale, *supra* note 7, at 143; see also Reeves, *supra* note 7, at 8; Werden et al., *supra* note 7, at 130; Elizabeth M. Bailey, *Roundtable Interview with Joseph Farrell and Carl Shapiro*, *supra* note 10, at 3. 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. See also Daniel A. Crane, *Rethinking Merger Efficiencies*, 110 Mich L. Rev. 347 (2011) (criticizing the hostile approach of antitrust agencies to efficiency claims).

<sup>154</sup> See Reeves & Stucke, *supra* note 2, at 1560-63; Stucke, *At the Gate*, *supra* note 2, at 573-75; Stucke, *Reconsidering*, *supra* note 7, at 155-56; Waller, *supra* note 146, at 881 (2011); see also Horton, *supra* note 7, at 493-502.

anticompetitive ones.<sup>155</sup> Hence, these commentators assert, the risks of over-enforcement diminish and a greater emphasis on preventing anticompetitive mergers is warranted if inefficient mergers indeed are prevalent.<sup>156</sup>

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.<sup>157</sup> 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.<sup>158</sup> More generally, effective entry can prevent even firms with large market shares from exerting market power,<sup>159</sup> an essential element of monopolization and attempted monopolization, tying, exclusive dealing, and other illegal practices.<sup>160</sup>

Traditional models assume that entry will only take place when it maximizes entrants' profits, thus requiring a positive risk-adjusted, net present value.<sup>161</sup> 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.<sup>162</sup> Studies further reveal two additional puzzling entry phenomena: For one, entry appears rather insensitive to some (though not all) of the main economic predictors of expected future profitability, including the expected

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<sup>155</sup> William E. Kovacic, *Assessing the Quality of the Competition Policy: The Case of Horizontal Merger Enforcement*, 5 COMPETITION POL'Y INT'L 129, 130 (Spring 2009).

<sup>156</sup> See 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 146, at 881 (2011).

<sup>157</sup> See generally Tor, *Entry*, *supra* note 2. See also Stucke, *At the Gate*, *supra* note 2, at 569-72; Stucke, *New Realism*, *supra* note 7, at 6-11; Petit & Neyrinck, *supra* note 7, at 4-5.

<sup>158</sup> 2010 MERGER GUIDELINES, *supra* note 29, at § 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 consumers.").

<sup>159</sup> See *Ball Mem'l Hosp., Inc. v. Mut. Hosp. Ins.*, 784 F.2d 1325, 1335 (7th Cir. 1986) (rejecting the argument that market share indicates market power even in the absence of entry barriers, 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 (1981) (an early discussion of entry, market share and market power).

<sup>160</sup> See 2B AREEDA & HOVENKAMP, *supra* note 3, ¶ 420b & n.10, at 73-74 (3d ed. 2006) ("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.")

<sup>161</sup> Tor, *Entry*, *supra* note 2, at 489-90 & n. 15-17.

<sup>162</sup> See, e.g., JOHN R. BALDWIN, *THE DYNAMICS OF INDUSTRIAL COMPETITION: A NORTH AMERICAN PERSPECTIVE* 359 (1995); Paul A. Geroski, *Some Data-Driven Reflections on the Entry Process*, in *ENTRY AND MARKET CONTESTABILITY: AN INTERNATIONAL COMPARISON* 282, 295 (P.A. Geroski & Joachim Schwalbach eds., 1991). See generally Tor, *Entry*, *supra* note 2, at 490-92 (discussing this puzzle).

intensity of competition, certain entry barriers, and more.<sup>163</sup> In addition, startup 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.<sup>164</sup>

A behavioral analysis of entrants' judgments reveals, however, that these three puzzling phenomena largely correspond to the patterns of the psychology of optimistic overconfidence.<sup>165</sup> New entrants typically make their personally significant judgments of entry's prospects under conditions of extreme uncertainty.<sup>166</sup> In such circumstances, overoptimism and a number of related phenomena lead real entrants, as a group, to overestimate their prospects upon entry.<sup>167</sup> These processes, moreover, both reduce entrants' sensitivity to market predictors of success<sup>168</sup> and exert a differential impact on startups versus diversifying entrants that makes the former more biased when judging their entry prospects.<sup>169</sup>

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, the more biased and numerous startups fail at far greater proportions than their diversifying competitors but still are overrepresented among those few entrants who ultimately survive and prosper.<sup>170</sup> Furthermore, insofar as new entry is associated with innovation, particularly for startups, boundedly rational entry may be socially beneficial overall despite its costs for entrants.<sup>171</sup>

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.<sup>172</sup> Startups, and small entrants generally, rarely

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<sup>163</sup> Tor, *Entry*, *supra* note 2, at 492-94.

<sup>164</sup> *Id.* at 494-96.

<sup>165</sup> *Id.*, at 504 (explaining that “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.”) (emphasis in the original).

<sup>166</sup> *Id.* at 487, 527 n.192.

<sup>167</sup> *Id.* at 505-514 (offering an in-depth analysis of the impact of these phenomena on entrants).

<sup>168</sup> *Id.* at 514-520.

<sup>169</sup> See *infra* the text accompanying notes 208-14 (discussing the role of moderating variables in shaping the competition among new entrants and its market effects).

<sup>170</sup> *Id.* at 531-33.

<sup>171</sup> *Id.* at 537-40.

<sup>172</sup> *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).

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pose a short-term competitive threat to incumbents, but some large diversifying entrants possibly do.<sup>173</sup> In the long run, however, the few successful, often biased, innovative entrants are an important source of competitive pressure on incumbents.<sup>174</sup> 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 pro-competitive benefits.<sup>175</sup>

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.<sup>176</sup> 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 that such recoupment is considered unlikely when entry barriers are low.<sup>177</sup> 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 in penetrating the market as better indicators of the short-term competitive constraint on incumbents' potential recoupment.<sup>178</sup>

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 draw for antitrust doctrine and policy. Regrettably, moreover, many of the contributions to this new literature and its critiques manifest a common, fundamental methodological error in behavioral antitrust analysis to which we now turn.

#### *D. The Fundamental Methodological Error*

The apparent, explicit tension between antitrust law's extensive reliance

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<sup>173</sup> *Id.* at 494-96.

<sup>174</sup> *Id.* at 537-43.

<sup>175</sup> *Id.* at 549-50.

<sup>176</sup> *Id.* at 550-52.

<sup>177</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 at 224-26; Tor, *Predatory Pricing*, *supra* note 2, at 55.

<sup>178</sup> Tor, *Entry*, *supra* note 2, at 553-55 (also noting 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. 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 *Welch Food*, citing the Court's former ruling. *R.W.Int'l Corp. v. Welch Food Inc.*, 13 F.3d 478, 488 (1st Cir. 1994)).

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.<sup>179</sup> It may also explain, moreover, the delayed penetration of the behavioral approach into antitrust scholarship compared to most other legal fields.<sup>180</sup>

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.<sup>181</sup> 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.<sup>182</sup> More generally, hypothetical assumptions provide antitrust with the benefits of increased tractability, predictability, and conceptual clarity.<sup>183</sup>

Commentators long familiar with the powerful simplifying assumptions of traditional antitrust law and economics quite naturally approach behavioral antitrust in the same way.<sup>184</sup> Whether asserting its

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<sup>179</sup> See *supra* note 7 and accompanying text.

<sup>180</sup> See, e.g., Stucke, *At the Gate*, *supra* note 2, at 514; Arnaudo, *supra* note 5.

<sup>181</sup> See 2010 MERGER GUIDELINES, *supra* note 30, at 7–14 (offering the Department of Justice and Federal Trade Commission’s guidelines for defining the relevant market); see also Jonathan Baker, *Market Definition: An Analytical Overview*, 74 ANTITRUST L. J. 129 (2007); Louis Kaplow, *Why Ever Define Markets?*, 124 HARV. L. REV. 437 (2010).

<sup>182</sup> See, e.g., Baker, *supra* note 180, at 130–32; Gregory J. Werden, *Why (Ever) Define Markets? An Answer to Professor Kaplow 1* (Feb. 13, 2012) (unpublished manuscript), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2004655](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).

<sup>183</sup> See, e.g., HOVENKAMP, ANTITRUST ENTERPRISE *supra* note 3, at 7, 31–39; Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 925 (1979). (describing the benefits of the Chicago School economics’ “powerful simplifications”); Salinger, *supra* note 7, at 67–69; Werden et al., *supra* note 7.

<sup>184</sup> 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, CORPORATION, AND MARKETS 3, 3 (H. Kent Baker & John R. Nofsinger eds. 2010) (“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).



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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,”<sup>185</sup> “replace[s] the assumption of rationality with one of ‘bounded rationality,’”<sup>186</sup> or relies on an “irrationality hypothesis.”<sup>187</sup>

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 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, importantly, 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.<sup>188</sup>

### 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

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<sup>185</sup> Reeves, *supra* note 7, at 2.

<sup>186</sup> Cooper & Kovacic, *supra* note 7, at 780.

<sup>187</sup> Wright & Stone, *supra* note 7, at 1523.

<sup>188</sup> This Part builds significantly on the more comprehensive review of the behavioral evidence showing variability and heterogeneity and its implications across the law in Avishalom Tor, *Legal Design for a Behaviorally-Complex World* (manuscript on file with author).

manifested more strongly in some circumstances and more weakly in other situations, at times disappearing altogether.<sup>189</sup> 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.<sup>190</sup> 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, mix multiple phenomena together, or simply mischaracterize the empirical evidence.<sup>191</sup> Unsurprisingly, such mistakes occasionally lead legal researchers to erroneous conclusions.<sup>192</sup> Importantly, moreover, these confusions often follow a failure to engage the empirical behavioral evidence directly, where analysts instead rely on second- or third-hand accounts, primarily within the legal literature, of behavioral findings.<sup>193</sup>

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.*<sup>194</sup> 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.<sup>195</sup> The author seems to suggest that in such situations ambiguity-averse decision makers avoid formal contracting,

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<sup>189</sup> Tor, *Behavioral Methodology*, *supra* note 1, at 290-96 (explaining the significance of boundary conditions and their legal implications).

<sup>190</sup> *Id.* See also Rachlinski, *supra* note 16 (comparing the broader set of circumstances under which overoptimism is manifested compared to the narrower boundaries of ambiguity aversion).

<sup>191</sup> 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 3 categories of heuristics, which are judgment rather than choice phenomena, naming framing effects “biases,” and more).

<sup>192</sup> See, e.g., Wright & Stone, *supra* note 7, at 1552.

<sup>193</sup> See e.g., Stucke, *Reconsidering*, *supra* note 7, at 136-37 & nn. 134, 138; Roger Van den Bergh, *Behavioral Antitrust: Not Ready for the Main Stage*, 9 J. COMPETITION L. & ECON. 203, 215-16 & nn. 36, 38 & 41 (2013); Wright & Stone, *supra* note 7, at 1522 & n.20. 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.

<sup>194</sup> *United States v. Paramount Pictures, Inc.*, 334 U.S. 131 (1948).

<sup>195</sup> Ryan M. Riegg, *Opportunism, Uncertainty, and Relational Contracting—Antitrust in the Film Industry*, 6 U. DENV. SPORTS & ENT. L. J. 107, 125 (2009).

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preferring instead more open-ended relational contracts.<sup>196</sup> While intuitively plausible, however, 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.<sup>197</sup> In the film industry, however, ambiguity is so pervasive that an aversion to it is 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.<sup>198</sup>

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.<sup>199</sup> 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 a vis the status quo ("gains," in prospect theory parlance).<sup>200</sup> 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.<sup>201</sup>

Yet not only is the assertion of common risk aversion among potential entrants at odds with extensive empirical findings from

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<sup>196</sup> *Id.*

<sup>197</sup> Craig R. Fox & Amos Tversky, *Ambiguity Aversion and Comparative Ignorance*, 110 Q. J. ECON. 585 (1995); Craig R. Fox and Martin Weber, *Ambiguity Aversion, Comparative Ignorance, and Decision Context*, 88 ORG. BEHAV. & HUM. DECISION PROCESSES 476 (2002). *But see* Clare Chua Choiw & Rakesh K. Sarin, *Comparative Ignorance and the Ellsberg Paradox*, 22 J. RISK & UNCERTAINTY 129 (2001) (showing that ambiguity aversion sometimes remains in non-comparative settings, although it is significantly stronger in the comparative setting).

<sup>198</sup> Moreover, research shows 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. Fox & Tversky, *supra* note 195; Fox & Weber, *supra* note 195. Yet as the study's author notes, citing a famous screen writer, "nobody knows anything" about what makes a movie a hit or not. Riegg, *supra* note 195, at 129. Hence ignorance is largely shared and ambiguity aversion not a likely force with respect to the most significant factor in this contracting environment.

<sup>199</sup> *See, e.g.*, Stucke, *At the Gate*, *supra* note 2, at 563-72; Stucke, *New 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* note 108 and the accompanying text (discussing firms' decision behavior).

<sup>200</sup> Kahneman & Tversky, *Prospect Theory*, *supra* note 86.

<sup>201</sup> Stucke, *At the Gate*, *supra* note 2, at 569-72; Stucke, *New Realism*, *supra* note 7, at 6-11; Petit & Neyrinck, *supra* note 7, at 4-5.

industrial organization research,<sup>202</sup> but a closer examination also reveals that it is not supported by the behavioral evidence either, for a number of reasons.<sup>203</sup> 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 aversion.<sup>204</sup> 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.<sup>205</sup> 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.<sup>206</sup>

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 one that generate loss aversion.<sup>207</sup> Such loss-averse entrants, however, will

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<sup>202</sup> Tor, *Entry*, *supra* note 2, at 488-501.

<sup>203</sup> Entrants may sometimes shun potentially profitable entry opportunities for a variety of traditional economic and behavioral reasons. *See, e.g.*, Stucke, *New Realism*, *supra* note 7, at 8-10. The present discussion only illustrates the limited explanatory power of framing and reference points in this case.

<sup>204</sup> The seminal article that introduced prospect theory uses a simple mixed gamble example to illustrate loss aversion. Kahneman & Tversky, *Prospect Theory*, *supra* note 86. *See also* Amos Tversky & Daniel Kahneman, *Advances in Prospect Theory: Cumulative Representation of Uncertainty*, 5 J. RISK UNCERTAINTY 297, 297-323 (1992) (offering evidence of loss aversion in mixed gambles); 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).

