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RETOOLING THE PATENT-ANTITRUST INTERSECTION: INSIGHTS FROM
BEHAVIORAL ECONOMICS

Daryl Lim*

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I. INTRODUCTION

Antitrust law is tricky to apply, particularly when it comes to innovation. In non-patent cases, courts face an already formidable task of digesting market data and weighing opposing economic evidence to understand the market effects of price-output decisions.¹ Patent cases impose an additional challenge. Courts must choose between competing narratives knowing their decisions may influence innovation across multiple industries.²

Curbing the rights of patentees could make the patented technology cheaper and improve its dissemination. However, it also risks dampening incentives to innovate. Conversely, giving patentees unbridled freedom might make investing in technology less risky and more lucrative, but licensees and consumers may pay more for the technology and receive less in return. To arbitrate between these narratives, courts must imagine a counterfactual world without the patentee’s allegedly offensive conduct and compare it against the alternative.

United States v. Microsoft Corp. is widely regarded as the seminal IP-antitrust opinion.³ Yet even there, the Court of Appeals for the D.C. Circuit in candidly observed that “neither plaintiffs nor the court can confidently reconstruct a product’s hypothetical technological development in a world absent the defendant’s exclusionary conduct.”⁴ More recently Chief Justice

¹Ill. Brick Co. v. Illinois, 431 U.S. 720, 731–32 (1977) (stressing “the uncertainties and difficulties in analyzing price and output decisions ‘in the real economic world rather than an economist’s hypothetical model.’”).

²For instance, the controversies related to standard essential patents impact not only the smartphone space but also the “Internet of Things.” See, e.g., Kenie Ho, *Internet of Things: Another Industry Patent War?*, LANDSLIDE (2015), available at <http://www.finnegan.com/resources/articles/articlesdetail.aspx?news=1031eb8f-a92a-4dca-9664-0e6169ae819a>.

³253 F.3d 34, 79 (D.C. Cir. 2001).

⁴*Id.*; Intel, Apple, Google, Microsoft, and Facebook: Observations on Antitrust and the High-Tech Sector, 2 ECKSTROM’S LICENSING IN FOR. & DOM. OPS. Appendix 8E-EE. Microsoft integrated its Internet Explorer browser with its Windows operating system (OS). *Microsoft*, 253 F.3d at 65, 74. It was accused of making a predatory design change to allow it to leverage its

Roberts noted in a dissenting opinion that, “patent policy encompasses a set of judgments about the proper tradeoff between competition and the incentive to innovate over the long run,” and “[a]ntitrust’s rule of reason was not designed for such judgments and is not adept at making them.”⁵ In the face of judges doubting their ability to competently adjudicate competing narratives on the patentee’s conduct’s effect on innovation, courts have generally deferred to patentees.⁶

Courts, guided by neoclassical economic thinking, assume that markets self-correct and that high-tech industries move too quickly for antitrust to effectively regulate.⁷ Neoclassical economics informs the modern antitrust enterprise, and assumes decision makers can accurately estimate the utility of their decisions and maximize that utility.⁸ Monopoly profits spur innovation, and courts should guard against inefficient and unsuccessful

dominance in the personal computer OS market into the browser market while also fending off Java’s browser threat to Windows. *Id.*

⁵FTC v. Actavis, Inc., 133 S. Ct. 2223, 2246 (2013) (Roberts, C.J., dissenting).

⁶See *infra* Part II. See also Rita Coco, *Antitrust Liability for Refusal to License Intellectual Property: A Comparative Analysis and the International Setting*, 12 MARQUETTE INTELLECTUAL PROPERTY L. REV. 1 (2008) (“[D]ifferent courts have granted IP owners diverse degrees of immunity from antitrust enforcement, ranging from absolute immunity to the denial of any immunity whatsoever, although with a clear bias in favor of IP.”); Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. PA. L. REV. 261, 342 (2010) (“[A]ntitrust jurisprudence now improperly advantages defendants.”).

⁷Ronald A. Cass, *Antitrust for High-Tech and Low: Regulation, Innovation, and Risk*, 9 J.L. ECON. & POL’Y 169, 169–70 (2013) (“Traditional problems of regulation generally, and of antitrust enforcement specifically, are exaggerated in high-technology sectors, where antitrust enforcers’ abilities to understand and predict industry evolution are most limited and where enforcement actions are most likely to rest on debatable predicates about the effects of specific conduct.”). Neoclassical economics reflects the influence of the Chicago School, Post-Chicago School, and Harvard School, which rely on the assumption of rationality as a central tenet in their analyses. See William E. Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: The Chicago/Harvard Double Helix*, 2007 COLUM. BUS. L. REV. 1, 14–15 (2007) (“[T]he Chicago/Harvard double helix provides the basic intellectual DNA for U.S. antitrust jurisprudence today and, by shaping doctrine, constrains the enforcement choices of antitrust agencies.”).

⁸GARY S. BECKER, *THE ECONOMIC APPROACH TO HUMAN BEHAVIOR* 14 (1976) (noting that people “maximize their utility from a stable set of preferences and accumulate an optimal amount of information and other inputs in a variety of markets.”).

rivals using antitrust law to hamper successful patentees.⁹ There is little doubt that today, “antitrust worships at the shrine of rationality.”¹⁰

Critics of neoclassical economics, however, see it as “unrealistic,”¹¹ and argue that faith in self-correcting markets and skepticism toward antitrust enforcement fetters the ability of courts to deal with patent abuses.¹² Advances in neuroscience and behavioral psychology suggest that courts may be reluctant to intervene, in part, because of an aversion to the possible loss in innovation incentives their decisions might cause compared to possible gains, despite the indeterminacy of either in many cases based on current jurisprudential methods.¹³

The Supreme Court’s recent decision in *F.T.C. v. Actavis, Inc.* has hastened the need for courts to articulate how patents should be regulated by antitrust law. The Court rejected the “scope of the patent” approach adopted by some lower courts that immunized a patent owner from antitrust scrutiny if that conduct fell within a patent’s scope.¹⁴ Instead, the Court required courts to consider both patent and antitrust policies to define the locus of a patentee’s rights when they result in anticompetitive harm to

⁹ See, e.g., *Novell, Inc. v. Microsoft Corp.*, 731 F.3d 1064, 1071 (10th Cir. 2013).

¹⁰ Leslie, *supra* note 6, at 265; HERBERT HOVENKAMP, *THE ANTITRUST ENTERPRISE* 134 (2005) (“[T]he entire antitrust enterprise is dedicated to the proposition that business firms behave rationally.”).

¹¹ Andreas Heinemann, *Behavioural Antitrust: A “More Realistic Approach” to Competition Law*, *EUROPEAN PERSPECTIVES ON BEHAVIOURAL LAW AND ECONOMICS* 2 (Klaus Mathis ed., 2015) (suggesting behavioral economics as the “urgently needed” alternative to “the Chicago approach [with] its focus on theoretical models which are often far away from the reality of markets.”).

¹² See *infra* Part II.

¹³ See *infra* Part II. See also Matthew Sipe, *Patents, Antitrust, and Preemption* (Mar. 7, 2016), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2743701 (“The dissonance between patent law and antitrust law has persisted despite a century of varied attempts at harmonization.”); Herbert Hovenkamp, *Antitrust and the Patent System: A Reexamination*, 76 OHIO ST. L.J. 467, 511–12 (2015) (“Overall, the existing literature provides very little insight into the effects of either specific patent or antitrust rules on economic performance.”); Benjamin Kern, *Innovation Markets, Future Markets, or Potential Competition: How Should Competition Authorities Account for Innovation Competition in Merger Reviews?*, 37 WORLD COMPETITION: L. AND ECON. REV. 173, 173 (2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2380130 (“[T]here is a broad consensus among lawyers and economists on the enormous importance of innovation, it is still controversially debated how exactly innovation should be taken into account.”).

¹⁴ *F.T.C. v. Actavis, Inc.*, 133 S. Ct. 2223, 2242 (2013).

market competition.¹⁵ The shift reflects the maturity and confidence of a Supreme Court prepared to require more careful antitrust analysis of patent rights knowing that there will be no easy answers.¹⁶

Antitrust statutes are sparsely worded, and the Supreme Court recognized antitrust law's "dynamic potential" to be retooled with "new wisdom."¹⁷ Indeed, two years after *Actavis*, the Court in *Kimble v. Marvel Entm't, LLC* affirmed that the responsibility Congress entrusted to courts to actively develop antitrust law in general also applied to the patent-antitrust intersection.¹⁸ In a post-*Actavis* world where courts have more discretion, the impact of biases on the outcome of patent-antitrust cases will be amplified.

This Article argues that courts should operationalize insights offered by behavioral economics in developing jurisprudence at the patent-antitrust interface. Behavioral economics teaches that people, including judges, patentees, licensees, and consumers navigate the world with imperfect knowledge and rely on heuristics to guide them.¹⁹ Heuristics represent much of what we do, and generally help us navigate instantaneously through our world using only our associative memory.²⁰ These mental short cuts bypass laborious computations of facts, values, and probabilities.²¹ At the same

¹⁵*Id.* at 2231.