<sup>205</sup> Kahneman & Tversky, *Prospect Theory*, *supra* note 86.

<sup>206</sup> For one, loss-averse entrants will be more reluctant to enter than entrants who are merely risk averse. *Cf.* Matthew Rabin, *Risk Aversion and Expected-Utility Theory: A Calibration Theorem*, 68 ECONOMETRICA 1281, 1281-92 (2000). 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 Tests of Gain-Loss Separability in Prospect Theory*, 54 MGMT. SCI. 1322, 1322-35 (showing that when choosing between mixed gambles individuals are less sensitive to differences in the probabilities of potential outcomes).

<sup>207</sup> *See* Johannes Abeler, Armin Falk, Lorenz Goette, David Huffman, *Reference Points and Effort Provision*, 101 AM. ECON. REV. 470 (2011) (showing experimentally how expectations impact real effort provision); Chip Heath, Richard P. Larrick & George Wu, *Goals as Reference Points*, 38 COG. PSYCHOL. 79 (1999) (presenting evidence that goals both function as reference points and exhibit the properties of loss aversion and diminishing sensitivity).

embark on far riskier ventures than their risk-averse counterparts would be willing to undertake.<sup>208</sup>

The role of framing and reference points in shaping entrants' risk preferences 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 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.<sup>209</sup> 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.<sup>210</sup> We further saw that the variables that moderate optimistic overconfidence help explain the inferior average performance of startup entrants compared to their diversifying counterparts.<sup>211</sup> Two such variables in particular—the intensity of preferences and the ambiguity of the decision environment—systematically lead startup entrants to exhibit more biased judgments of their prospects than those manifested by diversifying entrants.<sup>212</sup>

While these findings bear important implications for the competition among entrants, for its 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.<sup>213</sup> 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

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<sup>208</sup> 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).

<sup>209</sup> A moderator variable affects the direction of the strength of the relationship between two other variables. See, e.g., Reuben M. Baron & David A. Kenney, *The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations*, 51 J. PERSONALITY & SOC. PSYCHOL. 1173, 1174 (1986) (“In general terms, a moderator is a . . . variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable.”).

<sup>210</sup> See Tor, *Entry*, *supra* note 2, at 503-31.

<sup>211</sup> See *id.* at 487, 520-31.

<sup>212</sup> See Tor, *Entry*, *supra* note 2, at 520-31. See also Ken G. Smith et al., *Decision Making Behavior in Smaller Entrepreneurial and Larger Professionally Managed Firms*, 3 J. BUS. VENTURING 223 (1988); Arnold C. Cooper et al., *Entrepreneurs' Perceived Chances for Success*, 3 J. BUS. VENTURING 97, 103 (1988).

<sup>213</sup> See Tor, *Entry*, *supra* note 2, at 520-31.

incumbents,<sup>214</sup> or mistakenly believe that the cohort of ex-post successful entrants resembles the pool of those attempting entry ex-ante.<sup>215</sup>

### B. Heterogeneity, Not Uniformity

Much like they neglect of the variability of empirical behavioral phenomena, antitrust commentators frequently fail to appreciate the heterogeneity of human behavior.<sup>216</sup> 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.<sup>217</sup>

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,<sup>218</sup> thinking style,<sup>219</sup> risk-taking propensity,<sup>220</sup> personality traits,<sup>221</sup> and more.<sup>222</sup> Notwithstanding this evidence for systematic

<sup>214</sup> Wright & Stone, *supra* note 7, at 1540-41, n.91.

<sup>215</sup> *Id.* at 1541 n.91.

<sup>216</sup> *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).

<sup>217</sup> *See, e.g.*, Stucke, *Reconsidering*, *supra* note 7, at 121-22; Wright & Stone, *supra* note 7, at 1542.

<sup>218</sup> *See, e.g.*, 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); 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).

<sup>219</sup> *See, e.g.*, Richard West, Maggie E. Toplak & Keith Stanovich, *Heuristics and Biases as Measures of Critical Thinking: Associations with Cognitive Ability and Thinking Dispositions*, 100 J. EDUC. PSYCHOL. 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”).

<sup>220</sup> *See, e.g.*, Kevin T. Mahoney, Walter Buboltz, Irwin P. Levin, Dennis Doverspike & Daniel J. Svyantek, *Individual Differences in 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).

<sup>221</sup> *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, Gary J. Gaeth, Judy Schreiber & Marco Lauriola, *A New Look at Framing Effects: Distributions of Effect Sizes, Individual Differences, and Independence of Types of Effects*, 88 ORG. BEHAV. HUM. DECISION PROCESSES 411 (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).

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individual differences in specific behavioral phenomena, however, the correlation *within* individuals among different deviations from rationality is small and so is the proportion of the overall variance in behavior that even systematic individual differences account for.<sup>223</sup> Moreover, people exhibit a particular behavioral phenomenon to different degrees at different times in different contexts.<sup>224</sup> 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.<sup>225</sup> 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 resale price maintenance revealed, for example, that some manufacturers excessively impose this vertical restraint in their distribution systems when it is legal, and may only learn of their costly mistake after extended periods of time, to their own detriment and at a cost to some of their retailers.<sup>226</sup> 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*

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<sup>222</sup> Ann-Renée Blais, Megan M. Thompson & Joseph V. Baranski, *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 that the basis for these differences remained elusive).

<sup>223</sup> See Kirstin C. Appelt, Kerry F. Milch, Michel J. Handgraaf & Elke U. Weber, *The Decision Making Individual Differences Inventory and guidelines for the study of individual differences in judgment and decision making*, 6 JUDGMENT & DECISION MAKING 252 (2011).

<sup>224</sup> See, e.g., N.S. Fagley & Paul M. Miller, *Framing Effects and Arenas of Choice: Your Money or Your Life?*, 71 ORG. BEHAV. HUM. DECISION PROCESSES 355 (1997) (although “[t]here was a significant sex by frame interaction such that only women exhibited framing effects on choice...[r]egardless of frame, subjects made riskier choices when outcomes involved human lives rather than money”); Rui Mata, Anika K. Josef, Gregory R. Samanez-Larkin & Ralph Hertwig, *Age Differences in Risky Choice: A Meta-Analysis*, 1235 ANNALS N.Y. ACAD. SCI. 18 (2011) (using a systematic literature review researchers discovered that age-related differences varied considerably based on the task at hand). See generally, Appelt et al., *supra* note 223.

<sup>225</sup> Moreover, behavior that deviates further from the assumptions of rationality is not always associated with inferior performance in the market. See *infra* Part III.A.1.

<sup>226</sup> Tor & Rinner, *supra* note 7, at 839-42.

illegality.<sup>227</sup> Others offered to designate resale price maintenance, in light of the behavioral evidence, a presumptively illegal practice that courts can dispose of with a “quick look.”<sup>228</sup> 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.<sup>229</sup> 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 resale price maintenance that also accounts for behavioral regularities, as opposed to the alternative of an open-ended, unstructured ROR.<sup>230</sup>

More recently, some analysts have begun considering explicitly the implications of systematic differences between classes of antitrust actors.<sup>231</sup> 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.”<sup>232</sup> 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” consumers,<sup>233</sup> or another, strange, hypothetical world in which consumers are “rational” but firms are “boundedly rational.”<sup>234</sup>

Because of this assumed uniformity, many otherwise interesting and potentially valuable observations that are made throughout the analysis—whether with respect to consumers, firms, or the government’s role—are simultaneously too broad and too narrow. Take

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<sup>227</sup> 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 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).

<sup>228</sup> Reeves & Stucke, *supra* note 2, at 1528 & n.341.

<sup>229</sup> Tor & Rinner, *supra* note 7, at 854-55.

<sup>230</sup> *See id.* at 855-63, *See also infra* Part V.B..

<sup>231</sup> Part III *infra* examines at length 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 and that allow exploitation.

<sup>232</sup> Stucke, *Reconsidering*, *supra* note 7, at 121-22 (and throughout the whole article). 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.

*Id.* at 122

<sup>233</sup> *Id.* at 144-53.

<sup>234</sup> *Id.* at 162-85.



for instance the argument that a “rational” government that seeks to respond to the possible 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.”<sup>235</sup> 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.<sup>236</sup>

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.”<sup>237</sup> 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 naiveté 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

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<sup>235</sup> *Id.* at 139-44.

<sup>236</sup> 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 *infra* illustrates at length.

<sup>237</sup> Wright & Stone, *supra* note 7, at 1535 (emphasis in original).

literature for this assumption. . . .”<sup>238</sup> By now it should be clear that this charge itself is naïve, not only failing to recognize the extensive empirical 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 among each group of antitrust actors. We already saw, for instance, that new entrants exhibit greater optimistic overconfidence than their diversifying competitors.<sup>239</sup> 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.<sup>240</sup> 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.<sup>241</sup> 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.”<sup>242</sup> 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.<sup>243</sup> Thus even while holding their approach as

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<sup>238</sup> *Id.* at 1535-36.

<sup>239</sup> Tor, *Entry*, *supra* note 2, at 520-31.

<sup>240</sup> *Id.*

<sup>241</sup> *Cf.* Tor, *Entry*, *supra* note 2, at 543-45 (examining the factors that lead to an overrepresentation of more biased entrants when considering the variability of entry judgments).

<sup>242</sup> Wright & Stone, *supra* note 7, at 1527.

<sup>243</sup> *Id.* at 1536-48.

more sophisticated, these scholars repeatedly and naively assume a single, uniform, all-encompassing “irrationality,” ignoring the evidence of variability and heterogeneity, with respect to both behavioral phenomena generally and the competition among entrants and between them and incumbents more specifically.<sup>244</sup>

### III. THE SECOND MISTAKE: ASSUMING (AWAY) INSTITUTIONAL EFFECTS

Real antitrust actors do not operate alone, 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 a business by the means they believe most effective in 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: They either ignore the effects of antitrust institutions altogether, or blithely assume that these institutions perfectly align the behavior of antitrust actors with rationality-based models. Behavioral proponents who assume away institutional effects usually do not explain why these effects are unimportant or irrelevant to the antitrust questions they examine.<sup>245</sup> Nor do behavioral opponents, who routinely assume that antitrust institutions—particularly markets and firms<sup>246</sup>—guarantee rational behavior, pause to examine the specific conditions that determine whether and how these institutional effects take place.<sup>247</sup>

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<sup>244</sup> See Tor, *Entry*, *supra* note 2, at 565-67. 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. As explained above, “irrational” predation can be successful (and even comprise a rational strategy). See Leslie, *supra* note 3, at 280-85, 318-38. See also Edlin, *supra* note 123, at 148-51 (explaining that the success of predation depends on the parties’ beliefs regarding the likelihood of its success, irrespective of whether such predation is strictly rational independently of the beliefs about its prospects).

<sup>245</sup> See, e.g., Foer, *supra* note 6, at 35-39; Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 127-35.

<sup>246</sup> But see Cooper & Kovacic, *supra* note 7, at 782 (examining theoretically how the behavior of enforcement agencies may be shaped by some behavioral forces).

<sup>247</sup> See, e.g., Bailey, *supra* note 124, at 6-7; Salinger, *supra* note 7, at 82-83; Werden et al., *supra* note 7, at 129-37; Wright & Stone, *supra* note 7, at 523-25. 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 Jennifer

In reality, however, the effects of institutions on antitrust actors are pervasive yet variable. Consumers behave differently in market and non-market 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 sections 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.<sup>248</sup> 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.<sup>249</sup>

#### 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.<sup>250</sup> When markets offer better and more readily available information, consumers' judgments and decisions may be

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Arlen, *Comment: The Future of Behavioral Economic Analysis of Law*, 51 VAND. L. REV. 1765 (1998); Richard Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551, 1556 (1998); Roberta Romano, *A Comment on Information Overload, Cognitive Illusions and their Implications for Public Policy*, 59 S. CAL. L. REV. 313 (1986).

<sup>248</sup> See, e.g., *Pac. Bell Tel. Co. v. Linkline Commc'n*, 555 U.S. 438 (2009); *Leegin Creative Leather Prods. v. PSKS, Inc.*, 551 U.S. 877 (2007); *Bell Atl. Corp. v. Twombly*, 550 U.S. 544 (2006).

<sup>249</sup> Tor, *Behavioral Methodology*, *supra* note 1, at 310-13. Cf. Oren Bar-Gill, *supra* note 131, at 12, 15 (noting, with respect to the interaction between consumers and producers that: “[t]he behavioral economics model . . . is context dependent” such that “[w]hile the analysis and discussion below are 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”).

<sup>250</sup> 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) (discussing the costs of information search and their implications for advertising, the role of specialized intermediaries, and more).

more accurate and better aligned with their preferences.<sup>251</sup> 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, cognitive, or financial resources to make optimal judgments and decisions, leading consumers rationally to ignore relevant information.<sup>252</sup>

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.<sup>253</sup> 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.<sup>254</sup> 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.<sup>255</sup>

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 function.<sup>256</sup> These specialized service providers, ranging from long-

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<sup>251</sup> On the conditions necessary for such improvements, *see infra* notes 292-93 and the accompanying text.

<sup>252</sup> *Cf.* Melvin A. 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 TEX. L. REV. 1581, 1585-86 (2005) (discussing consumer ignorance with respect to standard-form contracts).

<sup>253</sup> *See, e.g.*, Justin P. Johnson & David P. Myatt, *On the Simple Economics of Advertising, Marketing, and Product Design*, 96 AM. ECON. REV. 756 (2006); Phillip Nelson, *Advertising as Information*, 82 J. POL. ECON. 729 (1974); Stigler, *supra* note 248, at 220-24.

<sup>254</sup> *See, e.g.*, Johnson & Myatt, *supra* note 251, at 766-68-; Nelson, *supra* note 251, at 729-34; Stigler, *supra* note 248, at 220-24. Recent scholarship further suggests that producers may possess better information regarding consumers' behavior than do consumers themselves. *See* Oren Bar-Gill & Oliver Board, *Product-Use Information and the Limits of Voluntary Disclosure*, 14 AM. L. & ECON. REV. 235 (2012); Oren Bar-Gill & Franco Ferrai, *Informing Consumers about Themselves*, 3 ERASMUS. L. REV. 93 (2010) (both arguing the significance of product use information and the need to regulate its disclosure). *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).