¹⁶*Id.* at 2237–38 (noting the "complexities" that will result from its ruling, and leaving it to lower courts to structure the rule).

¹⁷*Bus. Elecs. Corp. v. Sharp Elecs. Corp.*, 485 U.S. 717, 732 (1988). *See also* Joshua D. Wright, *The Antitrust/Consumer Protection Paradox: Two Policies at War with Each Other*, 121 YALE L.J. 2216, 2233 (2012) ("With brevity uncharacteristic of modern statutes, Congress gave the courts substantial latitude for shaping antitrust doctrine.").

¹⁸135 S. Ct. 2401, 2418 (2015).

¹⁹Behavioral economics traces its roots to the work of Nobel Laureate Herbert Simon on "bounded rationality" in the 1950s, and became recognized as an economic discipline in the 1970s when Nobel Prize winner Daniel Kahneman and Amos Tversky identified heuristics and supplied an alternative model to rational choice theory. *See* DANIEL KAHNEMAN, THINKING, FAST AND SLOW 20–24 (2011) (dividing human action between the automatic and involuntary and the effortful, deliberate, conscious, and introspective).

²⁰*Id.* at 416.

²¹For instance, one study showed that only one in a thousand read the terms and conditions of online purchases; a study that, unlike offline purchases, could be conducted with great precision. *See* David Currie, *Homo Economicus and Homo Sapiens: The CMA Experience of Behavioural Economics*, New Zealand Commerce Commission Public Lecture (April 21, 2015) (transcript available at <https://www.gov.uk/government/speeches/david-currie-speaks-about-the-cma-experience-of-behavioural-economics>) (noting that those terms can run up to 29,000 words. Further, consumers in mobile telephone routinely under and overestimate their data usage. About

time, these heuristics may sometimes be led astray by biases in computation and implementation,²² both by individuals and by firms.²³

Biases in computation cause people to prefer the status quo, and be more averse to losses than they are desirous of gains.²⁴ Status quo biases affect the willingness of licensees and consumers to switch to alternatives.²⁵ Loss aversion may lead consumers to show greater responsiveness to price increases than price decreases. Courts factoring these biases will estimate market power more accurately, enabling them to better adjudicate claims such as those involving patent holdups.²⁶ Loss aversion also dampens the willingness of courts to intervene when anticompetitive harm has been alleged.²⁷

Biases in implementation color the plausibility of exclusionary conduct by patentees, its likely net effect on competition, and ultimately the court's impetus to intervene as well.²⁸ A court that believes improper exclusion rarely occurs may accept that the accused conduct was ineffective in monopolizing the market,²⁹ and that patentees' justifications are procompetitive.³⁰ For instance a court may discount consumers' susceptibility to hyperbolic discounting, which favors immediate payoffs over long-term costs, and drives consumers to decisions that may harm them eventually. Hyperbolic discounting may impact the analysis of tying, exclusive dealing, and other types of restrictive licensing terms.³¹

15 percent suffer from over-confidence bias and pay excess usage charges, while half are overly-conservative and select a package with more usage than needed.).

²²Samuel Issacharoff, *Can There Be a Behavioral Law and Economics?*, 51 VAND. L. REV. 1729, 1732 (1998) (“[B]ehavioral studies show that humans use fundamentally defective heuristics to simplify choices made under conditions of uncertainty.”); EDWARD CARTWRIGHT, BEHAVIORAL ECONOMICS 27 (2d ed. 2014); *see also, e.g.*, David Berreby, *Economics*, N.Y. TIMES (Mar. 16, 2008), <http://www.nytimes.com/2008/03/16/books/review/Berreby-t.html>.

²³Heinemann, *supra* note 11, at 4.

²⁴*See* Joshua D. Wright & Judd E. Stone II, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 CARDOZO L. REV. 1517, 1530–31 (2012).

²⁵*See infra* Part IV.D.

²⁶Matthew Bennett et al., *The Jevons Colloquium: Behavioral Economics in Consumer Protection and Competition Law: What Does Behavioral Economics Mean for Competition Policy?*, 6 COMPETITION POL'Y INT'L 111, 111, 114–16, 120 (2010).

²⁷*See infra* Part II.

²⁸*See infra* Part IV.

²⁹*See infra* Part IV.A.1.

³⁰*See infra* Part IV.B.3.

³¹*See infra* Part IV.

Behavioral economics has been embraced in finance and implemented by the government.³² In IP law, scholars have argued it can inform non-obviousness analyses, decipher patent damages, and develop a more nuanced narrative for incentivizing innovation.³³ In antitrust law, scholars have argued for a larger role for behavioral economics in antitrust law more generally.³⁴ Yet to date, there has been no consideration of the role of behavioral economics at the patent-antitrust intersection.

In presenting pioneering work on the issue, this Article explains the role heuristics and biases play at the patent-antitrust intersection, and identifies specific ways that courts can take them into account. If antitrust law based on neoclassical economics were analogized to an app, behavioral economics would be a patch, not an overhaul of the status quo.³⁵ A court that understands how patentees, licensees, consumers, and enforcers decide can more accurately contextualize and assess competing narratives and

³²Michael A. Salinger et al., *Economics at the FTC: Pharmaceutical Patent Dispute Settlements and Behavioral Economics* 17 (2007), available at https://www.ftc.gov/sites/default/files/documents/reports/economics-ftc-pharmaceutical-patent-dispute-settlements-and-behavioral-economics/salingerschragippolito_rio2007.pdf; see RICHARD BREALEY & STEWART MEYERS, *PRINCIPLES OF CORPORATE FINANCE* 333–36 (10th ed. 2011) (explaining anomalies with the “efficient market hypothesis”).

³³William Hubbard, *The Debilitating Effect of Exclusive Rights: Patents and Productive Inefficiency*, 66 FLA. L. REV. 2045, 2051 (2014) (“Patent law scholars thus have not recognized that firms and individuals often do not maximize their profits and that this overlooked economic insight contradicts fundamental assumptions lying at the heart of current patent policy.”); Thomas F. Cotter, *Patent Damages Heuristics*, 24 TEXAS INTELL. PROP. L.J. (forthcoming, 2017) (“[T]he use of damages heuristics may better serve public policy than one that requires patent owners to substantiate every aspect of their claimed damages with rigorous proof.”); Cynthia M. Ho, *Drugged Out: How Cognitive Bias Hurts Drug Innovation*, 51 SAN DIEGO L. REV. 419, 426 (2014) (arguing that “pharmaceutical companies and some scholars have certain schemas that have been reinforced by confirmation bias and propagated to others, such as policymakers, through repetition.”).

³⁴Allan L. Shampine, *The Role of Behavioral Economics in Antitrust Analysis*, 27 ANTITRUST ABA 65, 67–70 (2012) (“[B]ehavioral economics has already entered antitrust analysis (even if through the backdoor) and seems to be here to stay.”); see Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 IND. L.J. 1527, 1544 (2011) (The U.K. competition authority reported that behavioral economics “can provide a superior account of competition, can lead to more empirically based presumptions in antitrust’s legal standards, and can result in more informed antitrust enforcement.”); see generally Currie, *supra* note 21.

³⁵See Bennett et al., *supra* note 26, at 129 (noting that while biases influence the market process, they do not undermine the current system of analysis but rather a form of market failure).

articulate more effective remedies.³⁶ In other words, behavioral economics can help judges better understand how to use the rule of reason to achieve more dynamically efficient outcomes.

Through the lens of patents, Part II traces how the discretion given to courts in applying the rule of reason has empowered them to treat patents first with disdain, and then with veneration under antitrust law. This shift parallels the ascendance of the importance of IP industries to the national economy and the rise of neoclassical economics. It also explains how the quest for dynamic efficiency has resulted in antitrust ennui, before mounting three challenges to the belief that antitrust policy deference toward patent owners promotes innovation. These challenges are that (1) deference underestimates anticompetitive harm and undervalues the value of gains from intervention, (2) courts are inconsistent about their insecurities in regulating innovation through antitrust: they worry about getting it wrong in exclusionary abuses and yet approach vertical restraints and merger analysis with surprising confidence, and (3) patent deference is suspect as a matter of patent policy.

Part III explains how *Actavis*'s requirement to scrutinize permissible patent conduct through the rule of reason also creates the challenge of developing a coherent and predictable framework of doing so. It argues that *Kimble* empowers courts to incorporate insights from behavioral economics. In doing so, courts can become more aware of their own cognitive biases and those of the parties appearing before them, giving them a chance to reach more dynamically efficient outcomes.

Part IV addresses the three criticisms against behavioral economics most pertinent to the patent-antitrust intersection: (1) that irrational conduct is irrelevant to antitrust analysis, (2) that behavioral economics fails to provide predictability to antitrust analysis, and (3) behavioral economics experiments are anecdotal and fail to provide antitrust with a generalizable organizing principle. Part IV then identifies four areas where behavioral economics can help courts reach better outcomes: (1) analyzing anticompetitive harm and procompetitive justifications, by contrasting the Court of Appeals for the D.C. Circuit's approaches in *Microsoft* and *Rambus*, as well as the Supreme Court's approaches in *Actavis* and *Kimble*,

³⁶Christopher R. Leslie, *Can Antitrust Law Incorporate Insights from Behavioral Economics?*, 92 TEX. L. REV. 53, 61 (2014) ("A behavioral economics approach acknowledges that deviations from rationality sometimes occur and it's important to understand why in order to interpret the evidence in a specific case.").

(2) empowering judges by enlarging the role of intent, with lessons drawn from cases such as *Aspen Skiing*, *McWane*, and *Intellectual Ventures*, (3) determining market power and lock-ins in aftermarkets, with lessons drawn from *Kodak* and FRAND (fair, reasonable, and nondiscriminatory) litigation, and (4) crafting smarter remedies by looking at the EU's *Microsoft* decision. The discussion draws on past, recent, and ongoing cases to illustrate each area. Part V identifies areas for future research and concludes.

II. DOES THE “LIGHT OF REASON” WORK IN IP CASES?

At the patent-antitrust intersection, antitrust law aims to lower costs to consumers by preempting or rectifying situations where a patentee has created, enhanced, or maintained market power in a way that harms vigorous rivalry among firms, whether through its licensing or litigation practices, or through mergers and acquisitions.³⁷ The jostling of interests inevitably results in winners and losers, and courts need to distinguish between losses that should be respected and those that should be corrected. The unpredictability about the course of future competition makes it difficult for courts applying antitrust law to do so.³⁸

Courts attempt to make that judgment by the “light of reason,”³⁹ also known as the “rule of reason.”⁴⁰ The rule of reason exonerates restraints on competition with net procompetitive benefits while condemning restraints that reduce consumer welfare.⁴¹ Defendants who restrict output or raise prices must show offsetting efficiencies to exonerate themselves.⁴² In

³⁷ HERBERT HOVENKAMP ET AL., *IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW* § 1.01-.03[A] (3d ed. 2017).

³⁸ William E. Kovacic, *Antitrust in High-Tech Industries: Improving the Federal Antitrust Joint Venture*, 19 GEO. MASON L. REV. 1097, 1100 (2012) (“Even when expert decision makers move at their fastest pace, traditional antitrust tribunals find it difficult to account for industry changes that take place as a proceeding unfolds and to make accurate predictions about how specific remedies might influence future competition.”).

³⁹ *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1, 63–64 (1911) (“[B]y defining the ulterior boundaries which could not be transgressed with impunity, to leave it to be determined by the light of reason, guided by the principles of law and the duty to apply and enforce the public policy embodied in the statute, in every given case whether any particular act or contract was within the contemplation of the statute.”).

⁴⁰ *Id.* at 66.

⁴¹ *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1433 (9th Cir. 1995) (“[R]eduction of competition does not invoke the Sherman Act until it harms consumer welfare.”).

⁴² *See, e.g., United States v. Microsoft Corp.*, 253 F.3d 34, 59–60 (2001).

theory, judges weigh them against each other, much as Benjamin Franklin used “prudential algebra” to weigh the pros and cons of his decisions against each other.⁴³ Surprisingly in practice, the balancing is almost never done.⁴⁴ Instead, courts rely on “hunch, faith, and intuition.”⁴⁵

Courts dispose of allegations if the plaintiff failed to proffer incriminating plausible evidence of anticompetitive harm, or if the defendant introduced plausible exonerating evidence of procompetitive benefits.⁴⁶ Assessment under the rule of reason varies wildly “because [economic] models can be built in many ways and their outcomes usually depend more on the assumptions underlying the models than on the data resulting from the fact-finding exercises.”⁴⁷ The normative lens through which a court views patents can be decisive, and several factors color that lens.

First, a court’s risk assessment whether innovation is harmed is necessarily subjective. Risk helps judges understand and cope with uncertainties when adjudicating between competing narratives. Accordingly, their evaluation of risk depends on the measure they choose “with the obvious possibility that the choice may have been guided by a preference for one outcome or another.”⁴⁸ For instance, loss aversion is a

⁴³Letter from Benjamin Franklin to Joseph Priestley (1772), available at <http://www.procon.org/view.background-resource.php?resourceID=1474>; see also Albert A. Foer, *On the Inefficiencies of Efficiency as the Single-minded Goal of Antitrust* 39 (The American Antitrust Institute, Working Paper No. 14-02, 2014), available at <http://www.antitrustinstitute.org/sites/default/files/WorkingPaper14-02.pdf>.

⁴⁴Herbert Hovenkamp, *Implementing Antitrust’s Welfare Goals*, 81 *FORDHAM L. REV.* 2471, 2496 (2013) (“[A]ntitrust policy almost never balances except in cases where there is nothing to put on one side of the scale or weighting differences are so great as to make the balancing solution simple and obvious.”); Adriaan Ten Kate, Sr., *Hundred Years Rule of Reason versus Rule of Law* 9, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2795797 (noting that “out of almost 300 rule-of-reason cases decided by federal courts in the U.S. during the last fifteen years only six of them were resolved by a balancing test of pro- and anticompetitive effects.”).

⁴⁵Robert Pitofsky, *The Political Content of Antitrust*, 127 *U. PA. L. REV.* 1051, 1065 (1979) (“[A]ntitrust enforcement along economic lines already incorporates large doses of hunch, faith, and intuition.”); Kate, Sr., *supra* note 44, at 9 (“So my conclusion was that none of the cases was effectively decided by the balancing test of the books.”).

⁴⁶See generally ANDREW I. GAVIL, WILLIAM E. KOVACIC & JONATHAN B. BAKER, *ANTITRUST LAW IN PERSPECTIVE: CASES, CONCEPTS AND PROBLEMS IN COMPETITION POLICY* (2d ed. 2008) (observing that courts do not actually balance procompetitive justifications against anticompetitive effects).

⁴⁷Kate, Sr., *supra* note 44, at 6.

⁴⁸KAHNEMAN, *supra* note 19, at 141.

“powerful conservative force” that informs the reluctance toward intervention.⁴⁹ Decision makers weigh future losses from their mistakes more heavily than future gains if their intervention proves correct.⁵⁰

Second, courts can subconsciously substitute the more difficult answer with an easier one. When faced with the question whether innovation would be harmed by allowing a patentee to impose grant-backs or exclusive dealing requirements on licensees, courts must digest complex qualitative and quantitative evidence. That intensive focus can drive them instead seek to answer an easier and related question – “what do I think of patent rights?”⁵¹ This affect heuristic, where the harder question is substituted for an easier one, can then lead the decision maker to make implausibly high correlation between the benefits and risks of intervention.⁵²

Behavioral expert Daniel Kahneman notes that the affect heuristic “simplifies our lives by creating a world that is much tidier than reality. Good technologies have few costs in the imaginary world we inhabit, bad technologies have no benefits, and all decisions are easy.”⁵³ People favorably disposed toward the patented technology see large benefits with little risk when presented with arguments about the benefits of the technologies, and their assessment of the risk changes even without any relevant evidence of those risks.⁵⁴

Similarly, those presented with arguments about low risks develop more favorable view of its benefits. “In the real world, of course, we often face painful tradeoffs between benefits and costs.”⁵⁵ The “benefits and costs” that Kahneman refers to is, of course, central to the antitrust rule of reason. Yet, behavioral economics suggests that that balancing is missing, and admissions like those by the D.C. Court of Appeals in *Microsoft* confirms it. To find the missing piece of this doctrinal puzzle, “a page of history is worth a volume of logic.”⁵⁶

⁴⁹ *Id.* at 305.

⁵⁰ *Id.* at 302 (“The aversion to the failure of not reaching the goal is much stronger than the desire to exceed.”).

⁵¹ *See id.* at 12 (describing how an executive being asked about whether to invest in Ford stock substituting the question for whether he likes Ford cars).

⁵² *Id.* at 139.

⁵³ *Id.* at 140.

⁵⁴ *Id.* at 139.

⁵⁵ *Id.* at 140.

⁵⁶ *N.Y. Trust Co. v. Eisner*, 256 U.S. 345, 349 (1921).

A. *Patents on a Pendulum*

Antitrust law has oscillated between deference and suspicion of IP rights.⁵⁷ Nowhere is this seen more starkly than in its treatment of patents.⁵⁸ Patents have been synonymous with American innovation since at least 1641 when the Massachusetts General Court conferred on Samuel Winslow a ten-year exclusive right to a new process of making salt.⁵⁹ After America's independence, patent rights were Constitutionally enshrined along with Congress's right to regulate commerce, establish post offices, and declare war.⁶⁰

Patents promote innovation by defining the scope of patented technology and determining the circumstances where that scope has been infringed.⁶¹ Patentees who can exclude non-licensed uses attributable to the claimed technology can recoup the investment of time and effort in developing and commercializing their inventions by exploiting their claimed technology for a limited duration.⁶² Motivated by the promise of profits, inventors develop new products and processes, and in so doing, advance the state of the art.⁶³ Without exclusive rights, valuable commercial

⁵⁷ See Jeffrey I.D. Lewis & Maggie Wittlin, *Entering the Innovation Twilight Zone: How Patent and Antitrust Law Must Work Together*, 17 VAND. J. ENT. & TECH. L. 517, 523–39 (2015).