<sup>255</sup> *See, e.g.*, DAN F. SPULBER, MARKET MICROSTRUCTURE: INTERMEDIARIES AND THE THEORY OF THE FIRM (1999). Producers can benefit from exploiting or even generating consumers' deviations from rationality, not only by offering biased information but also by shaping consumer perceptions of and preferences for their products. *See generally* OREN BAR-GILL, SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS (2012).

<sup>256</sup> *See* FRANK ROSE THE ECONOMICS, CONCEPT, AND DESIGN OF INFORMATION INTERMEDIARIES: A THEORETIC APPROACH (1999); Thomas F. Cosimano, *Intermediation*, 63

standing outlets aimed at the general public, such as “consumer reports,” through 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.<sup>257</sup> 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.<sup>258</sup> 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.<sup>259</sup> In other instances, sellers develop products that are more complex than necessary to satisfy consumer demand—such as where certain cellular service plans are concerned<sup>260</sup>—making it exceedingly difficult to compare among competing offerings.<sup>261</sup>

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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); Dan F. Spulber, *Market Microstructure and Intermediation*, 10 J. ECON. PERSP. 135 (1996). *See also* Stigler, *supra* note 248, at 216-17 (discussing the role of distributors as information intermediaries).

<sup>257</sup> *See* Oren Bar-Gill & Elizabeth Warren, *Making Credit Safer*, 157 U. PA. L. REV. 1, 26-55 (2008) (citing U.S. GOV’T ACCOUNTABILITY OFFICE, CREDIT CARDS: INCREASED COMPLEXITY IN RATES AND FEES HEIGHTENS NEED FOR MORE EFFECTIVE DISCLOSURES TO CONSUMERS 6 [hereinafter GAO, INCREASED COMPLEXITY REPORT]); Brian Bucks & Karen Pence, *Do Homeowners Know Their House Values and Mortgage Terms?* 26-27 (Fed. Res. Bd. of Governors, Fin. & Econ. Discussion Series, Paper No. 2006-03, 2006), available at <http://www.federalreserve.gov/Pubs/feds/2006/200603/200603pap.pdf>; Oren Bar-Gill, *Seduction by Plastic*, 98 NW. U. L. REV. 1373, 1395-1408 (2003).

<sup>258</sup> *See, e.g.*, GAO, INCREASED COMPLEXITY REPORT *supra* note 255, at 6 (finding that “[m]ost financial products such as mortgage loans and credit cards are too complicated and lengthy for [them] to fully understand”); BAR-GILL, *supra* note 253, at 28-32.

<sup>259</sup> Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 Q. J. ECON. 505, 519-20 (2006).

<sup>260</sup> *See* Adi Ayal, *Harmful Freedom of Choice: Lessons from the Cellphone Market*, 74 LAW CONTEMP. PROB. 91 (examining the ways in which the complexity of cellphone usage contracts might be harmful to consumers); Bar-Gill, *Competition and Consumer Protection*, *supra* note 131, at 11-13, 21-22. *See also* Michael Grubb, *Selling to Overconfident Consumers*, 99 AM. ECON. REV. 1770 (2009) (where observed cell phone plans were structured to exploit consumer overconfidence).

<sup>261</sup> *See, e.g.*, Bruce Ian Carlin, *Strategic Price Complexity in Retail Financial Markets*, 91 J. FIN. ECON. 278 (2009) (a model showing that as competition intensifies firms add complexity to their price structures in a non-cooperative oligopoly, to increase market power by preventing some consumers from becoming knowledgeable about prices); Glenn Ellison & Alexander Wolitzky, *A Search Cost Model of Obfuscation* (NBER Working Paper 15237, August 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); Chris M. Wilson, *Ordered Search and Equilibrium Obfuscation*, 28 INT’L J. INDUS. ORG. 496 (2010) (a model demonstrating the

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.<sup>262</sup> 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.<sup>263</sup>

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 collectively cancel each other out.<sup>264</sup> This argument, however, fails to account for *systematic* deviations from rationality that bias market behavior in predictable and consistent directions and

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incentives for an oligopolist to obfuscate by deliberately increasing the cost for consumers to locate its product and price). *But see* Alexia Gaudeul & Robert Sugden, *Spurious Complexity and Common Standards in Markets for Consumer Good*, 79 *ECONOMICA* 209 (2012) (a model showing that a countervailing force of consumer preference for simple choice can reduce complexity); Miravete, E.J. *Competition and the Use of Foggy Pricing*, 5 *AM. ECON. J. MICROECONOMICS* 194 (2013) (concluding that the transition from monopoly to competition in early U.S. cellphone industry did not generally foster the use of tariff options aiming at profiting from consumer mistakes and offering alternative accounts for the observed “foggy” pricing).

<sup>262</sup> *See, e.g.*, Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 *N.Y.U. L. REV.* 630 (1999); Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: Some Evidence of Market Manipulation* 112 *HARV. L. REV.* 1432 (1998-1999) (discussing manipulation of consumers). 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; Salinger, *supra* note 7, at 122; Petit & Neyrinck, *supra* note 7, at 9-11; Maurice E. Stucke, *Behavioral Exploitation and its Implications on Competition and Consumer Protection Policies*, in *PROS AND CONS*, *supra* note 253, at 77.

<sup>263</sup> *See* JOHN BLACK, *A DICTIONARY OF ECONOMICS* 348 (1997); Stucke, *Reconsidering*, *supra* note 7, at 123. 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 268-271 and the accompanying text (discussing the approach of the agencies to consumer behavior in merger investigations).

<sup>264</sup> Milton Friedman, *The Methodology of Positive Economics*, in *ESSAYS IN POSITIVE ECONOMICS* 3, 21-22 (1953). *See also* Allan Gibbard & Hal Varian, *Economic Models*, 75 *J. PHIL.* 664, 669-673 (1978) (discussing the concepts of approximation and fit in microeconomic models that are based on false assumptions); Posner, *supra* note 257, at 1556 (echoing Friedman's argument in his critique of behavioral law and economics).

therefore do not cancel out in the aggregate.<sup>265</sup>

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.<sup>266</sup> 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, resale price maintenance, and even the efficacy of new entry.<sup>267</sup> 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.<sup>268</sup> Hence, merger predictions that fail to account for systematic biases in consumer demand—whereby consumers, for instance, over- or under-react to changes in the relative prices of products in a given market—may result in erroneous predictions of merger outcomes.<sup>269</sup>

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 market.<sup>270</sup> 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.<sup>271</sup>

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<sup>265</sup> Tor, *Entry*, *supra* note 2, at 563.

<sup>266</sup> 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).

<sup>267</sup> See *supra* notes 71-77 and accompanying text.

<sup>268</sup> 2010 MERGER GUIDELINES, *supra* note 29; PETER DAVIS & ELIANA GARCES, QUANTITATIVE TECHNIQUES FOR COMPETITION AND ANTITRUST ANALYSIS 401-35 (2009); Gregory J. Werden & Luke M. Froeb, *Unilateral Competitive Effects of Horizontal Mergers*, in HANDBOOK OF ANTITRUST ECONOMICS 43 (Paolo Buccirossi ed. 2008).

<sup>269</sup> Cf. Bennett et al., *supra* note 7, at 119 (noting that “passive” consumers can reduce both the overall price elasticity of a product or its cross-elasticity with other products).

<sup>270</sup> See, e.g., Werden et al., *supra* note 7, at 137; Wright & Stone, *supra* note 7, at 1523.

<sup>271</sup> See, e.g., DAVIS & GARCES, *supra* note 76, at 495-96 (also explaining the limited availability



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.<sup>272</sup> 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.<sup>273</sup> 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.<sup>274</sup> Hence it is clear, even without resolving these significant questions, that the empirical behavioral evidence is potentially relevant to merger enforcement across the board.<sup>275</sup>

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

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of such data).

<sup>272</sup> Stucke, *Reconsidering*, *supra* note 7, at 34. See also Werden et al., *supra* note 7, at 127 (implying behavioral evidence could be used to challenge the assumption that consumers maximize utility via choice).

<sup>273</sup> 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.

<sup>274</sup> See *id.* at 318, n. 344 and accompanying text.

<sup>275</sup> 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, Comment, *Behavioral Antitrust and Merger Control*, 167 J. INST. THEORETICAL ECON. 143, 146-47 (2011) (criticizing Werden et al.'s argument that the behavioral evidence should be ignored, regardless of its validity, if it makes current practices in welfare economics obsolete); Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 117; Stucke, *Reconsidering*, *supra* note 7, at 186-88; Werden et al., *supra* note 7, at 137 ("...[I]rrational decision making by consumers destroys the analytic basis of welfare economics."). 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.

it or trying to exploit it—markets also help align producers’ own behavior with rationality through a number of mechanisms.<sup>276</sup> 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 the 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.<sup>277</sup> Importantly, though powerful and significant, the various mechanisms of market rationality are imperfect, at times failing to insure producer rationality and occasionally even facilitating systematic deviations from it.<sup>278</sup>

Economists have long argued that markets overall may comport with the predictions of strictly rational models even while individual firms deviate from it. Milton Friedman explained that the aggregation of firm behavior in the market means that random errors will cancel out in the aggregate.<sup>279</sup> Nonetheless, as we saw already with respect to consumer behavior, systematic deviations from rationality may not cancel out, instead generating broader market patterns that differ from predictions based on hypothetical rationality.<sup>280</sup>

Similarly, Becker extended his argument regarding irrational consumer behavior, *ceteris paribus*, to producers.<sup>281</sup> He showed that even firms who do not maximize profits must respond systematically

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<sup>276</sup> The notion that non-market 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 247, at 1782 (1998) (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, “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, 1748-1749, 1758-1760 (1998) (bounded rationality may be of limited importance for the analysis of market behaviors because of competitive discipline).

<sup>277</sup> To distinguish among the different mechanisms and their effects on rationality, the present section treats the firm as a single decision maker, while the next section considers in detail the various intra-organizational mechanisms that operate within the producer-firm.

<sup>278</sup> 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 rationality that pertains to specific firms, *see* Becker, *supra* note 264, at 2-12 (introducing this distinction and using it to explain seemingly contradicting findings at the two levels).

<sup>279</sup> Friedman, *supra* note 262, at 21-22.

<sup>280</sup> Tor, *Entry*, *supra* note 2, at 563 (discussing this caveat with respect to Friedman’s argument).

<sup>281</sup> Becker, *supra* note 264, at 9-12 (showing how the argument extends to firms that use decision rules other than profit maximization).

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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. 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.<sup>282</sup>

However, the generality of this result—which applies not just to business firms but to all decision makers with resource constraints<sup>283</sup>—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,<sup>284</sup> monopolization and attempted monopolization both apply only to firms above a certain market power threshold,<sup>285</sup> 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.<sup>286</sup> In each of these areas of antitrust doctrine, different markets that move in the same general direction will generate very different legal results, depending on the respective magnitude of change in market power. The nature of these changes, however, will depend in part on the nature of producers' rationality in a given market setting.<sup>287</sup>

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 behaviors of that firm, its competitors, suppliers, and so on adhere the precepts of rational profit maximization. To illustrate, the same allegedly predatory conduct that could not harm competition in a world populated only by perfectly rational firms—say,

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<sup>282</sup> *Id.* (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.”).

<sup>283</sup> *Id.* at 12.

<sup>284</sup> Clayton Act § 7, 15 U.S.C. § 18 (2000); 2010 MERGER GUIDELINES, *supra* note 29.

<sup>285</sup> See 1 AREEDA & HOVENKAMP, *supra* note 3; *United States v. Grinnell Corp.*, 384 U.S. 563 (1966); *Ball Mem'l Hosp., Inc. v. Mut. Hosp. Ins., Inc.*, 784 F.2d 1325, 1335 (7th Cir. 1986).

<sup>286</sup> See 1 AREEDA & HOVENKAMP, *supra* note 3; *United States v. Microsoft Corp.*, 253 F.3d 34, 50-51 (D.C. Cir. 2001); *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 601-602 (1985); *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951).

<sup>287</sup> *Cf.* Thomas Russell & Richard H. Thaler, *The Relevance of Quasi-Rationality in Competitive Markets*, 75 AM. ECON. REV. 1071 (1985) (an early model showing 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).

because market conditions make recoupment of the costs invested in predation unlikely—can generate significant competitive harm where a real monopolist is (or is perceived to be) irrationally aggressive in the face of new entry.<sup>288</sup>

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 non-market 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 non-market settings.<sup>289</sup>

To most economists, the notion that monetary incentives matter and that larger monetary incentives lead to greater effort and better performance is near axiomatic.<sup>290</sup> 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.<sup>291</sup> In fact, sometimes increased monetary incentives even diminish performance.<sup>292</sup> 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.<sup>293</sup>

<sup>288</sup> See Leslie, *supra* note 3, at 298-300; Tor, *Predatory Pricing*, *supra* note 2, at 55-57.

<sup>289</sup> Or consumers, even in market settings, given their very different incentives.

<sup>290</sup> See, e.g., Uri Gneezy et al., *When and Why Incentives (Don't) Work to Modify Behavior*, 25 J. ECON. PERSP. 191, 191 (2011) (discussing the conditions under which extrinsic—particularly monetary—incentives work and do not work).

<sup>291</sup> Colin F. Camerer & Robyn M. Hogarth, *The Effects of Financial Incentives in Experiments: A Review and Capital-Labor-Production Framework*, 19 J. RISK UNCERTAINTY 7 (1997). 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, 101-2 (2002); Vernon L. Smith & James M. Walker, *Monetary Rewards and Decision Cost in Experimental Economics*, 31 ECON. INQUIRY 245 (1993) (concluding based on a review of experimental economics studies that increased financial incentives reduce the variances in participants' performance and also tends to improve its quality); Ondrej Rydvač & Andreas Ortmann, *How Financial Incentives and Cognitive Abilities Affect Task Performance in Laboratory Settings: An Illustration*, 85 ECON. LETTERS 315 (2004) (showing through a reanalysis of the Gneezy and Rustichini data that intelligence differences are at least twice as important as financial incentives for performance).