⁵⁸ Hovenkamp, *supra* note 13, at 468 (“Since the Sherman Act was passed, the federal antitrust laws have cycled through extreme positions on the relationship between competition policy and the patent system.”).

⁵⁹ U.S. Const. art I., § 8, cl. 8.

⁶⁰ *America's Founding Documents*, NATIONAL ARCHIVES, http://www.archives.gov/exhibits/charters/constitution_transcript.html.

⁶¹ Robert Taylor, *A Short History Lesson on Patent Policy*, IP WATCHDOG (June 21, 2015), <http://www.ipwatchdog.com/2015/06/21/a-short-history-lesson-on-patent-policy/id=58833/> (“[E]nforceable patents provide the only viable way to justify the commitment of money, time and effort needed to develop such a product.”); see also William E. Kovacic, *Intellectual Property Policy and Competition Policy*, 66 N.Y.U. ANN. SURV. AM. L. 421, 424 (2011) (“Patent protection can be essential to attract funds from capital markets, and facilitate licensing and joint venture relationships.”).

⁶² 35 U.S.C. § 154(a)(1) (2012); See, e.g., *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974) (patent laws promote scientific progress “by offering a right of exclusion for a limited period as an incentive to inventors to risk the often enormous costs in terms of time, research, and development.”).

⁶³ *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004) (“The opportunity to charge monopoly prices—at least for a short period—is what attracts ‘business acumen’ in the first place; it induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive *conduct*.”).

ideas and their embodiments are immediately copied, leading to the “market failure of unfettered competition.”⁶⁴

Former FTC Chair Bill Kovacic observed that patented technology “present[s] acutely difficult variants of core antitrust issues and pose analytical challenges that put extreme pressure at the joints of existing antitrust rules.”⁶⁵ That difficulty arises because the competitive effects of curtailing patentee rights are unclear, and the arguments supporting permissive or restrictive standards are inconclusive.⁶⁶ In this context, a judge’s biases will skew the outcome toward a theoretical model consistent with the judge’s worldview and the evidence he or she considers persuasive.⁶⁷

The initial period of deference in the early 1900s rested on the supposition that patent rights conferred “absolute freedom,” according to the Supreme Court, “in the use or sale of rights under the patent laws” because “[t]he very object of these laws is monopoly.”⁶⁸ That period also coincided with antitrust law being viewed as weak and used against labor combinations rather than capital.⁶⁹

From the 1930s, the Court was hostile toward patents and antitrust hostility toward patents reached its height in 1970, when the U.S. Antitrust Division issued its “nine no nos” of patent licenses would provoke an antitrust challenge.⁷⁰ The Court also saw patents as a worrisome impediment to market competition, and gave a narrow interpretation of patent law rights in favor of the antitrust laws.⁷¹ With the rise of

⁶⁴Rudolph J.R. Peritz, *Taking Antitrust to Patent School: The Instance of Pay-For-Delay Settlements*, 58 ANTITRUST BULLETIN 159, 162 (2013).

⁶⁵Kovacic, *supra* note 38, at 1100.

⁶⁶*See* *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 148, 151 (1989) (noting that patent law creates an “exception” to the general rule of “free exploitation of ideas,” and it engages in “the difficult business ‘of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.’”).

⁶⁷Marina Lao, *Ideology Matters in the Antitrust Debate*, 79 ANTITRUST L.J. 649, 653 (2014)

⁶⁸*Bement v. Nat’l Harrow Co.*, 186 U.S. 70, 91 (1902).

⁶⁹Daniel A. Crane, *The Unrealized Congressional Vision for the FTC and Its Historic Performance as a Law Enforcement Agency*, COMPETITION POL’Y INT’L (2014), available at <https://www.competitionpolicyinternational.com/assets/Uploads/CraneMAY-141.pdf>.

⁷⁰Bruce B. Wilson, Deputy Ass’t Atty. Gen., Antitrust Div., Dep’t of Justice, Patent and Know-How License Agreements: Field of Use, Territorial, Price and Quantity Restrictions, Remarks Before the Fourth New England Antitrust Conference 9 (Nov. 6, 1970).

⁷¹*See* FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 18 (Oct. 2003), available at

neoclassical economics in the late 1970s, the pendulum started swinging toward patent deference and the scope of the patent test was resurrected to shield patents from antitrust law.⁷² During the period of neoclassical economics' ascendance, there were three main factors that accentuated its influence.

First, neoclassical economics was deeply concerned about the costs of antitrust intervention.⁷³ It should be said that neoclassical economics deserves credit for steering enforcement away from populism and the formalism of per se illegality, and toward a more nuanced and sophisticated "effects-based" approach.⁷⁴ Under the influence of neoclassical economics, the presumption that patents bestowed market power was eliminated.⁷⁵ The antitrust plaintiff had to show that the antitrust defendant possessed monopoly power in the relevant market and it was guilty of "willful acquisition or maintenance of that power as distinguished from growth or

<http://www.ftc.gov/os/2003/10/innovationrpt.pdf>; Hovenkamp, *supra* note 13, at 476–79 ("To be sure, that approach made some sense in the early 1970s when . . . antitrust policy was unreasonably hostile toward a wide variety of conduct, particularly vertical practices that we regard today as economically harmless. The walled garden protected the patent from significant antitrust overreaching. But today the tables have turned, and the overreaching is going in the other direction.").

⁷²WARD S. BOWMAN, JR., PATENTS AND ANTITRUST LAW (1973) (envisioning the patent as a walled garden protecting everything within its scope); *see also In re Ciprofloxacin Hydrochloride Antitrust Litig.*, 544 F.3d 1323, 1333 (Fed. Cir. 2008) (recognizing "that any adverse anti-competitive effects within the scope of the '444 patent could not be redressed by antitrust law."), *abrogated by F.T.C. v. Actavis, Inc.*, 133 S. Ct. 2223 (2013).

⁷³*Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 414–15 (2004).

⁷⁴*See Douglas H. Ginsburg & Derek Moore, The Jevons Colloquium: Behavioral Economics in Consumer Protection and Competition Law: The Future of Behavioral Economics in Antitrust Jurisprudence*, 6 COMPETITION POL'Y INT'L 89, 89 (2010); James C. Cooper & William E. Kovacic, *Behavioral Economics and Its Meaning for Antitrust Agency Decision Making*, 8 J.L. ECON. & POL'Y 779, 779 (2012) ("Of all fields of regulation in the United States, antitrust law relies most heavily on economics to inform the design and application of legal rules."); Stefan Buehler, *Common Errors and Misunderstandings in Competition Law: An Economist's View* (2012), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2206317 ("[I]t is now widely accepted that, in many markets, the proper application of competition law requires a sound understanding of applied microeconomics, with a particular emphasis on industrial organization (IO) and applied econometrics."); Edward D. Cavanagh, *Antitrust Law and Economic Theory: Finding A Balance*, 45 LOY. U. CHI. L.J. 123, 127–28 (2013) ("[N]ow that economics and econometrics are front and center in antitrust analysis, the first call, once parties have 'lawyered up,' is to an expert economist.").

⁷⁵*Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45 (2006).

development as a consequence of a superior product, business acumen, or historic accident.”⁷⁶ Critically for the patent-antitrust interface, “[t]o safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct.”⁷⁷

At the same time, jurisprudence informed by neoclassical economics warned against false positives and the resulting chill to efficient conduct,⁷⁸ and warned that applying the rule of reason can be tricky because “the means of illicit exclusion, like the means of legitimate competition, are myriad,”⁷⁹ and “inferences and the resulting false condemnations are ‘especially costly, because they chill the very conduct the antitrust laws are designed to protect.’”⁸⁰ This could result in “arbitrary, inefficient, and heavy-handed,” “[infringements on] rights to property and freedom to trade, and suppresses individuality, initiative, and creativity.”⁸¹ The sensible response is to do nothing, but if one must, one should tread gingerly since “competitive and exclusionary conduct look alike.”⁸²

Second, there was an effort by courts to rein in what was perceived to be a plague of private antitrust litigation.⁸³ Courts devised hurdles for antitrust plaintiffs that made it easier for defendants to extinguish plaintiffs’ claims at summary judgment, and at the later motion to dismiss stage.⁸⁴ The glacial

⁷⁶ *United States v. Grinnell Corp.*, 384 U.S. 563, 570–571 (1966).

⁷⁷ *Verizon Commc’ns*, 540 U.S. at 407.

⁷⁸ *Id.* at 399–400.

⁷⁹ *Id.* at 414–15 (quoting *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001) (en banc) (per curiam)).

⁸⁰ *Id.* at 414.

⁸¹ Eleanor M. Fox, *The Battle for the Soul of Antitrust*, 75 CALIF. L. REV. 917, 917 (1987).

⁸² Frank H. Easterbrook, *When Is It Worthwhile to Use Courts to Search for Exclusionary Conduct?*, 2003 COLUM. BUS. L. REV. 345, 345 (2003).

⁸³ See Gregory G. Wrobel et al., *Judicial Applications of the Twombly/Aqbal Plausibility Standard in Antitrust Cases*, 26 ANTITRUST 8, 8 (2011) (finding that the courts had dismissed one or more antitrust claims in 74 percent of 278 courts of appeals and district court rulings on motions to dismiss in antitrust cases from the time *Twombly* was decided in 2007 until 2011).

⁸⁴ See *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 554 (2007); see also Cavanagh, *supra* note 74, at 127–28 (“Somewhat anomalously, the Court appears to solve the problem by advocating for trial courts to dismiss these cases at the outset rather than go through a costly and lengthy trial and run the risk of an erroneous outcome. The irony here, of course, is that on the one hand, the Supreme Court encourages trial courts to admit economic evidence, and yet on the other, the Court maintains that this type of evidence is too complicated for judges and juries to handle.”).

pace of antitrust litigation and its expense conspire to make antitrust enforcement ineffective in constraining even genuine anticompetitive acts.⁸⁵

As influential as these first two factors might have been, the third movement may have been the most powerful force in shaping the patent-antitrust interface. Dynamic efficiency, or improving of social welfare through technological advancement, is the Holy Grail of antitrust policy.⁸⁶ Dynamic efficiency is responsible for most economic growth and consumer welfare.⁸⁷ Gains from rewarding innovation easily swamp static efficiency from increased price competition.⁸⁸ The opposite is true: stifling innovation harms the economy more than stifling price competition. There is therefore a belief that dynamic efficiency is best achieved through patent deference.⁸⁹

B. Dynamic Efficiency via Patent Deference: A Call to Inaction?

In a dynamically efficient market, patentees are rewarded for their investment risk and genius to the extent needed to spur innovation.⁹⁰ Firms who want to sustain more than competitive returns must develop commercially valuable new products or processes. In this way, competition leads to more efficient allocation of resources, encourages business to lower costs, and promotes innovation.

⁸⁵ See, e.g., David J. Teece & Mary Coleman, *The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries*, 43 ANTITRUST BULL. 801, 810 (1998) (arguing that scientific progress may render the technology at issue obsolete).

⁸⁶ Richard M. Brunell, *Appropriability in Antitrust: How Much Is Enough?*, 69 ANTITRUST L.J. 1, 39 (2001) (noting that while static efficiency is “the traditional realm of neo-classical economics,” “dynamic efficiency is far more important to economic welfare than allocative efficiency drains the latter of much of its normative significance.”).

⁸⁷ Bill Baer, Assistant Attorney General Antitrust Division, U.S. Department of Justice Remarks as Prepared for the Chatham House Conference on “Politicization of Competition Policy – Myth or Reality?” (June 18, 2015) (“Economists have long recognized that these types of innovations are responsible for the lion’s share of economic growth and advances in consumer welfare.”).

⁸⁸ ELEANOR M. FOX, *THE EFFICIENCY PARADOX, HOW THE CHICAGO SCHOOL OVERSHOT THE MARK* 77 (Roberts Pitofsky ed. 2008).

⁸⁹ DEP’T OF JUSTICE & FED. TRADE COMM’N, *ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY* 2 (April 6, 1995), available at <http://www.justice.gov/atr/public/guidelines/0558.htm> (“The intellectual property laws and antitrust laws share the common purpose of promoting innovation and enhancing consumer welfare.”).

⁹⁰ *United States v. Line Material Co.*, 333 U.S. 287, 320 (1948) (Douglas, J., concurring) (“[The Constitution] makes the public interest the primary concern in the patent system.”).

Finding an optimal balance requires operationalizing price-innovation trade-offs, a task that can be difficult because products and processes change rapidly, and analysis of market definition, market power, and competitive effects require an understanding of how these markets work.⁹¹ For instance, it is difficult to discern the factors that make firms dominant, those that affect the durability of dominance, and those that could erode that dominance.⁹²

Efforts by both Democratic and Republican administrations over the past few decades to incorporate dynamic efficiency into antitrust analysis have resulted in an antitrust policy justifying high prices and limited access without proof that patent deference delivers dynamic efficiency gains.⁹³ This policy assumes “that maximizing the means maximizes the ends, that greater intellectual property protection naturally leads to more invention and thus to more progress.”⁹⁴ Indeed, large drug, software, and consumer electronics companies pushed a consistent narrative “that patent . . . protection must be maximized because it represents the United States’ last competitive advantage in global markets.”⁹⁵

While courts have occasionally tried to articulate a balance between the neoclassical paradigm for intervention, none have received widespread application.⁹⁶ Courts shifted from *per se* illegality toward a narrative that patents confer property rights as the reward for effort, risk taking, and ingenuity that should be respected by antitrust deference.⁹⁷ The assumption

⁹¹ See, e.g., Kovacic, *supra* note 38, at 1100 (“[T]he exercise of defining relevant markets and measuring market power can be especially difficult when an agency or court must assess the relative weight of an incumbent technology as compared to that of a new technology that threatens to displace it.”).

⁹² Cass, *supra* note 7, at 194.

⁹³ Ronald A. Cass, *Antitrust and High-tech: Regulatory Risks for Innovation and Competition*, 14 *ENGAGE* 25, 30 (February 2013). See generally Thomas Cheng, *Putting Innovation Incentives Back in the Patent-Antitrust Interface*, 11 *NW. J. TECH. & INTELL. PROP.* 385 (2013).

⁹⁴ Rudolph J.R. Peritz, *Competition within Intellectual Property Regimes – The Instance of Patent Rights Intellectual Property and Competition Law: New Frontiers*, 5 (2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2084236.

⁹⁵ Peritz, *supra* note 64, at 163.

⁹⁶ See Michael A. Carrier, *Refusals to License Intellectual Property After Trinko*, 55 *DEPAUL L. REV.* 1191, 1209 (2006) (noting inconsistent approaches and how that the trend “support[s] lower court cases proffering absolute or near absolute immunity for refusals to license.”).

⁹⁷ Peritz, *supra* note 64, at 161 (“What emerges is the powerful ideology that patents are the just desserts of individual genius, the commercial reward for success in intellectual competition of

is that monopoly power and charging of monopoly prices sustains the free-market by attracting business acumen and risk taking that produces innovation and economic growth.⁹⁸ Firms with market power can better fund and direct technological progress, and better guarantee dynamically efficient outcomes.⁹⁹ Conversely, competition lowers prices but also dampens innovation.¹⁰⁰

A court's views to refusals to license sets the tone for all other forms of licensing restrictions. The reason is that if patentees have an absolute right not to deal with a licensee, then surely any condition, however onerous, simply reflects the prerogative of patentees to dictate the terms of access. The latitude courts give to that prerogative is also a function of how much it subscribes to a linear relationship between stronger patent rights and innovation. For instance, in *Novell, Inc. v. Microsoft Corp.*, Judge Gorsuch wrote,

Forcing firms to help one another would also risk reducing the incentive both sides have to innovate, invest, and expand—again results inconsistent with the goals of antitrust. The monopolist might be deterred from investing, innovating, or expanding (or even entering a market in the first place) with the knowledge anything it creates it could be forced to share; the smaller company might be deterred, too, knowing it could just demand the right to piggyback on its larger rival.”¹⁰¹

The narrative goes that it is therefore pro-competitive to allow patentees to control access to its technology and require rivals to develop their own competing technologies. This may well have influenced augmenting the loss aversion bias discussed earlier. Without a proper basis for avoiding harm to dynamic efficiency when courts intervene, antitrust sunk into

the highest order. In this light, any expansion of patent protection is praised as fuller protection of perfectly natural rights.”)

⁹⁸ *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004).

⁹⁹ *See, e.g.,* JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM, AND DEMOCRACY* 106 (George Allen & Unwin 1976) (1943).

¹⁰⁰ Jennifer E. Sturiale, *Compulsory Licensing of Intellectual Property as Merger Remedy: A Decision-Theoretic Approach*, 72 *LA. L. REV.* 605, 610 (2012).

¹⁰¹ 731 F.3d 1064, 1073 (10th Cir. 2013).

inertness.¹⁰² Only conduct that fell outside the patent scope was subject to antitrust scrutiny, such as where it was used to create another monopoly in an ancillary market,¹⁰³ whether it was obtained by fraud, or asserted in sham litigation.¹⁰⁴

Behavioral economics suggests another reason for this inertness. Judges and government officials expect their decisions to be scrutinized with hindsight, and are driven to “extreme reluctance to take risks.”¹⁰⁵ We tend to blame decision makers for good decisions that turn out badly and miss signs that seem obvious on hindsight.¹⁰⁶ People tend to revise their current beliefs in reconstructing former beliefs, without believing that they ever thought or felt differently.¹⁰⁷ As a result, hindsight bias leads observers to assess the quality of a decision to curtail a patentee’s conduct based on whether the outcome was good or not, rather than whether the process by which the decision had been reached was sound.¹⁰⁸ “The worse the consequence, the greater the hindsight bias.”¹⁰⁹ Technology is the nation’s greatest economic engine, and courts adjudicating patent-antitrust cases may worry the impact their decision might have on it.¹¹⁰

¹⁰²Maurice E. Stucke, *Money, Is That What I Want?: Competition Policy and the Role of Behavioral Economics*, 50 SANTA CLARA L. REV. 893 (2010); Cass, *supra* note 93, at 30 (“[M]uch of the analytical effort has been devoted to exposing reasons for doubting static indications that markets are competitive rather than to identify the ways in which dynamic changes will increase competition and correct perceived distortions.”).