<sup>292</sup> Ariely et al., *Large Stakes and Big Mistakes*, 76 REV. ECON. STUD. 451 (2009) (comparing performance on identical tasks when varying monetary incentives); Uri Gneezy & Aldo Rustichini, *Pay Enough or Don't Pay at All*, 115 Q. J. ECON. 791 (2000) (providing evidence that low financial incentives lead to worse performance than no incentives by "crowding out" alternative motivations, but high incentives improve performance); Dan N. Stone & David A. Ziebart, *A Model of Financial Incentive Effects in Decision Making*, 61 ORG. BEHAV. HUM. DECISION PROCESSES 250 (1995) (providing evidence that financial incentives can improve performance via increased motivation and diminish it by generating negative affect).

<sup>293</sup> See Armstrong & Huck, *supra* note 7, at 13-17; Stephen N. Garcia, Avishalom Tor & Richard

For profit motivation to improve the performance of boundedly rational producers they must learn to correct their mistakes. Effective learning requires market participants to identify their judgment and decision errors, to associate these errors with specific negative consequences and, finally, to replace them with more rational judgments and decisions.<sup>294</sup> 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.<sup>295</sup>

Over time and with experience producers nevertheless can improve their performance even without “true” learning. They may imitate successful competitors,<sup>296</sup> follow established industry norms,<sup>297</sup> or seek the advice of service providers with expertise in improving business outcomes.<sup>298</sup> Sometimes such efforts may 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

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Gonzalez, *Ranks and Rivals: A Theory of Competition*, 32 PERSONALITY SOC. PSYCHOL. BULL. 970 (2006); Gneezy et al., *supra* note 288; Garcia et al., *supra* note 112; Gneezy et al., *supra* note 288; Goppelsroeder, *supra* note 103. . .

<sup>294</sup> 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, David H. Krantz, Christopher Jepson & Geoffrey T. Fong, *Improving Inductive Inference*, in JUDGMENT UNDER UNCERTAINTY 445, *supra* note 90, at 445-46 (noting that decision makers need to know that an error has occurred, how it has occurred, and how to improve the decision process); Amos Tversky and Daniel Kahneman, *Rational Choice and the Framing of Decisions*, in RATIONAL CHOICE, *supra* note 90, at 67.

<sup>295</sup> On the importance of effective feedback see also 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.”)

<sup>296</sup> See Armstrong & Huck, *supra* note 7, at 13-18. See also, Goppelsroeder, *supra* note 103.

<sup>297</sup> See Stucke, *Reconsidering*, *supra* note 7, at 161-62.

<sup>298</sup> See Bailey, *supra* note 124, at 6.

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 from competition states that underperforming producers in competitive markets will be less profitable than their competitors and ultimately will not survive.<sup>299</sup> 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.<sup>300</sup>

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 antitrust law: First, while competition may weed out those who consistently underperform, deviations from rationality are variable and heterogeneous.<sup>301</sup> 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.<sup>302</sup>

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 fails.<sup>303</sup> Similarly, producers who trust

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<sup>299</sup> Armen Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211, 213 (1950); see also Becker, *supra* note 264, at 9-12 (noting that Alchian's argument is a specific case of the broader argument that markets behave rationally irrespective of the rationality of participants when resources are constrained).

<sup>300</sup> See, e.g., Bailey, *supra* note 124, at 6. Cf. Ernst Fehr & Jean-Robert Tyran, *Individual Irrationality and Aggregate Outcomes*, 19 J. ECON. PERSP. 43, 44 (2005) (describing the common argument "that rational agents will drive the irrational agents from the market because the former make higher profits").

<sup>301</sup> See *supra* Part II.

<sup>302</sup> Cf. Ernst Fehr & Jean-Robert Tyran, *Individual Irrationality and Aggregate Outcomes*, 19 J. ECON. PERSPECTIVES 43 (2005) (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 complements).

<sup>303</sup> See Tor, *Entry*, *supra* note 2, at 504-12 (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)

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their peers, adhere to social norms, or exhibit other non-standard social preferences may obtain higher profits through oligopolistic coordination or cartelization in market conditions that would prevent strictly rational competitors from doing so.<sup>304</sup>

Second, antitrust law largely focuses on those least competitive markets, which inevitably exert more limited disciplinary pressure on market participants. A monopolist, or even oligopolists, in markets with significant entry barriers, for instance, may dissipate some of their supra-competitive profits by operating less efficiently.<sup>305</sup> After all, systematic deviations from rationality, even when unprofitable, can survive in non-competitive markets much like other inefficiencies.

Another disciplinary force besides product market competition is arbitrage by rational actors who identify, exploit, and consequently erode the profit opportunities generated by the errors of boundedly rational decision makers.<sup>306</sup> For this to happen, however, there must exist a sufficiently large 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.<sup>307</sup>

Yet these conditions rarely exist even in sophisticated financial markets,<sup>308</sup> not to mention real product markets. For example, rational arbitrageurs would find it difficult to engage in product market activities

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(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* III.B.

<sup>304</sup> *See, e.g.*, Armstrong & Huck, *supra* note 7, at 21-22; Bennett et al., *supra* note 7, at 10; Leslie, *supra* note 3, at 281-83.

<sup>305</sup> *See* Harold Demsetz, *Barriers to Entry*, 72 AM. ECON. REV. 47 (1982); HARVEY LEIBENSTEIN, *BEYOND ECONOMIC MAN: A NEW FOUNDATION FOR MICROECONOMICS* (2d ed. 1980) (discussing the theory of and evidence for “x-inefficiency”—that is, a non-allocative efficiency loss—where firms enjoy some degree of sheltering from competitive pressures); Giovanni De Fraja, *Efficiency and Privatisation in Imperfectly Competitive Industries*, 39 J. INDUS. ECON. 311 (1991). *See also* George J. Stigler, *The Existence of X-Efficiency*, 66 AM. ECON. REV. 213, 213-16 (1976) (acknowledging ex-ante errors by market participants but arguing that seeming failures to maximize profits are better analyzed as differences in information acquisition by profit-maximizing actors).

<sup>306</sup> ANDREI SHLEIFER, *INEFFICIENT MARKETS: AN INTRODUCTION TO BEHAVIORAL FINANCE* (2000) (providing a readable and comprehensive review of the early behavioral finance literature); Andrei Shleifer & Robert Vishny, *The Limits of Arbitrage*, 52 J. FIN. 35 (1997).

<sup>307</sup> *See* SHLEIFER *supra* note 315; Barberis & Thaler, *supra* note 81; Denis Gromb & Dimitri Vayanos, *Limits of Arbitrage*, 2 ANN. REV. FIN. ECON. 251 (2010) (surveying the theoretical literature and offering a simple model that incorporate costs and constraints of arbitrage including risk, short-selling costs; leverage and margin constraints; and constraints on equity capital).

<sup>308</sup> 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).

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, 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 about.

### *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 institutional mechanisms. 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 with the interests of the firm; and make group decisions by corporate boards of directors that can direct, monitor, and discipline managers.<sup>309</sup>

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.<sup>310</sup> In the same vein, corporate governance research demonstrates the limited ability of

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<sup>309</sup> 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).

<sup>310</sup> See *infra* Part III.B.I.



key intra-firm mechanisms—from contractual arrangements to boards—to guarantee desirable behavior by corporate decision makers.<sup>311</sup>

### 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.<sup>312</sup> However, the evidence also reveals that where the rationality of judgment and decision behavior specifically is concerned, experts often make mistakes that resemble those of other individuals.<sup>313</sup>

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.<sup>314</sup> Apparently, the learning processes that help experts develop more rational behavior resemble those that individuals use for learning more generally. In

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<sup>311</sup> 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) (introducing a special issue with studies addressing key corporate governance issues). *See generally* REINIER KRAAKMAN ET AL. (EDS.), *THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH* (2009); Luigi Zingales, *Corporate Governance*, in *THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW* (P. Newman ed., 1998) (offering a clear analysis of the key issues concerning the various constraints and institutions employed within firm to incentivize and monitor managerial behavior).

<sup>312</sup> 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 ORG. BEHAV. HUM. DECISION PROCESS 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 (2008) (noting 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); Judith Orasanu & Terry Connolly, *The Reinvention of Decision Making*, in *DECISION MAKING IN ACTION: MODELS AND METHODS 3* (Gary A. Klein et al. eds., 1993); Rebecca Pliske & Gary Klein, *The Naturalistic Decision-Making Perspective*, in *EMERGING PERSPECTIVES ON JUDGMENT AND DECISION RESEARCH 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).

<sup>313</sup> *See, e.g.,* Daniel Kahneman & Gary Klein, *Conditions for Intuitive Experts: 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”). *See also* Colin F. Camerer & Eric J. Johnson, *The Process-Performance Paradox in Expert Judgment: How Can Experts Know So Much and Predict So Badly?*, in Goldstein & Hogarth, *supra* note 84, at 342, 342-43 (describing two views on experts that the authors seek to integrate).

<sup>314</sup> Kahneman & Klein, *supra* note 322, at 520-23.

domains where feedback is clear and readily available—such as in the area of weather forecasting—experts can perform well even the face of uncertainty, and they continuously improve their performance.<sup>315</sup> 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”: high validity environments and an adequate opportunity to learn in them.<sup>316</sup>

Skilled intuition can only develop in environments that offer valid—causal and statistical—cues to the nature of the situation with sufficient regularity.<sup>317</sup> 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.<sup>318</sup>

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.<sup>319</sup>

Unsurprisingly, therefore, numerous studies reveal systematic judgment and decision errors by experts, even while these more experienced, sophisticated actors outperform non-experts in some settings. In fact, some of the earliest studies of intuitive judgment biases used experts in statistics as participants.<sup>320</sup> Other experimental studies and field evidence show biases in the clinical judgments of

<sup>315</sup> \_\_\_\_\_ & Bruno Frey, \_\_\_\_\_ (working paper 2013) FROM ISNIE

<sup>316</sup> Kahneman & Klein, *supra* note 322, at 519. See also ROBIN M. HOGARTH, EDUCATING INTUITION (2001) (discussing the importance of appropriate preconditions for developing skill in intuitive judgment and decision making).

<sup>317</sup> *Id.* at 520 (further illustrating this requirement by contrasting the type of environments facing a hospital nurse or an experienced firefighting commander with those of a stock trader with only publicly available information).

<sup>318</sup> *Id.*

<sup>319</sup> *Id.* at 521 (discussing these limitations and providing some illustrations).

<sup>320</sup> 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 (describing studies showing judgment errors using, inter alia, a large sample of graduate students in psychology at three major U.S. universities); *Belief in the Law of Small Numbers*, 2 PSYCHOL. BULL. 105, 105 (1971) (same, using as experimental subjects the experts participating in meetings of the Mathematical Psychology Group and the American Psychological Association)

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doctors, psychiatrists, and other health professionals.<sup>321</sup>

The evidence also reveals systematic errors by professionals with expertise in tasks that require complex judgments and decisions in business and finance.<sup>322</sup> For instance, studies found anchoring effects among veteran accountants and real estate brokers,<sup>323</sup> desirability bias among investment managers,<sup>324</sup> subadditive judgments by options traders,<sup>325</sup> and framing effects among financial planners.<sup>326</sup>

Still one might hope for a better alignment with rational models on the part of top corporate managers due to selection effects.<sup>327</sup> The managers whose behavior is most relevant for antitrust purposes are not only expert and experienced business decision makers; they 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

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<sup>321</sup> See, e.g., Hal R. Arkes, Robert L. Wortmann, Paul D. Saville, & Allan R. Harkness, *Hindsight Bias Among Physicians Weighing the Likelihood of Diagnoses*, 66 J. APPLIED PSYCHOL. 252, 253 (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); L. R. Goldberg, *Man Versus Model of Man: A Rationale, Plus Some Evidence, For a Method of Improving on Clinical Inferences*, 73 PSYCHOL. BULL. 422 (1970); Natalia Karelaia & Robert M. Hogarth, *Determinants of Linear Judgment: A Meta-Analysis of Lens Model Studies*, 134 PSYCHOL. BULL. 404 (2008); 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 (1991). See generally Katherine H. Hall, *Reviewing Intuitive Decision-Making and Uncertainty: The Implications for Medical Education*, 36 MED. EDUC. 216 (2002).

<sup>322</sup> Cf. Derek J. Koehler, Lyle Brenne & Dale Griffin, *The Calibration of Expert Judgment: Heuristics and Biases Beyond the Laboratory*, in HEURISTICS AND BIASES, *supra* note 82, 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 yet 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).

<sup>323</sup> Joyce and Biddle, *Anchoring and Adjustment in Probabilistic Inference in Auditing*, 19 J. ACCOUNT RES. 120 (1981) (accountants); Gregory Northcraft and Margaret Neale, *Experts, Amateurs, and Real Estate: An Anchoring and Adjustment Perspective on Property Pricing Decisions*, 39 ORG. BEHAV. HUM. DECISION PROCESSES 84 (1987) (real estate brokers).

<sup>324</sup> Robert A. Olsen, *Desirability Bias Among Professional Investment Managers: Some Evidence from Experts*, 10 J. BEHAV. DECISION MAKING 65, 66-70 (1997).

<sup>325</sup> Craig R. Fox, Brett A. Rogers, & Amos Tversky, *Options Traders Exhibit Subadditive Decision Weights*, 13 J. RISK UNCERTAINTY 5, 16 (1996) (option traders relying on heuristics in probabilistic reasoning).

<sup>326</sup> Michael J. Rozkowski & Glenn E. Snelbecker, *Effects of "Framing" on Measures of Risk Tolerance: Financial Planners Are Not Immune*, 19 J. BEHAV. ECON. 237 (1990).