¹⁰³*See, e.g.*, *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 666 (1944) (“The fact that the patentee has the power to refuse a license does not enable him to enlarge the monopoly of the patent by the expedient of attaching conditions to its use.”).

¹⁰⁴*In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1326 (Fed. Cir. 2000).

¹⁰⁵KAHNEMAN, *supra* note 19, at 204.

¹⁰⁶*See id.* at 204–05.

¹⁰⁷*See id.* at 203 (“The tendency to revise the history of one’s beliefs in light of what actually happened produces a robust cognitive illusion.”).

¹⁰⁸*Cf. id.* at 203–04.

¹⁰⁹*Id.* at 204. (citing the example of a July 2001 tip-off to the Central Intelligence Agency about a possible threat from al-Qaeda attack on the United States that was escalated to National Security Advisor Condoleezza Rice rather than President George W. Bush. After the 9/11 attack, Ben Bradlee, editor of the Washington Post remarked “It seems to me elementary that if you’ve got the story that’s going to dominate history you might as well go right to the president.” This despite the fact that no one could have known the significance of that tip-off *ex ante*.)

¹¹⁰*See, e.g.*, ECONOMICS AND STATISTICS ADMINISTRATION AND U.S. PATENT AND TRADEMARK OFFICE, INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: 2016 UPDATE 1 (2016), available at <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf> (“Innovation and creative endeavors are indispensable elements that drive economic

The main problem with attempting to achieve dynamic efficiency in the antitrust context through patentee deference is that the benefits of doing cannot be proven.¹¹¹ Anyone seeking to quantify gains must discount the future value of the invention to the present value and compare it against the present cost imposed by the patentee's conduct.¹¹² Further, to determine whether the outcome was dynamically efficient, courts must consider the counterfactual and prospectively evaluate innovation incentives along the current technological trajectory. What is the price of the counterfactual to an anticompetitive exclusive dealing license? The exclusive nature of that agreement eliminates a reference point for a competitive price. Yet estimating anticompetitive effects rests on knowing that reference point.

Professor Herbert Hovenkamp used Pfizer's blockbuster cholesterol drug Lipitor to explain why antitrust intervention can be so tricky.¹¹³ When Lipitor was brought to market, it was introduced at a high price but consumers remained unharmed because earlier alternatives were still available and may have even become cheaper because many of them

growth and sustain the competitive edge of the U.S. economy. The last century recorded unprecedented improvements in the health, economic well-being, and overall quality of life for the entire U.S. population as technological innovation in medicine and groundbreaking scientific advances in many fields were realized.”).

¹¹¹ SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHTS ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 33 (Comm. Print 1958) (“No economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss upon society.”); Peritz, *supra* note 64, at 162 (“Despite a century of scholarly work, too many academics, policy makers, and judges in the United States still proceed as if maximizing patent rights serves to maximize innovation and, with it, economic progress. These forces have propelled a maximalist view of patents and IPRs more generally, despite the economic stalemate between patent protection and open competition as the better engine for innovation and economic growth.”); Cass, *supra* note 7, at 197 (“[T]he problem is not so much inattention to the possibility that there will be constraints on market leaders that are not readily visible to the regulators, but rather the relative impenetrability of serious analysis of what dynamic effects will be.”).

¹¹² Peritz, *supra* note 64, at 164 (“[A]nalytical stalemate between the exclusionary rights of patent protection and the free access of open competition, a stalemate because both contribute to economic growth but to indeterminable degrees.”); Kate, Sr., *supra* note 44, at 6 (“When the pro- and anticompetitive effects of a conduct are conceived as the effects of the conduct on competition – in my view, the only way to see it – one must be able to measure competition, something that has proved beyond the capabilities of the competition community thus far.”); *Id.* at 7 (“To that end assumptions must be made about the counterfactual conduct and about the way others react to the change. Such assumptions are mostly arbitrary.”).

¹¹³ Herbert Hovenkamp, *Consumer Welfare in Competition and Intellectual Property Law*, 9 COMPETITION POL’Y IN’L 53, 60 (2013).

substituted their medication with Lipitor.¹¹⁴ Those who bought it placed at least as much value as its price, and total output for cholesterol increased – all efficient outcomes under antitrust law. The comparison is between monopoly-priced Lipitor and none, not between competitively priced Lipitor and the monopoly price. Rewarding is thus necessary, but how much is too much?

There are still other complications. For instance, predicting innovative activity depends on whether one believes innovation is cumulative or sequential. If sequential, then control is preferred for the patentee success shepherds his successor in turn.¹¹⁵ If cumulative, then the patentee's claim on exclusivity may impede innovation.¹¹⁶ Further, patents influence innovative activity more in biopharma industries and much less so in the tech industries.¹¹⁷ Claims over specific molecules and chemical formulations enabled undertakings to exclude rivals and appropriate gains to compensate for costly investments.¹¹⁸ In contrast, since innovation in software, telecommunications, and microelectronics industries is cumulative rather than discrete, the driving force in innovation is cross-licensing rather than exclusion.¹¹⁹

The shortlist is hardly exhaustive. Other factors include: (1) the optimal duration of patents;¹²⁰ (2) whether patent holdups dampen innovation more

¹¹⁴*Id.*

¹¹⁵See Gregory K. Leonard, *Reflections on the Debates Surrounding Standard-Essential Patents*, THE ANTITRUST SOURCE (Aug. 2015), http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/aug15_leonard_7_21f.authcheckdam.pdf.

¹¹⁶*Id.* (“[I]n a model of a single potential innovation, a patent system generally improves social welfare, while in a model with cumulative innovations, a patent system can harm social welfare.”).

¹¹⁷JAMES BESSEN & MICHAEL MEURER, PATENT FAILURE: HOW JUDGES, LAWYERS, AND BUREAUCRATS PUT INNOVATION AT RISK (2008); See, e.g., Richard C. Levin, *Appropriability, R&D Spending, and Technological Performance*, 78 AM. ECON. REV. 424 (1988) (A survey of 650 executives responsible for research and development in 130 industries shows they were most effective in pharmaceutical and chemical industries.); See also Ho, *supra* note 33, at 426–427 (“It is undisputed that patents are valuable and even essential to pharmaceutical companies, unlike other areas of technology, such as software, where other issues, such as first-mover advantage, are more important.”).

¹¹⁸Ho, *supra* note 33, at 433.

¹¹⁹Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* 22 (Nat'l Bureau of Econ. Research Working Paper No. 7552, 2000), available at <http://www.nber.org/papers/w7552>.

¹²⁰See, e.g., Richard Gilbert and Carl Shapiro, *Optimal Patent Length and Breadth*, 21 THE RAND JOURNAL OF ECONOMICS 106, 106 (1990).

than patent holdouts;¹²¹ (3) the proper scope of patent defenses and exceptions;¹²² (4) whether innovation in a particular industry is at, or below, its optimal level;¹²³ and (5) whether the pace of innovation may continue uninterrupted even with diminished patentee control as first-mover advantage, trade secrets, or serendipity steps in to drive the innovation.¹²⁴ Rather than confronting the known unknowns, neoclassical economics has instead offered assumptions to buttress its preference for inertness. Unfortunately, these assumptions rest on shaky ground.¹²⁵

First, studies have undermined the theory that markets self-correct. They indicate that the harm to competition can continue for more than a decade after antitrust enforcement.¹²⁶ For instance, network effects can lead to dominant software firms becoming entrenched and allow the firms to leverage into other product or geographic markets,¹²⁷ drawing consumers into the patentee's orbit.¹²⁸ Further, neoclassical economics fails to account

¹²¹ See, e.g., Joseph Farrell, John Hayes, Carl Shapiro & Theresa Sullivan, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603, 603-604 (2007).

¹²² See, e.g., Daryl Lim, *Misconduct in Standard Setting: The Case for Patent Misuse*, 51 IDEA 559, 573 (2011).

¹²³ See, e.g., DAN L. BURK & MARK A. LEMLEY, THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT 86 (2009) (“[S]ome industries rely more on patents than others to appropriate the returns from innovation”).

¹²⁴ F.M. Scherer, *First Mover Advantages and Optimal Patent Protection 2* (Harvard Kennedy Sch. Faculty Research Working Paper Series, RWP14-053), available at <https://research.hks.harvard.edu/publications/getFile.aspx?Id=1191>.

¹²⁵ Benjamin R. Kern et al., *Empirical Analysis of the Assessment of Innovation Effects in U.S. Merger Cases*, 16 J. OF INDUS., COMPETITION AND TRADE 2, 1 (2016), available at https://www.unimarburg.de/fb02/makro/forschung/magkspapers/50-2014_kerber.pdf (“Despite the consensus that competition policy should also protect innovation competition, it is still very unclear whether and how competition authorities should take innovation effects into account.”).