<sup>327</sup> See Wright & Stone, *supra* note 7, at 1524-25.

than their typical competitors.<sup>328</sup>

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.<sup>329</sup> 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.<sup>330</sup>

Moreover, managerial tournaments at best reward those performance elements that most closely correlate with the firm's long-run profitability.<sup>331</sup> 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 would disregard.<sup>332</sup>

Similarly, managerial tournaments may promote overconfidence—a term denoting a cluster of loosely-related deviations from rational judgment<sup>333</sup>—that received much scholarly attention in recent years.<sup>334</sup>

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<sup>328</sup> See Bailey, *supra* note 124, at 6; Werden et al., *supra* note 7, at 9. See also Langevoort, *Behavioral Approaches*, *supra* note 307, at 442-45 (making a similar observation in the corporate governance context).

<sup>329</sup> See *supra* Part III.A.

<sup>330</sup> See Baker & Nofsinger, *supra* note 183, at 8 (suggesting that intra-firm behavior will 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).

<sup>331</sup> 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.

<sup>332</sup> See Dawes, *supra* note 83, at 500-502 (describing the attention to sunk costs as an ambiguous anomaly on this and related grounds); Langevoort, *Behavioral Approaches*, *supra* note 307, at 444 (noting the attention to sunk costs may be beneficial for managers). See also Barry M. Shaw, *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 prediction, which is validated in this context).

<sup>333</sup> 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 80, 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, *Perspective on Probability Judgment Calibration*, in BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 177 (Derek J. Koehler & Nigel Harvey eds., 2004) (reviewing some key findings and approaches in this area); Sarah Lichtenstein, Baruch Fischhoff & Lawrence D. Phillips, *Calibration of Probabilities: The State of the Art to 1980*, in JUDGMENT UNDER UNCERTAINTY, *supra* note 292, at 306 (an earlier, paradigm-setting contribution). For a summary of key findings on optimistic overconfidence, *see* Tor, *Entry*, *supra* note 2 at 504-28. *See also* Ch. 13-19 in HEURISTICS AND BIASES, *supra* note 81, at 230-378 (reviewing and discussing phenomena relating to both types of overconfidence).

<sup>334</sup> *See, e.g.*, Anand M. Goel & Anjan V. Thakor, *Overconfidence, CEO Selection, and Corporate Governance*, 63 J. FIN. 2737 (2008). Wen-I Chuang & Bong-Soo Lee, *An Empirical Evaluation of the Overconfidence Hypothesis*, 30 J. BANKING FIN. 2489 (2006) (finding strong empirical evidence, *inter alia*, that overconfident investors overreact to private information and underreact to public information, as well as that market gains increase investors' overconfidence so they trade more aggressively in subsequent periods); Stephen P. Ferris, Narayanan Jayaraman & Sanjiv Sabherwal, *CEO Overconfidence and International Merger and Acquisition Activity*, J. FIN. QUANTITATIVE ANALYSIS (forthcoming) (finding that "[o]verconfidence helps to explain the number of offers made by a CEO, the frequency of diversifying acquisitions, and the use of cash to finance a merger deal"); Simon Gervais, J. B. Heaton & Terrance Odean, *Overconfidence, Compensation Contracts, and Capital Budgeting*, 66 J. FIN. 1735 (2011) (studying "the interaction of managerial overconfidence and compensation in the context of a firm's investment policy"); Dirk Hackbarth, *Managerial Traits and Capital Structure Decisions*, 43 J. FIN. QUANTITATIVE ANALYSIS 843 (2008) [hereinafter Gervais et al., *Capital Budgeting*] ("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. CORP. INVESTMENT 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?*, 11 EUR. FIN. MGMT. 649 (2005) [hereinafter Malmendier & Tate, *Corporate Investment*] (linking CEO overconfidence with firm investment decisions); Jijun Niu, *CEO Overconfidence and Corporate Investment*, 30 ECON. BULL. 3288 (2010) (finding that banks managed by overconfident CEO's 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, while market performance has no significant impact); Catherine M. Schrand & Sarah L. Zechman, *Executive Overconfidence and the Slippery Slope to Financial Misreporting*, 53 J. ACCT. ECON. 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. Texas A&M Univ., Research Paper No. 2012-77) available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2097895](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2097895); Itshak Ben-David, John R. Graham & Campbell R. Harvey, *Managerial Miscalibration* (Charles A. Dice Center, Working Paper No. 2010-12, Nov. 2010), available at <http://ssrn.com/abstract=1640552> (finding "that financial executives are severely miscalibrated: realized market returns are within the executives' 80% confidence intervals only 33% of the time"); Simon Gervais, J.B. Heaton & Terrance Odean, *Overconfidence, Investment Policy, and Executive Stock Options* (Rodney L. White Ctr. for Financial Research, Working Paper No. 15-02, 2003) available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=361200](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=361200) [hereinafter Gervais, et al., *Executive Stock Options*] ("Moderate levels of overconfidence and optimism tend to align . . . decisions with the interests of shareholders, increase firm value, and reduce the need for option compensation."); Simon Gervais, J.B. Heaton & Terrance Odean, *The Positive Role of Overconfidence and Optimism in Investment Policy* (Rodney L. White Ctr. for Financial Research, Working Paper No. 15-02, 2002) available at <http://finance.wharton.upenn.edu/~rlwctr/workingpapers/papers2002.html> [hereinafter Gervais et al., *The Positive Role of Overconfidence and Optimism*] (finding that "moderately confident or

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.<sup>335</sup>

Of course, overconfidence is not all-around beneficial for either the managers or their firms. On the one hand, a recent empirical study shows, for instance, that in innovative industries firms 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).<sup>336</sup> Some models further show that overconfidence or mild optimism can better align managerial behavior with shareholder interests.<sup>337</sup>

On the other hand, behavioral corporate finance research also reveals that banks with overconfident CEOs take greater risks than their peer institutions,<sup>338</sup> 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.<sup>339</sup> Studies

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optimistic managers make decisions that are in the better interest of shareholders than do rational managers”); Ulrike Malmendier, Geoffrey Tate & Jun Yan, *Corporate Financial Policies with Overconfident Managers* (Nat’l Bureau of Econ. Research, Working Paper No. 13570, 2007), available at [http://www.nber.org/papers/w13570.pdf?new\\_window=1](http://www.nber.org/papers/w13570.pdf?new_window=1) [hereinafter Malmendier et al., *Overconfident Managers*] (linking individual managerial characteristics, particularly overconfidence, to firm financing decisions); Alberto Galasso & Timothy S. Simcoe, *CEO Overconfidence and Innovation* (May 24, 2010) (unpublished manuscript) (on file with author), available at <http://ssrn.com/abstract=1615002> (reporting that overly-optimistic and overconfident CEO’s are more likely to innovate); Simon Gervais, J. B. Heaton & Terrance Odean, *Overconfidence, Investment Policy, and Manager Welfare* (Oct. 17, 2007) (available at <http://apps.olin.wustl.edu/FIRS/pdf/MemberPapers/21/1.pdf>) [hereinafter Gervais et al., *Manager Welfare*] (finding that “[o]verconfident managers overestimate their personal ability to reduce risk, and as a result may make capital budgeting decisions that are in the better interest of shareholders”). See generally Glaser & Weber, *supra* note 330, at 252 (noting, following a review of some of the relevant literature in finance that “[m]any regard overconfidence as the most prevalent judgment bias”).

<sup>335</sup> See, e.g., Goel & Thakor, *supra* note 331 (showing that overconfident managers are more likely to win intra-firm tournaments); Langevoort, *Behavioral Approaches*, *supra* note 307, at 444.

<sup>336</sup> David Hirshleifer, Angie Low & Siew Hong Teoh, *Are Overconfident CEOs Better Innovators?* 67 J. FIN. 1457 (2012). See also Galasso & Simcoe, *supra* note 331 (finding a robust positive association between CEO overconfidence and citation-weighted patent counts, with a larger effect in more competitive industries, in a panel of large public firms from 1980 to 1994).

<sup>337</sup> See, e.g., Gervais et al., *Capital Budgeting*, *supra* note 331; Gervais, et al., *Executive Stock Options*, *supra* note 331; Gervais et al., *The Positive Role of Overconfidence and Optimism*, *supra* note 331; Gervais et al., *Manager Welfare*, *supra* note 331.

<sup>338</sup> See Niu, *supra* note 331.

<sup>339</sup> See Puetz & Ruenzi, *supra* note 331.

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further show that managerial overconfidence distorts both investment and financing decisions at the firm level;<sup>340</sup> helps explain the volume, type, and financing of mergers and acquisitions activity;<sup>341</sup> and is even linked to aggressive accounting<sup>342</sup> and an increased likelihood of financial misreporting.<sup>343</sup>

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 organization 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.<sup>344</sup> 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.<sup>345</sup>

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.<sup>346</sup> These

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<sup>340</sup> See, e.g., Malmendier & Tate, *CEO Overconfidence*, *supra* note 343; Malmendier & Tate, *Corporate Investment*, *supra* note 343; Malmendier et al., *Overconfident Managers*, *supra* note 331.

<sup>341</sup> See Ferris et al., *supra* note 331.

<sup>342</sup> See Ahmed & Duellman, *supra* note 331.

<sup>343</sup> See Schrand & Zechman, *supra* note 331.

<sup>344</sup> See generally Chip Heath, Richard P. Larrick & Joshua Klayman, *Cognitive Repairs: How Organizational Practices Can Compensate for Individual Shortcomings*, 20 RES. ORG. BEHAVIOR 1, 4–12 (discussing various common judgment and decision errors then suggesting ways organizations may attempt to correct them and providing anecdotal evidence for such cognitive repairs).

<sup>345</sup> See *id.* at 4–12 (discussing various common judgment and decision errors, then suggesting ways organizations may attempt to correct them, and providing anecdotal evidence for such cognitive repairs).

<sup>346</sup> *Cf. id.* at 12–16 (discussing various classifications of repairs along different dimensions and their likely efficacy).

characteristics, however, do not apply to many of the most significant antitrust-related tasks managers face, which concern judgments and decisions regarding a 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 case are made infrequently, at the highest management levels, and usually offer only limited and noisy feedback, all of which make organizational repairs unlikely.<sup>347</sup>

Second, managers may better approximate rational action simply because they function as agents of the firm.<sup>348</sup> 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 hold<sup>349</sup>—was not manifested by experimental participants taking the role of agents and transacting on behalf of their principals.<sup>350</sup> In the same vein, the behavioral evidence suggests 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.<sup>351</sup>

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

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<sup>347</sup> See *id.* at 12–15 (discussing methods of social feedback). See generally *supra* note 292-93 and accompanying text (discussing factors that make learning difficult in many situations).

<sup>348</sup> 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 a lesser concern here. For further background on managerial incentives and agency costs, see FRANK H. EASTERBROOK & DANIEL R. FISCHER, *THE ECONOMIC STRUCTURE OF CORPORATE LAW*, chap. 4 (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); Oliver E. Williamson, *Managerial Discretion and Business Behavior*, 53 AM. ECON. REV. 1032 (1963). See also Bebchuk & Weisbach, *supra* note 309 (reviewing more recent corporate governance research).

<sup>349</sup> See Daniel Kahneman, Jack L. Knetsch & Richard H. Thaler, *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, 5 J. ECON. PERSP. (1991) (describing the endowment effect); Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. ECON. BEHAVIOR ORG. 39 (1980). See also Russell Korobkin, *The Endowment Effect and Legal Analysis*, 97 NW. U.L. REV. 1227, 1256-92 (2003) (applying the endowment effect to several areas of law).

<sup>350</sup> See Jennifer Arlen et al., *Endowment Effects Within Corporate Agency Relationships*, 31 J. LEGAL STUD. 1, 11-22 (2002) (finding that experimental participants acting as agents did not exhibit a significant endowment effect because they frame they frame 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 (2003).

<sup>351</sup> Cf. Tor, *Entry*, *supra* note 2, at 505 (discussing entry decisions by overconfident managers).



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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 these entitlements.<sup>352</sup> 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 to entitlements such as goods held by the firm for routine transactions.<sup>353</sup> 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.<sup>354</sup>

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.<sup>355</sup>

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<sup>352</sup> See Daniel Kahneman, Jack L. Knetsch and Richard H. Thaler, *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. POL. ECON. 1325 (1990) (experiment 1 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 (1991) (no loss aversion for routine transactions). 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 as well); Ian Bateman et al., *Testing Competing Models of Loss Aversion: An Adversarial Collaboration*, 89 J. PUB. ECON. 1561 (2005) (same). See generally Nathan Novemsky & Daniel Kahneman, *The Boundaries of Loss Aversion*, 42 J. MARKETING. 119 (2005) (exploring the boundary conditions of loss aversion).

<sup>353</sup> Tor & Rinner, *supra* note 7, at 829–30 (applying this distinction to managers' decision to employ resale price maintenance 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 (1996) (finding experimental market participants exhibited loss aversion for exchange goods when traders are uncertain about future exchange prices).

<sup>354</sup> Cf. Tor, *Entry*, *supra* note 2, at 535–36 (arguing that the advantage of financiers over new entrants in making decision regarding new ventures diminishes when they adopt the entrants' perspective). See generally MAX H. BAZERMAN, *JUDGMENT IN MANAGERIAL DECISION MAKING* (5th ed. 2001) (reviewing and applying individual-level phenomena to managerial decision making); LEE ROY BEACH & TERRY CONNOLLY, *THE 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”).

<sup>355</sup> See Stephen M. Bainbridge, *Why a Board? Group Decision making 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 (discussing the intuitive

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.<sup>356</sup>

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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); Donald C. Langevoort, *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 (2004) (advocating enhanced internal reporting controls that increase as the risk of self-serving managerial behavior increases).