¹²⁶ See Margaret C. Levenstein & Valerie Y. Suslow, *What Determines Cartel Success?*, 44 J. ECON LIT. 43, 53 tbl. 9 (2006) (indicating that a number of cartels have lasted at least 40 years); Ariel Ezrachi & David Gilo, *Are Excessive Prices Really Self-Correcting?*, 5 J. COMPETITION L. & ECON. 249, 7 (2008) (supracompetitive prices only attract entry efforts if they signal that the post-entry price would be high or that the incumbent firms have high costs, and even then entry may not succeed in competing those prices down to competitive levels); Jonathan B. Baker, *Responding to Developments in Economics and the Courts: Entry in the Merger Guidelines*, 71 ANTITRUST L.J. 189, 194-95 (2003) (the price-depressing effects of entry may deter new competition even if the merger raises prices above competitive levels).

¹²⁷ See, e.g., Mark Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CALIF. L. REV. 479 (1998).

¹²⁸ See Jonathan B. Baker, *Taking the Error Out of “Error Cost” Analysis: What’s Wrong with Antitrust’s Right*, 80 ANTITRUST L.J. 1, 14 (2015) (“To relax antitrust rules on the rationale

for the innovation *gains* that denying the patentee's claims might yield. For instance, restricting the ability of patentees to pay potential generic challengers may spur incumbents to develop new drugs to secure future streams of income from newer patented technology.¹²⁹ Indeed, rivals "often . . . are in the best position to detect and prosecute many antitrust violations early, before they cause significant consumer harm."¹³⁰

Second, neoclassical economics is selectively distrustful of courts' abilities despite the fact that, as Michael Salinger noted, "reliable estimation of the relative costs of false acquittals and false condemnations has proven elusive."¹³¹ Further, and rather inexplicably, judges interpreting antitrust law seems to have no problems resolving allegations of competitive harm from vertical restraints¹³² and mergers, which can also have efficiency justifications,¹³³ but yet distrust their own ability to determine whether monopolistic conduct harms or benefits competition.¹³⁴ This seems strange, particularly in light of the fact that agencies have internal institutional

that one firm is enough for competition, in rapidly changing high-technology markets or otherwise, would undermine innovation incentives under the guise of protecting them.")

¹²⁹ Hovenkamp, *supra* note 13, at 512.

¹³⁰ HOVENKAMP, *supra* note 10, at 70.

¹³¹ Joshua Wright, *Abandoning Antitrust's Chicago Obsession: The Case for Evidence-Based Antitrust*, 78 ANTITRUST L.J. 301, 308 (2012) (citing Michael Salinger, *Section 2 Symposium: Michael Salinger on Framing the Debate*, TRUTH ON THE MARKET (May 4, 2009), <http://truthonthemarket.com/2009/05/04/section-2-symposium-michael-salinger-on-framing-the-debate/>).

¹³² See *Leegin Creative Leather Prods. V. PSKS, Inc.*, 551 U.S. 877, 916–17 (2007) (Breyer, J., dissenting) (noting the difficulties courts face in evaluating market power and the net effect of resale price maintenance).

¹³³ Like dynamic efficiency, a prediction must be made about future efficiencies even before the weighing takes place. The less cognizable the anticompetitive effects or efficiencies the more likely the party bearing the burden of proof will lose. U.S. DEP'T OF JUSTICE & FEDERAL TRADE COMM'N, HORIZONTAL MERGER GUIDELINES (1992, revised 1997), *reprinted in* 4 TRADE REG. REP. (CCH) § 4. ("[P]rimary benefit of mergers to the economy is their potential to generate such efficiencies.").

¹³⁴ Baker, *supra* note 128, at 30. ("[T]he oddly selective conservative skepticism about the competence of courts to make factual assessments appears to reflect a reflexive hostility to exclusion cases rather than a sober response to an institutional problem with the courts.")

checks and external judicial review,¹³⁵ and courts can filter out baseless claims and impose sanctions to deter other opportunistic actions.¹³⁶

Third, as a matter of patent policy, patent rights do not reward effort per se, but rather are simply a means of promoting technological progress through the creation, disclosure, and dissemination of inventions.¹³⁷ The Supreme Court “has consistently held that the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents, but is ‘to promote the progress of science and the useful arts.’”¹³⁸ Patents are neither rewards nor natural rights but incidental incentives, a private means to a public end.¹³⁹ They are incidental and subservient to the public’s interest in the disclosure and dissemination of the technology.¹⁴⁰ In a dynamically efficient market, patentees are rewarded for their investment risk and genius to the extent needed to spur innovation.¹⁴¹ Where the opposing forces are equally ambiguous, this tilts the balance in favor of access, not control.

Perhaps the starkest doctrinal embodiment of patent deference is the “scope of the patent” approach, which extinguishes even a *consideration* of any anticompetitive effects that may result.¹⁴² Under this view, a patent right creates a “zone within which the patent holder may operate without facing antitrust liability.”¹⁴³ The problem is that just as antitrust formalism

¹³⁵ Jonathan B. Baker, “Continuous” Regulatory Reform at the Federal Trade Commission, 49 ADMIN. L. REV. 859, 861 (1997) (describing the FTC’s Bureau of Economics “placing a cost-benefit focus on every decision.”).

¹³⁶ See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES § 2.2 (2010) (describing circumstances under which individual customer and competitor interests regarding a merger among rivals would or would not be aligned with the public interest).

¹³⁷ Peritz, *supra* note 64, at 162 (“Though the natural rights perspective is popular, it is the constitutional rights view that dominates scholarly and policy debates in the U.S., the view that patent rights are the private means to promote the public benefits of innovation to economic growth.”).

¹³⁸ Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 511 (1917).

¹³⁹ Kendall v. Winsor, 62 U.S. 322, 327–28 (1858) (“[T]he limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly.”).

¹⁴⁰ See *id.* at 328.

¹⁴¹ United States v. Line Material Co., 333 U.S. 287, 320 (1948) (Douglas, J., concurring) (“[The Constitution] makes the public interest the primary concern in the patent system.”).

¹⁴² FTC v. Actavis Inc., 133 S. Ct. 2223, 2225 (2013).

¹⁴³ *Id.* at 2238 (Roberts, J., dissenting).

condemning the exercise of patent rights without considering their market effects led to an ideological persecution of patentees,¹⁴⁴ formalism animates an abdication of judicial oversight.¹⁴⁵ For instance, patent reverence blinkers serious debate about whether incumbents have less incentive to innovate because its new offerings will end up competing against its earlier products.¹⁴⁶

The FTC had warned that “[c]ompetition and patent policy are bound together by the economics of innovation and an intricate web of legal rules that seek to balance the scope and effect of each policy. Errors or systematic biases in the interpretation or application of one policy’s rules can harm the other policy’s effectiveness.”¹⁴⁷ The advent of the Supreme Court’s *Actavis* opinion would force every court adjudicating a patent-antitrust issue to confront that balance head-on.¹⁴⁸

III. THE SUPREME COURT SPEAKS, TWICE

In 2013, the Supreme Court in *Actavis* shattered the paradigm that patents could immunize their owners from antitrust scrutiny. In subjecting the exercise of patent rights to rule of reason analysis, the Court has created a powerful impetus for courts to develop a more coherent framework to adjudicate competing narratives at the patent-antitrust intersection. Two years later, in *Kimble*, a patent case, the Court noted the central role of judges in retooling antitrust analysis in light of new economic learning. *Kimble* provides precedential backing for litigating parties and lower courts to harness the evolutionary potential of the common law to fine-tune

¹⁴⁴ See *supra* Part II.A.

¹⁴⁵ Tim Wu, *Intellectual Property Experimentalism By Way Of Competition Law*, COMPETITION POL’Y INT’L (Dec. 20, 2013), available at <https://www.competitionpolicyinternational.com/intellectual-property-experimentalism-by-way-of-competition-law> (“[T]he idea of selectively examining such rights *ex post* threatens the certainty and clarity prized by the system as a whole.”).

¹⁴⁶ See, e.g., Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS, 620 (1962).

¹⁴⁷ See Susan DeSanti et. al., FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 1 (2003), available at <https://www.ftc.gov/sites/default/files/documents/reports/promote-innovation-proper-balance-competition-and-patent-law-and-policy/innovationrpt.pdf>.

¹⁴⁸ Hovenkamp, *supra* note 13, at 477 (“The *Actavis* decision suggests that the Supreme Court may be finished with the walled garden approach reflected in the “scope of the patent” test.”); *Id.* at 478 (“The ‘beyond the scope’ formulation is a relic of a bygone approach to antitrust . . .”).

antitrust analysis to recognize biases in predictive adjudication and finds ways to better manage them.