<sup>356</sup> See generally 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 (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 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 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 THE HANDBOOK OF SOCIAL PSYCHOLOGY, *supra* note 83, at 415, 438-39 (same). *But see* R. Scott Tindale, Tatsuya Kameda & Verlin B. Hinsz, *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 they show the general superiority of groups, despite some unique biases and problems in their decision making). For 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 ORG. BEHAV. HUM. DECISION PROCESSES 296 (1990) (finding that group discussion amplifies judgment by representativeness when the 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 ORG. 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 & Richard Gonzalez, *Interaction with Others Increases Decision Confidence but Not Decision Quality: Evidence Against Information Collection Views of Interactive Decision Making*, 61 ORG. BEHAV. HUM. DECISION PROCESSES 305 (1995); L. Robin Keller et al., *An Examination of Ambiguity Aversion: Are Two Heads Better than One?*, 2 JUDGMENT DECISION MAKING 390 (2007) (finding that the majority of the dyads exhibited greater ambiguity aversion than the two individuals' average); Richard F. Martell & Mae Ro Borg, *A Comparison of the Behavioral Accuracy of Groups and Individuals*, 78 J. APPLIED PSYCHOL. 43 (1993) (finding that groups' delayed ratings of behavior were more accurate than those of individuals, whereas in the immediate rating condition groups and individuals did not differ. At the same time, groups also

Moreover, beyond their limited capacity to meliorate individuals' errors, some common characteristics of group decision making—most notably deliberation—can generate additional, group-level biases.<sup>357</sup> Groups, for instance, may exhibit groupthink, promoting an erroneous consensus that does not reflect the information held by individual group members.<sup>358</sup> Their deliberations, instead of leading to a superior integration of group members' information and perspectives, can also cause group polarization, so that the resulting collective view of the group is more extreme than the individual members' pre-deliberation tendencies.<sup>359</sup> 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.<sup>360</sup> Even with the gradual shift in recent

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demonstrated greater response bias than individuals); Paul W. Paese et al., *Framing Effects and Choice Shifts in Group Decision Making*, 56 *ORG. BEHAV. HUM. DECISION PROCESSES* 149 (1993) (finding, *inter alia*, that groups can increase or decrease individual framing effects depending on how decisions are presented); Glen Whyte, *Escalating Commitment in Individual and Group Decision Making: A Prospect Theory Approach*, 54 *ORG. BEHAV. HUM. DECISION PROCESSES* 430 (1993) (finding that groups exhibit more extreme escalation of commitment).

<sup>357</sup> See Joyce Berg, John Dickhaut, & Kevin McCabe, *The Individual Versus the Aggregate*, in *JUDGMENT AND DECISION RESEARCH IN ACCOUNTING AND AUDITING* 102 (1995) (developing a framework for comparing individual performance to group settings and providing evidence, *inter alia*, of group-level biases in addition to some individual biases that extend to groups, concluding the impact of aggregation on individual-level biases varies widely); Sunstein, *supra* note 352, at 984-86 (discussing the role of information and social influence in contributing to the failure of deliberation in groups consistently to produce rational outcomes). See generally BLACKWELL HANDBOOK OF SOCIAL PSYCHOLOGY: GROUP PROCESSES (Michal A. Hogg & Scott Tindale eds., 2001) (a collection reviewing group processes that introduce additional complexity and phenomena beyond those found in individuals).

<sup>358</sup> See, e.g., IRVING L. JANIS, *GROUPTHINK* (2d ed., rev. 1983) (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 the evidence on these phenomena over 30 years and arguing it shows that groupthink-like phenomena are common – though not universal – in mundane, temporary, and even minimal groups); James Esser, *Alive and Well After 25 Years: A Review of Groupthink Research*, 73 *ORG. BEHAV. HUM. DECISION PROCESSES* 116 (1998). See generally Robert J. MacCoun, *Comparing Micro and Macro Rationality*, in *JUDGMENTS, DECISIONS, AND PUBLIC POLICY* 116, 121-26 (Rajeev Gowda & Jeffrey C. Fox eds., 2002) (reviewing variables that sometimes cause groups to exhibit less accurate judgments than individuals).

<sup>359</sup> See, e.g., Daniel J. Isenberg, *Group Polarization: A Critical Review and Meta-Analysis*, 50 *J. PERSONALITY SOC. PSYCHOL.* 1141 (1986) (examining polarization studies up to that date focusing on the two central account for the effect based on social comparison and persuasive argumentation processes). See also Cass R. Sunstein, *Group Judgments: Deliberation, Statistical Means, and Information Markets*, 80 *N.Y.U. L. REV.* 962, 984-1006 (2005) (reviewing biases that may be generated by group deliberation and dividing their underlying mechanisms into informational influences and social pressures).

<sup>360</sup> See, e.g., LUCIAN BEBCHUK & JESSE FRIED, *PAY WITHOUT PERFORMANCE: THE*

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.<sup>361</sup>

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.

#### IV. THE THIRD MISTAKE: CONFUSING BOUNDED RATIONALITY WITH ANTICOMPETITIVENESS

Unlike 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 error 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.<sup>362</sup> 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

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UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION (2004); Iman Anabtawi, *Explaining Pay Without Performance: The Tournament Alternative*, 54 EMORY L.J. 1557, 1574–79 (2005); Sanjai Bhagat & Bernard Black, *The Non-correlation Between Board Independence and Long-term Firm Performance*, 27 J. CORP. L. 231, 263 (2002); Larry E. Ribstein, *Partnership Governance of Large Firms*, 76 U. CHI. L. REV. 289, 290 (2009) (discussing the ineffectiveness of various corporate devices, such as independent directors, at monitoring). *See generally* Renee Adams, Benjamin. E. Hermalin, & Michael. S. Weisbach, *The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey*, 48 J. ECON. LIT. 58 (2010); Benjamin. E. Hermalin, & Michael. S. Weisbach, *Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature*, 9 FED. RES. BANK OF N. Y. ECON. POL. REV. 7 (2003) (an earlier and an updated review of the relevant economic literature on board composition and actions and their effects on firm performance).

<sup>361</sup> *See, e.g.*, Tor & Rinner, *supra* note 7, at 851–52 (discussing the limited efficacy of boards in the RPM context).

<sup>362</sup> *See* Horton *supra* note 7, at 503–22; Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 130–35 (asserting that consumer deviation from rationality is inevitably anticompetitive); Stucke, *Gambit*, *supra* note 7, at 27–31. *But see* Ginsburg & Moore, *supra* note 7, at 96–98 (arguing behavioral principles “could only serve to broaden . . . the meaning of the term ‘unfair’”); Werden et al., *supra* note 7, at 3–4; Wright & Stone, *supra* note 7, at 31, 40–51.

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.<sup>363</sup> Such producers, for instance, form and maintain cartels whenever the expected economic benefits of cartelization outweigh its expected economic costs.<sup>364</sup> Cartels can be extremely profitable,<sup>365</sup> and the probability of their detection still is quite low, though the advent of successful leniency programs has increased it dramatically.<sup>366</sup> So, with strictly rational managers, cartels would have been not only common—as they appear to be<sup>367</sup>—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 exhibit more law-abiding behavior because of moral considerations, due to social norms, or for fear of the extra-legal costs associated with criminal conviction, real-world, boundedly rational managers may act in this case 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 economic sanction merits. Such monopolists, for example, may avoid some profitable predatory actions towards weaker

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<sup>363</sup> 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 (NPV). *See, e.g.*, Tor, *Entry*, *supra* note 2, at 489–90 (discussing the NPV concept and its application to antitrust economics). For other general applications, *see* AREEDA & HOVENKAMP, *supra* note 3, ¶ 113, at 140; RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 11–28, 85–108, 179–83, 204–29 (5th ed. 1996); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 34–35 (1988).

<sup>364</sup> *See* John M. Connor, *Global Cartels Redux: The Lysine Antitrust Litigation*, in *THE ANTITRUST REVOLUTION* 252, 256–57 (John E. Kwoka, Jr. & Lawrence J. White eds., 4th ed. 2009).

<sup>365</sup> *See id.*

<sup>366</sup> *See, e.g.*, Jose Apesteguia, Martin Dufwenberg, & Reinhard Selten, *Blowing the Whistle*, 31 *ECON. THEORY* 143, 156 (2004) (noting the minimal impact of so-called leniency programs on the risk of detection); Maria Bigoni et al., *Risk Aversion, Prospect Theory, and Strategic Risk in Law Enforcement: Evidence from an Antitrust Experiment* 9–10 (Stockholm School of Economics, Working Paper No. 696, 2008) (assuming that a “high” probability of detection for a cartel is ten percent).

<sup>367</sup> *See* Stucke, *At the Gate*, *supra* note 2, at 565–68.

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.<sup>368</sup> When very little conduct clearly is illegal, neither moral intuitions nor social norms of legal compliance are likely to exert a strong influence. Similarly, the lack of criminal liability in practice for most categories of antitrust violations removes managerial concerns about those extra-legal sanctions that follow criminal convictions.<sup>369</sup>

Other non-standard 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.<sup>370</sup> Both theoretical models and experimental evidence suggest, however, that oligopolists who seek to protect and advance their market share, rather than simply to maximize profits, may find it harder to coordinate their behavior.<sup>371</sup> The common preference for a superior relative position thus will sometimes generate more competitive markets.<sup>372</sup>

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 on point: Firms may select overconfident managers for a variety of reasons, and these managers impact firm-level behavior.<sup>373</sup> Sometimes, managerial overconfidence leads to inefficient firm-level outcomes, as when it distorts investment or financing decisions.<sup>374</sup> Other effects appear more positive, such as where firms with overconfident managers generate more innovative activity.<sup>375</sup> Insofar as this increased innovative activity facilitates dynamic competition in the market more broadly, its procompetitive benefits may well outweigh the static efficiency losses

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<sup>368</sup> See Economides & Lianos, *supra* note 134, at 488.

<sup>369</sup> See Uri Gneezy & Aldo Rustichini, *Incentives, Punishment, and Behavior*, in GENETIC AND CULTURAL EVOLUTION OF COOPERATION 429, 432-33 (Peter Hammerstein ed., 2003) (cited in Stucke, *Money*, *supra* note 7, at 913); 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 naming stigmatization “the foundation of the deterrent effect”).

<sup>370</sup> See RICHARD A. POSNER, ANTITRUST LAW 135–67 (2d ed. 2001); Louis Kaplow, *On the Meaning of Horizontal Agreement*, 99 CALIF. L. REV. 683 (2011).

<sup>371</sup> See *supra* notes 110-13 and the accompanying text.

<sup>372</sup> *Id.*

<sup>373</sup> See *supra* notes 330–332, 369 and the accompanying text.

<sup>374</sup> See Armstrong & Huck, *supra* note 7, at 27-28; Leslie, *supra* note 3, at 275-77; Tor, *Entry*, *supra* note 2, at 505.

<sup>375</sup> Tor, *Entry*, *supra* note 2, at 543–45.

generated by overconfidence-driven behavior.<sup>376</sup> 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.<sup>377</sup>

Optimistic overconfidence may also have procompetitive-on-balance consequences in other market settings. The pervasive phenomenon of excess entry into manufacturing industries, for instance, is partly driven by the psychology of overconfidence.<sup>378</sup> New entry is inefficient for those entrants who are making boundedly rational entry attempts with a negative net present value.<sup>379</sup> Moreover, excess entry typically is not procompetitive in the sense of exerting greater pressure on incumbents, notwithstanding the intuitive appeal of this proposition.<sup>380</sup> In the short term, overconfident entrants diminish the likelihood that other entrants will survive and prosper, with limited impact on incumbents.<sup>381</sup> 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.<sup>382</sup> 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.<sup>383</sup>

### B. *Inefficient, Competitively-Neutral Deviations*

Some deviations from strict rationality generate clear efficiency losses but do not raise antitrust concern. For instance, when resale price maintenance is legal, some manufacturers use it excessively, even for

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<sup>376</sup> *Id.* at 531-33. *See also*

<sup>377</sup> *See, e.g.,* Gervais et al., *Capital Budgeting*, *supra* note 331; Gervais, et al., *Executive Stock Options*, *supra* note 331; Gervais et al., *The Positive Role of Overconfidence and Optimism*, *supra* note 331; Gervais et al., *Manager Welfare*, *supra* note 331; Richard H. Thaler, *Mental Accounting Matters*, in *ADVANCES IN BEHAVIORAL ECONOMICS* 97 (Colin F. Camerer et al. eds., 2004); Tor, *Entry*, *supra* note 2, at 523. *See also* Daniel Kahneman & Dan Lovallo, *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk taking*, 39 *MGMT. SCI.* 17 (1993).

<sup>378</sup> *See* Tor, *Entry*, *supra* note 2, at 490-91, 504-08 (describing the high rate of negative NPV 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 data).

<sup>379</sup> Tor, *Entry*, *supra* note 2, at 489.

<sup>380</sup> *See* Werden et al., *supra* note 7, at 5; Wright & Stone, *supra* note 7, at 36.

<sup>381</sup> Tor, *Entry*, *supra* note 2, at 491-92, 522-24. (finding that most new entrants simply replace preceding entrants, while larger, diversifying entrants, on the other hand, tend to be less overconfident and to exert more significant pressure on incumbents).

<sup>382</sup> *See id.* at 540-43 (describing the consequences of innovative entry for the market).

<sup>383</sup> *See id.* at 545.

significant periods of time.<sup>384</sup> Boundedly rational resale price maintenance is inefficient and harmful for both the manufacturers exercising it and some of their retailers.<sup>385</sup> 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.<sup>386</sup>

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.<sup>387</sup> 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.<sup>388</sup> 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.<sup>389</sup> 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.<sup>390</sup> Either way, such fairness-minded behavior not only deviates from the standard prediction in 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

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<sup>384</sup> See generally Tor & Rinner *supra* note 7, at 819–39 (describing why boundedly rational manufacturers have tended to reply upon RPM).

<sup>385</sup> See *id.* at 839–42 (describing studies showing that RPM is inefficient and has become less popular).

<sup>386</sup> See *id.* at 857.

<sup>387</sup> Kwoka & White, in THE ANTITRUST REVOLUTION *supra* note 361, at 8–10. On occasion, rational firms will not exploit their market power fully, such as when they want 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 the practice is credible when potential entrants have incomplete information about incumbent's cost); PHILLIP AREEDA ET AL., *ANTITRUST ANALYSIS: PROBLEMS, TEXT, AND CASES* 488 (5th ed., 2004) (discussing unexploited market power).

<sup>388</sup> Daniel Kahneman, Jack L Knetsch & Richard H. Thaler, *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 *AM. ECON. REV.* 728 (1986) (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) (a comment on Kahneman et al. offering follow-up evidence with business managers).

<sup>389</sup> See Kahneman et al., *supra* note 125, at 738.

<sup>390</sup> See Bailey, *supra* note 124, at 6–7; Reeves & Stucke, *supra* note 2, at 1579–80.



the prices they are willing to pay.<sup>391</sup> When producers avoid raising prices, however, they effectively allocate their goods through an inefficient queue system, on a first come basis.<sup>392</sup>

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.<sup>393</sup> 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 present, consistently pro-defendant use of rationality assumptions in antitrust doctrine due to the Court's concerns regarding the costs and effects of antitrust litigation.<sup>394</sup> 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.<sup>395</sup>

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.<sup>396</sup> Indirectly, since proponents who neglect the behavioral analysis of antitrust institutions naturally tend to focus on market participants' limitations,<sup>397</sup> implicitly assuming that the

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<sup>391</sup> This is true, of course, only under the common if oft-criticized economic approach that equates willingness to pay with utility, an approach that underpins antitrust law's focus on protecting the competitive process.

<sup>392</sup> See Kahneman et al., *supra* note 125, at 738.

<sup>393</sup> See Tor, *Behavioral Methodology*, *supra* note 1, at 314.

<sup>394</sup> See, e.g., *Brooke Group 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 liability under Section 2 of the Sherman Act, because otherwise the investment would be irrational). See, also Foer, *supra* note 6, at 38-39; Leslie, *supra* note 3; Stucke, *At the Gate*, *supra* note 2.

<sup>395</sup> 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).

<sup>396</sup> See *supra* Part IV.A-B.

<sup>397</sup> See *supra* Part III (also noting that behavioral opponents often make a mirror-view mistake, assuming that behavioral phenomena are of no antitrust concern because of the institutional

enforcement agencies or the courts can and should respond to these limitations.<sup>398</sup> 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.<sup>399</sup>

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.<sup>400</sup> On 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, we noted that a closer attention to the complex relationship between antitrust institutions and rationality exposes some limits of courts and enforcement agents that might otherwise go unnoticed.<sup>401</sup>

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.<sup>402</sup> 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.<sup>403</sup> At trial, however, defendant could have argued that its aftermarket tying was procompetitive on balance. Kodak might have needed to preserve its

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corrections provided by markets and firms).

<sup>398</sup> See, e.g., Horton, *supra* note 7, at 520 (advocating the use of antitrust policy and enforcement to promote morality); Huffman, *Neo-Chicago with Behavioral Antitrust*, *supra* note 7, at 135–37 (arguing that traditional law and economics models did not provide for enough enforcement); Reeves & Stucke, *supra* note 2, at 1577–81 (surveying areas of antitrust policy that could be more strongly enforced using behavioral antitrust).

<sup>399</sup> See *supra* notes 243–245 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).

<sup>400</sup> See *supra* Part I.A.

<sup>401</sup> E.g., Cooper & Kovacic, *supra* note 7 (examining the implications of some potential behavioral factors for agency decision making). See also Tor, *Entry*, *supra* note 2, at 546–47.

<sup>402</sup> *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451 (1992).

<sup>403</sup> See *supra* notes 64–70 and the accompanying text (discussing the case in more detail).

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brand reputation with boundedly rational consumers that—unlike their hypothetical, rational counterparts—might have misattributed to the manufacturer problems with copiers that were serviced with non-Kodak parts.<sup>404</sup> 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 defendant rather than 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,<sup>405</sup> 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.<sup>406</sup>

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<sup>404</sup> I thank Steve Salop for making this observation at our 60<sup>th</sup> ABA Section of Antitrust Spring Meeting panel on behavioral antitrust, *supra* note 9.

<sup>405</sup> 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).

<sup>406</sup> See Leslie, *supra* note 3, at 341–44 (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*

Courts rely on the rationality assumption to grant summary judgment for defendants unless plaintiffs can show that the alleged conduct could be rational given market conditions.<sup>407</sup> *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.<sup>408</sup> Later on *Brooke Group* applied similar reasoning to allegations of predatory pricing under Section 2, instituting the recoupment requirement.<sup>409</sup> More recently, the same rationale was applied in *Weyerhaeuser* to reject predatory bidding allegations.<sup>410</sup>

Yet the empirical evidence shows that horizontal conspiracies routinely take place where they could not have been sustained if market participants were strictly rational.<sup>411</sup> 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.<sup>412</sup> 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.<sup>413</sup>

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.<sup>414</sup> 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.<sup>415</sup>

Importantly, the evidence showing that boundedly rational conduct not only exists in the market but sometimes generates anticompetitive

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*Kahneman's Thinking, Fast and Slow: Does Behavioral Economics Have a Role in Antitrust Analysis?*, ANTITRUST SOURCE, Aug. 2012, at 7-8 (book review).

<sup>407</sup> See *Brooke Group*, 509 U.S. at 224. See also Leslie, *supra* note 3, at 301-02 (criticizing the holdings of *Matsushita* and *Brooke Group*).

<sup>408</sup> *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588-90 (1989).

<sup>409</sup> *Brooke Group*, 509 U.S. at 224-25.

<sup>410</sup> *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co., Inc.*, 549 U.S. 312, 318-19 (2007) (applying the *Brooke Group* test).

<sup>411</sup> See *supra* notes 103-105 and accompanying text.

<sup>412</sup> See *supra* notes 120-123 and accompanying text.

<sup>413</sup> See *supra* note 123 and accompanying text.

<sup>414</sup> 3A AREEDA & HOVENKAMP, *supra* note 3, ¶ 723a, at 22-23; Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. CHI. L. REV. 263, 266-67 (explaining that predatory pricing benefits consumers in the short term and may be difficult to distinguish from desirable, aggressive competition).

<sup>415</sup> 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.

effects does not imply that all theories of conspiracy or predation should suffice for antitrust plaintiffs routinely to proceed beyond summary judgment. Courts and scholars have rightly emphasized the significant social costs of antitrust litigation,<sup>416</sup> 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.<sup>417</sup>

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 under-enforcement, sometimes referred to as type I versus type II errors in antitrust law.<sup>418</sup> However, unlike familiar calls for curbing antitrust complaints to avoid risking over-enforcement,<sup>419</sup> behavioral antitrust also recognizes the risks and costs of under-enforcement 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 under-enforcement costs in key antitrust areas. Besides evaluating the familiar effects of the

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<sup>416</sup> See *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 557–58 (2007) (citing *Asahi Glass Co. v. Pentech Pharmaceuticals, 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., Ltd. 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.”). See also Easterbrook, *The Limits of Antitrust*, 63 Tex. 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.”).

<sup>417</sup> See *Verizon Comm’n 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; Easterbrook, *supra* note 413, at 4–5.

<sup>418</sup> See, e.g., C. Frederick Beckner III & Steven C. Salop, *Decision Theory and Antitrust Rules*, 67 ANTITRUST L.J. 41, 44–45 (1999) (analogizing the two types of error costs to the investment of a private decisionmaker); 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 (2000) (drawing on this framework to consider the relationship between case-specific evidence and economic theory at the summary judgment stage).

<sup>419</sup> See, e.g., Easterbrook, *supra* note 413, at 34–39 (arguing that certain groups 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 . . .”).

antitrust laws, such analyses will have to factor in the likelihood of both procompetitive 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.<sup>420</sup> 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.<sup>421</sup> 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.”<sup>422</sup> The hypothetical monopolist test focuses on demand substitution, asking how consumers of the product in questions would react to a small but significant and non-transitory increase in price (or a

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<sup>420</sup> See, e.g., Bennett et al., *supra* note 7, at 124–25 (noting possible behavioral impact on merger enforcement policy). But see Werden et al., *supra* note 7, at 12–13 (arguing that courts should continue to rely solely on neoclassical economics in the merger context)

<sup>421</sup> 2010 MERGER GUIDELINES, *supra* note 36, § 4.1. Note that although the structure of these recent guidelines and its 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 ORG. FOR ECON. CO-OPERATION AND DEV.: DIRECTORATE FOR FIN. AND ENTERPRISE AFFAIRS COMPETITION COMM., ROUNDTABLE ON MARKET DEFINITION 11–25 (2012). See also Jonathan B. Baker, *supra* note 181, at 129–131 (surveying the reasons for market definition in antitrust law). For opposing viewpoints regarding the appropriate role of market definition, see generally Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437 (2010) (severely criticizing the dominant market definition/market share paradigm), and Gregory J. Werden, *Why (Ever) Define Markets? An Answer to Professor Kaplow* (Working Paper Series, Feb. 13, 2012), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2004655](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2004655) (arguing that market definition still fulfills a central role in merger enforcement).

<sup>422</sup> 2010 MERGER GUIDELINES, *supra* note 30, § 4.

SSNIP).<sup>423</sup> The test requires that a product market contain enough substitute products so that it could be subject to a post-merger exercise of market power significantly exceeding that which prevails absent the merger.<sup>424</sup>

Customer surveys are one common method of data collection for purposes of predicting consumer demand substitution away from the hypothetical monopolist.<sup>425</sup> Yet scholars noted that the surveys designed by the agencies may not take into account the possible impact of framing effects on consumers.<sup>426</sup> 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.<sup>427</sup> In the presence of framing effects, therefore, the survey might overestimate the 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.<sup>428</sup> A behaviorally-informed approach to customer surveys would consider instead the possible effects of framing on survey outcomes, 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

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<sup>423</sup> *Id.* § 4.1.1.

<sup>424</sup> *Id.*

<sup>425</sup> See Stephen Hurley, *The Use of Surveys in Merger and Competition Analysis*, 7 J. COMP. 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. COMP. L. & ECON. 411 (2008) (discussing the prevalent use of customer survey in the U.K.'s merger enforcement process); Darren S. Tucker, Scott L. Reiter & Kevin L. Yingling, *The Customer is Sometimes Right: The Role of Customer Views in Merger Investigations*, 3 J. COMP. L. & ECON. 551 (2007) (arguing that customers can provide important information regarding several merger issues including, inter alia, demand substitution). Note that the reliance on survey is more likely where more direct evidence of consumer behavior, such as point-of-sale scanner data for consumer goods, is not available.

<sup>426</sup> Wholly apart from other shortcomings of surveys relying on consumers' predictions of their likely reactions to hypothetical changes in the market.

<sup>427</sup> See Reeves & Stucke, *supra* note 2, at 1533–34 (discussing framing as an explanation for this phenomenon).

<sup>428</sup> See *id.* at 1534 & n.47 (discussing status quo bias). See generally Baker, *supra* note 181, at 148–66 (explaining how broadly defined markets underestimate participants' market shares and vice versa when market are defined too narrowly).

included as current market participants.<sup>429</sup> The behavioral approach supports the Guidelines' inclusion of rapid entrants in the market, since firms who can enter without incurring 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.<sup>430</sup>

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.<sup>431</sup> 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."<sup>432</sup> The behavioral approach reveals, however, that rationality-based models understate the likelihood of entry and sometimes overstate its competitive effects.<sup>433</sup> Startup 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.<sup>434</sup> 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.<sup>435</sup>

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."<sup>436</sup> 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.<sup>437</sup> Yet the Guidelines also mention in passing the possibility that entry will not be

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<sup>429</sup> 2010 MERGER GUIDELINES, *supra* note 30, § 5.1.

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

<sup>431</sup> 2010 MERGER GUIDELINES, *supra* note 30, § 9.

<sup>432</sup> *Id.*

<sup>433</sup> Tor, *Entry*, *supra* note **Error! Bookmark not defined.**, at 557–59.

<sup>434</sup> See *supra* notes 162-168 and accompanying text.

<sup>435</sup> The Guidelines allow for circumstances in which entry 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 29, § 9.3. But this allowance applies only in limited circumstances.

<sup>436</sup> *Id.* § 9.

<sup>437</sup> *Id.* § 9.3.



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sufficient if it occurs at such a smaller scale, compared to the merging parties, so that the potential entrants will be at a significant competitive disadvantage.<sup>438</sup> Without speaking directly to it, this aspect of sufficiency could help account for the systematically different impact of startup entrants and diversifying entrants, which also tend to enter at a smaller versus larger scale, respectively.<sup>439</sup>

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.”<sup>440</sup> 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.”<sup>441</sup> 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 scholars already noted that the agencies in practice are quite skeptical of entry as a counterweight to the adverse competitive effects of mergers.<sup>442</sup>

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.<sup>443</sup> Some commentators argue that

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<sup>438</sup> *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.”)

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

<sup>440</sup> 2010 MERGER GUIDELINES, *supra* note 30, § 9.

<sup>441</sup> *Id.* See also DEP’T OF JUSTICE & FED. TRADE COMM’N, 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”).

<sup>442</sup> See Werden et al., *supra* note 7, at 130 (discussing COMMENTARY, *supra* note 440, to this effect as well as a theoretical model that suggests the limited efficacy of entry in disciplining post-merger, unilateral effects).

<sup>443</sup> 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 and Jeffrey H. Fischer, *Why Can’t We All Just Get Along: Structural Modeling and Natural Experiments in Merger Analysis*, 8 EUR. COMPETITION J. 41 (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

merger enforcement need not be concerned with behavioral findings because it is based on real-world data on demand in the market.<sup>444</sup> 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,<sup>445</sup> though it is relevant to other empirical methods that predict merger effects based in part on demand estimation.<sup>446</sup> Simulation and other structural models are primarily 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.<sup>447</sup> Yet in addition to the many limitations of this methodology that economists already have noted,<sup>448</sup> 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 and therefore may not be informative with respect to the welfare effects of the merger under examination.<sup>449</sup>

### 3. Accounting for Behavioral Irregularities in Specific

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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. See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES (1992) available at <http://www.justice.gov/atr/public/guidelines/hmg.pdf>.

<sup>444</sup> See *supra* Part III.A.1. (examining this argument when considering whether and when market institutions promote demand-side rationality). See, e.g., Wedren et al., *supra* note 7, at 137 (arguing that “[i]n estimating the parameters of the demand system from data on actual choices merger assessment takes account of 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).

<sup>445</sup> See, e.g., Oliver Budzinsky & Isabel Ruhmer, *Merger Simulation in Competition Policy: A Survey*, 6 J. COMPETITION L. & ECON. 277 (2009); Coate & Fischer, *supra* note 455, at 442; Aviv Nevo & Michael D. Whinston, *Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference*, 24 J. ECON. PERSP. 69 (2010); Daniel L. Rubinfeld, *Current Issues in Antitrust Analysis* in COMPETITION POLICY AND THE ECONOMIC APPROACH: FOUNDATIONS AND LIMITATIONS 81, 88-91 (JOSEF DREXL ET AL. EDS. 2011) (discussing the main approaches to merger simulation and some of their limitations).

<sup>446</sup> See, e.g., DAVIS & GARCES, *supra* note 76, at 499 (noting the centrality of demand estimation in empirical methods of merger analysis).

<sup>447</sup> See Coate & Fischer, *supra* note 455, at 442.

<sup>448</sup> See Budzinsky & Ruhmer, *supra* note 444, at 296-314; Coate & Fischer, *supra* note 455, at 442; Nevo & Whinston, *supra* note 457, at 304-312; Rubinfeld, *supra* note 444, at 88-91. 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 airlines mergers that standard unilateral effects simulations do not generally accurately forecast price effects).

<sup>449</sup> See *supra* notes 266-267 and accompanying text which also discuss the broader challenge consumer bias poses for antitrust policy.

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## 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.<sup>450</sup> Specifically, courts and agencies cannot automatically assume—without adducing evidence for the conduct or effects that make the relevant violation of the antitrust laws—that market participants will exhibit any particular deviation from rationality in a given instance.<sup>451</sup> They cannot assume defendant’s conduct had an anticompetitive effect for behavioral reasons, nor can they assume that bounded rationality prevented competitive harm, without accounting for behavioral irregularities.

Unlike scholars falling 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.<sup>452</sup> 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.<sup>453</sup>

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.<sup>454</sup> When courts face evidence of cartelization they need not examine whether market behavior and outcomes comport with rationality or bounded rationality.<sup>455</sup>

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

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<sup>450</sup> See *supra* Part I.D.

<sup>451</sup> See Christopher R. Leslie, Can Antitrust Law Incorporate Insights from Behavioral Economics? 20, 22-23 (manuscript on file with author) (noting that “[t]heory deals in aggregates; litigation deals with individual episodes of anticompetitive behavior”).

<sup>452</sup> See *id.* (explaining that “[t]heory deals in aggregates; litigation deals with individual episodes of anticompetitive behavior”). Insofar as the Supreme 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 regularities as well, discussed *infra* Part V.B.

<sup>453</sup> Leslie, *supra* note **Error! Bookmark not defined.**, 7, at 22–23.

<sup>454</sup> 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 Comm’n Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) (referring to cartels as the “supreme evil of antitrust”); *Palmer v. BRG of Ga., Inc.*, 498 U.S. 46, 49–50 (1990) (applying per se illegality to the division of markets between competitors).

<sup>455</sup> See 8 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶1500 (2d ed. 2003).

evaluate its competitive effects.<sup>456</sup> In fact, the dramatic majority of ROR cases is disposed of due to plaintiff's failure to make the case that defendant's conduct generated the requisite anticompetitive effects.<sup>457</sup> 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 rule of reason approach to resale price maintenance is a case on point.<sup>458</sup> The behavioral approach revealed that manufacturers excessively rely on RPM to control the resale prices of their products.<sup>459</sup> 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.<sup>460</sup> 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.<sup>461</sup> 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 resale price maintenance.<sup>462</sup> Under this approach, courts would seek case-specific evidence that sheds light on the nature of defendant's RPM and its competitive effects, assigning liability only to cases in which the practice—rational or boundedly rational—is anticompetitive.<sup>463</sup>

Monopolization by predatory pricing offers another example of how courts can account for behavioral irregularities. Behavioral findings suggested that some monopolists may engage in predation that would not have been rational in a world populated only by strictly

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<sup>456</sup> See, e.g., *Dagher*, 547 U.S. 1, 5 (2006). 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).

<sup>457</sup> See Michael A. Carrier, *The Rule of Reason: An Empirical Update for the 21st Century*, 16 GEO. MASON L. REV. 827, 828 (2009) (finding that 97% of reported cases are disposed of based on plaintiff's failure to prove anticompetitive effects); Michael A. Carrier, *The Real Rule of Reason: Bridging the Disconnect*, 1999 B.Y.U. L. REV. 1265, 1267–68 (finding this outcome in 96% of rule of reason cases).

<sup>458</sup> See *Leegin Creative Leather Products, Inc. v. PSKS, Inc.* 551 U.S. 877 (2007).

<sup>459</sup> See Tor & Rinner, *supra* note 7, at 834.

<sup>460</sup> *Id.* at 854–55.

<sup>461</sup> See *id.* at 855.

<sup>462</sup> See *id.* at 860–64 (proposing a new rule of reason analysis taking into account the behavioral evidence).

<sup>463</sup> See *id.* at 858–64.

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rational actors.<sup>464</sup> Courts should 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.<sup>465</sup>

In the merger area, due to the parties' strong incentives to overstate future efficiencies, as well as the strong 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.<sup>466</sup> 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.<sup>467</sup> Arguably, the agencies' traditional skepticism towards efficiency claims may be appropriate, though currently it is based on considerations other than the contribution of behavioral forces to biased predictions.<sup>468</sup> To determine how behavioral factors should be accounted for when they evaluate efficiency claims, the agencies would need 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.<sup>469</sup> Firms who 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.<sup>470</sup> Some commentators point to this evidence as favoring a less-critical approach towards claims of merger efficiencies.<sup>471</sup> Yet this argument

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<sup>464</sup> 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).

<sup>465</sup> Further research could be helpful in identifying circumstances that make boundedly rational predation more or less likely, for fashioning appropriate hurdles for plaintiffs to overcome to reach trial. See also *infra* Part V.B..

<sup>466</sup> 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).

<sup>467</sup> Werden et al., *supra* note 7, at 130.

<sup>468</sup> See, e.g., *id.*; Reeves & Stucke, *supra* note 2, at 1560–63 (challenging the assumption that mergers are consummated to generate significant efficiencies).

<sup>469</sup> See Bennett et al., *supra* note 7, at 124–25; Werden et al., *supra* note 7, at 130–31.

<sup>470</sup> Cf. Bennett et al., *supra* note 7, at 125 (questioning the assumption that sunk costs would not affect pricing decisions in mergers).

<sup>471</sup> See, e.g., Werden et al., *supra* note 7, at 131.

again manifests the fundamental attribution error: Some merging parties will indeed take into account fixed-costs 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.<sup>472</sup> 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 the choice among competing antitrust rules in different areas.<sup>473</sup> Second, a better understanding of such regularities can assist in structuring these rules to promote rather than retard competition. 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 straightforward. For example, if one were to assume that manufacturers

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<sup>472</sup> See, e.g., Wright & Stone, *supra* note 7, at 1548–49 (“Behavioral economics does not add significant explanatory power concerning the behavior of firms over and above existing theories.”)

<sup>473</sup> Importantly, the rules advocated by the behavioral approach can be either simple or complex, irrespective of the complexity of the market behavior they address.

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.<sup>474</sup> 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.<sup>475</sup>

In reality, of course, the behavioral evidence on RPM revealed only a strong tendency of some manufacturers to employ this practice excessively.<sup>476</sup> Yet excessive, boundedly rational uses of this vertical arrangement can co-exist with rational anticompetitive ones as well as with beneficial, procompetitive arrangements that promote the provision of output-increasing dealer services.<sup>477</sup> 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 resale price maintenance.<sup>478</sup> Per se illegality, which initially appeared attractive, turns out to be inappropriate in the face of a behavioral regularity that falls short of universality.<sup>479</sup>

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 more. In each of these areas, antitrust courts

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<sup>474</sup> See *supra* notes 138 & 225 and accompanying text (describing the tendency of some manufacturers to excessively impose RPM).

<sup>475</sup> See generally Richard A. Posner, *The Next Step in the Antitrust Treatment of Restricted Distribution: Per Se Legality*, 48 U. CHI. L. REV. 6 (1981) (advocating the benefits of per se legality in vertical restraints); AREEDA & HOVENKAMP, *supra* note 3, ¶ 1510 at 449; See also *Atlantic Richfield Co. v. U.S.A. 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, 343–44 (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.”).

<sup>476</sup> See Tor & Rinner, *supra* note 7, at 839–47.

<sup>477</sup> See *id.* at 859–62 (arguing that behavioral antitrust supports the view that neither the pro-plaintiff nor the pro-defendant visions of RPM are entirely correct).

<sup>478</sup> See *id.* at 860–62.

<sup>479</sup> The behavioral account also makes clear that the per se legality that some advocate for RPM is equally inappropriate. See generally, e.g., Posner, *supra* note 474 (arguing for per se legality of vertical restraints).

are required to determine whether a particular form of market conduct is on balance pro- or anticompetitive in every case.<sup>480</sup>

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.<sup>481</sup> 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.<sup>482</sup> 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 have been with allegations of vertical non-price restraints under Section 1 of the Sherman Act since *Sylvania*.<sup>483</sup>

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 our RPM illustration, 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

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<sup>480</sup> See, e.g., *Leegin Creative Leather Prods. v. PSKS, Inc.*, 551 U.S. 877 (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 (1997) (overruling *Albrecht v. Herald Co.*, 390 U.S. 145 (1968) and holding that maximum RPM should be evaluated under the rule of reason); *Continental Television v. GTE Sylvania*, 433 U.S. 36 (1977) (overruling *United States v. Arnold, Schwinn & Co.* 388 U.S. 365 (1967) and holding that vertical non-price restraints should be evaluated under the rule of reason); *Standard Oil Co. of N.J. v. United States* 221 U.S.1 (1911).

<sup>481</sup> 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, 455–56 (holding plaintiff must show defendant had market power in a relevant market to in 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) (tying).

<sup>482</sup> See, e.g., *Polygram Holding, Inc. v. FTC*, 416 F.3d 29, 35–36 (D.C. Cir. 2005) (upholding the FTC's order in the “Three Tenors” case and applying a burden-shifting framework to a horizontal restraint); *United States v. Microsoft Corp.*, 253 F.3d 34, 58–59 (D.C. Cir. 2001)(burden-shifting structure in ROR inquiry for alleged monopolization under Section 2 of the Sherman Act).

<sup>483</sup> See *Carrier, The Rule of Reason*, supra note 456, at 834–36 (describing the burden shifting tests applied by each Circuit, including threshold showings of market power); *Carrier, The Real Rule of Reason*, supra note 456, at 1268; Douglas H. Ginsburg, *Vertical Restraints: De Facto Legality under the Rule of Reason*, 60 ANTITRUST L.J. 67, 71 (1991).



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procompetitive ones.”<sup>484</sup> Following *Leegin*’s call, and occasionally even prior to it, courts, enforcement agencies, and scholars offered a variety of structured ROR approaches to RPM.<sup>485</sup> Notwithstanding their many fundamental differences, these approaches all sought to distinguish rationally procompetitive instances of the practice from its rationally anticompetitive uses.<sup>486</sup> 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.<sup>487</sup>

In contract, when structuring the rule of reason behavioral antitrust takes into account the incidence and market effects of boundedly rational resale price maintenance 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 defendant’s output decreased following the employment of RPM, which indicates that the practice was anticompetitive or boundedly rational and excessive. 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. Where plaintiff made either prima facie case, defendant should be allowed to rebut, showing not only that the practice sought to address a real business problem—such as free riding—but also that the problem generated a measurable harm to the manufacturer. Defendants would also have to show, moreover, that less restrictive means for addressing this problem were more costly or less effective, otherwise manufacturers could routinely proclaim the various theoretical harms of price-cutting without offering specific evidence.<sup>488</sup>

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 behavior.<sup>489</sup> 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

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<sup>484</sup> *Leegin*, 551 U.S. at 898–99. In fact, following *Leegin* and occasionally even before it, courts, enforcement agencies, and scholars offered a variety of structured ROR approaches to RPM.

<sup>485</sup> See Tor & Rinner, *supra* note 7, at 858–59 & n. 309–312 (providing examples for rule of reason structures in judicial and agency decisions as well in academic commentary).

<sup>486</sup> See *id.* at n.309–12 (surveying the judicial and academic landscape post-*Leegin*).

<sup>487</sup> See *id.* at 821.

<sup>488</sup> *Id.*

<sup>489</sup> Cf. Jolls et al, *supra* note 1, at 1475 (making a similar point with respect to behavioral law and economics more generally).

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, financing and investment decisions, to name but a few key areas.<sup>490</sup> In antitrust, empirical studies similarly could compare the predictive power of behaviorally-informed models to that of traditional, rationality-based ones. When offering better predictions, stylized behavioral models also could be used by the agencies and the parties before them when assessing the competitive effects of mergers. 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 this new literature primarily focuses on the reactions of rational firms to consumer limitations and bias.<sup>491</sup>

#### CONCLUSION

In conclusion, this Article finds that behavioral antitrust clearly can advance the law by offering a better understanding of the behavior of antitrust actors, though the approach still is nascent. The outpour of interest from all quarters of 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. This Article showed that the behavioral approach is poised to advance antitrust law and policy in myriad ways but can and should supplement, not substitute for, antitrust law and economics.

As behavioral antitrust continues to develop, proponents and critics alike must beware the common pitfalls associated with the fundamental

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<sup>490</sup> See, e.g., See Baker & Nofsinger, *supra* note 183 (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 HANDBOOK OF THE ECONOMICS OF FINANCE (George M. Constantinides, Milton Harris & Rene M. Stulz, eds., 2013) (a more recent general survey of the field).

<sup>491</sup> See, e.g., Armstrong & Huck, *supra* note 7 (discussing some research of this nature); Ellison, *supra* note 91 (a review from the middle of the last decade of much of the new industrial organizational literature that draws on stylized behaviorally-informed models); Steffen Huck, Jidong Zhou, and Charlotte Duke, CONSUMER BEHAVIORAL BIASES IN COMPETITION A SURVEY (Final Report, Office of Fair Trading, May 2011); RAN SPIGLER, 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).

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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 a better understanding of the nature of behavioral antitrust, this Article discussed in detail 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 well short of universal propositions. If followed, these essential lessons already can significantly promote the antitrust laws' mission of protecting competition.