A. *Actavis: Toward a Unified Whole*

Actavis involved a license between brand-name and generic-drug manufacturers known as a “reverse payment,” so named because the flow of money ran opposite from the typical exchange between licensee and patentee when parties settle litigation.¹⁴⁹ It was not ancillary to any kind of joint production activity or technology sharing.¹⁵⁰ The Court was concerned that patents could be used as a pretext to divide the market and share the proceeds of potentially invalid or non-infringed rights at the consumer’s expense.¹⁵¹ Those patents might be weak or invalid, and the accused infringer paid off to refrain from challenging the patent.¹⁵²

More importantly, as Hovenkamp observed, the Court expunged the notion that “[o]nce an area was deemed to be pervasively regulated, antitrust law had no place.”¹⁵³ Settlement agreements between patentees and their would-be generic rivals were subject to antitrust scrutiny regardless of whether they operated within the scope of the patent.¹⁵⁴ Wherever the exercise of patent rights might cause anticompetitive harm, “patent and antitrust policies are both relevant in determining the ‘scope of the patent monopoly’—and consequently antitrust law immunity—that is conferred by a patent.”¹⁵⁵

The Court asserted that there was “nothing novel” in what it did.¹⁵⁶ It merely harkened back to the approach it took prior to the era of antitrust

¹⁴⁹ *Actavis*, 133 S. Ct. at 2227.

¹⁵⁰ *See id.* at 2229.

¹⁵¹ *Id.* at 2231; Wu, *supra* note 145, at 37 (“[S]ince such settlements are not uncommon, they were, as a class, a defect in the system that should be fixed.”).

¹⁵² *Actavis*, 133 S. Ct. at 2236–37.

¹⁵³ Hovenkamp, *supra* note 13, at 478.

¹⁵⁴ *Id.* at 477 (“Naked market division, the practice at issue in *Actavis*, is not authorized by the Patent Act, whether or not the agreement goes beyond the scope of the patent.”).

¹⁵⁵ *Actavis*, 133 S. Ct. at 2231. Both the *Actavis* dissent and Eleventh Circuit defined patent scope differently, which suggests the arbitrariness of that definition. The dissent defined scope as the “precise terms of the grant define the limits of a patentee’s monopoly and the area in which the patentee is freed from competition.” In contrast, both the Eleventh Circuit and the *Actavis* majority defined “scope” using the patent’s expiration date.

¹⁵⁶ *Id.* at 2233.

immunity.¹⁵⁷ In providing historical context to the “scope of the patent approach,” Hovenkamp explained that:

The “beyond the scope” formulation actually originated before the antitrust laws were passed, in nineteenth century cases involving patent term extensions applied retroactively to goods that had already been purchased. It was later used to justify the judge-made first sale doctrine against patentees who attempted to enforce patents rights in goods that they had already sold.¹⁵⁸

In explaining the first sale doctrine, The Court noted that:

Once the patent issues, it is strictly construed[.] [I]t cannot be used to secure any monopoly beyond that contained in the patent, the patentee’s control over the product when it leaves his hands is sharply limited, and the patent monopoly may not be used in disregard of the antitrust laws.¹⁵⁹

In criticizing the “scope of the patent” approach, Hovenkamp noted that it created a “walled garden” that both shielded conduct that should have been scrutinized and it unduly presumed harm where it was negligible or nonexistent.¹⁶⁰ Indeed, “[o]utside the patent law context such, an agreement would be unlawful per se and could even be a criminal violation.”¹⁶¹

¹⁵⁷ *Id.* at 2231–32.

¹⁵⁸ Hovenkamp, *supra* note 13, at 476

¹⁵⁹ *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 230 (1964) (internal citations omitted).

¹⁶⁰ Hovenkamp, *supra* note 13, at 477 (“The ‘beyond the scope’ formulation has led courts to two different ideas, both of which lack either conceptual or empirical support. One is that any patent practice that reaches ‘beyond the scope’ of the patent is competitively harmful. The other is that a patent practice that does *not* reach ‘beyond the scope’ of the patent is benign or untouchable. As a matter of competition policy, the ‘beyond the scope’ formulation makes little sense.”).

¹⁶¹ Herbert Hovenkamp, *The Rule of Reason and the Scope of the Patent*, 52 SAN DIEGO L. REV. 515, 518 (2015). *See also* Commissioner J. Thomas Rosch, “Intel, Apple, Google, Microsoft, and Facebook: Observations on Antitrust and the High-Tech Sector,” remarks presented at the ABA Antitrust Section Fall Forum (Nov. 18, 2010), *available at* http://www.ftc.gov/sites/default/files/documents/public_statements/intel-apple-google-microsoft-and-facebook-observations-antitrust-and-high-tech-sector/101118fallforum.pdf (“[I]t would be irresponsible of us to treat any transaction or conduct by an inventor as per se legal. That would be like creating a super-immunity for patent holders.”).

Previously the Court of Appeals for the D.C. Circuit in *Microsoft* had also debunked the notion that patents confer antitrust immunity when it analogized IP to a baseball bat, and wrote owning one does not mean escaping liability if it was used to cause tortious harm.¹⁶² The proper scope of any property right is determined by looking at a constellation of relevant rules. The Patent Act too supports the view that patent rights must be considered in the context of antitrust law. Section 211 states that “Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.”¹⁶³ In scrutinizing the conduct of patentee in antitrust cases on par with non-patent cases, *Actavis* therefore reached a well-supported conclusion.

At the same time, courts applying the rule of reason to exploitation of patent rights find their quest for precision in achieving dynamic efficiency stymied by the challenge of operationalizing the rule. Professor Maurice Stucke observed that the rule of reason employs “antitrust’s most vague and open-ended principles, making prospective compliance with its requirements exceedingly difficult.”¹⁶⁴ While it is a challenge to weigh those technological merits and costs along a non-linear and uncertain trajectory,¹⁶⁵ predictive judgments are “more qualitative and interpretive than quantitative and technical.”¹⁶⁶ This predisposes the outcome of cases to the biases of the decision maker.¹⁶⁷

¹⁶²United States v. Microsoft Corp., 253 F.3d 34, 63 (D.C. Cir. 2001) (“Microsoft’s primary copyright argument borders upon the frivolous. The company claims an absolute and unfettered right to use its intellectual property as it wishes: ‘[I]f intellectual property rights have been lawfully acquired,’ it says, then ‘their subsequent exercise cannot give rise to antitrust liability.’ That is no more correct than the proposition that use of one’s personal property, such as a baseball bat, cannot give rise to tort liability.”).

¹⁶³35 U.S.C. § 211 (2012).

¹⁶⁴Maurice E. Stucke, *Does the Rule of Reason Violate the Rule of Law?*, 42 U.C. DAVIS L. REV. 1375, 1379 (2009).

¹⁶⁵Alan Devlin & Michael Jacobs, *Anticompetitive Innovation and the Quality of Invention*, 27 BERKELEY TECH. L.J. 1, 14 (2012); see also *id.* at 14–15 (“Identifying the ‘merits’ of a new technology, however, constitutes the single most intractable aspect of the law governing both anticompetitive innovation generally, and the D.C. Circuit’s balancing test specifically.”).

¹⁶⁶Douglas H. Ginsburg & Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST L.J. 1, 19 (2012).

¹⁶⁷Devlin & Jacobs, *supra* note 165 at 14 (“That problem, in turn, might result in courts making decisions on the basis of their perceptions of the technical merits of the change in question.”).

In the three years since *Actavis*, courts have continued to struggle with applying the rule of reason to reverse payments. The Court in *Actavis* had pithily exhorted that “trial courts can structure antitrust litigation so as to avoid, on one hand, the use of antitrust theories too abbreviated to permit proper analysis, and on the other, consideration of every possible fact or theory irrespective of the minimal light it may shed on the basic question.”¹⁶⁸ However, attorneys have bemoaned that “[t]he lack of a concrete blueprint for evaluating whether potential reverse payments violate the antitrust laws, coupled with minimal case law addressing causation and damages, makes counseling in this area difficult in the extreme.”¹⁶⁹ Fortunately, the Court had in fact provided the jurisprudential means for making the development of that blueprint more tractable. However, bold judicial spirits must be willing to step out from among the crowd of timorous souls, roll up their sleeves, and engage litigants in order to figure out how to do so.

B. *Kimble: Beyond Tautology*

In *Kimble*, the Supreme Court had to decide whether to overturn a precedent prohibiting patentees from charging post-expiration royalties.¹⁷⁰ It held that *stare decisis* in patent law was “superpowered.”¹⁷¹ For patent cases that had anticompetitive significance, the outcome turned on the “categorical principle” that royalties end when the patent term expires.¹⁷²

Curiously, the Court noted that *per se* illegality “is simplicity itself to apply,” in sharp contrast to the rule of reason which it noted “would make the law less, not more, workable than it is now.”¹⁷³ Just two years before, in *Actavis*, it had defended the rule of reason as being administratively

¹⁶⁸ *FTC v. Actavis, Inc.*, 133 S. Ct. 2223, 2238 (2013).

¹⁶⁹ Brian Sodikoff, James J. Calder & Thomas Maas, *Reverse Payments After Actavis*, Bloomberg BNA, 2 (Mar. 31, 2017). See also *Actavis*, 133 S. Ct. at 2238 (“Although antitrust attacks on reverse payment settlements have been brought for roughly 20 years, the law is still developing—and is doing so at a frustratingly slow pace.”).

¹⁷⁰ *Kimble v. Marvel Entm’t. LLC*, 135 S. Ct. 2401, 2405 (2015).

¹⁷¹ *Id.* at 2410.

¹⁷² *Id.* at 2413. Elsewhere, I discuss how uncoupling the competitive significance of the case casts into doubt the Federal Circuit’s reformulation of the patent misuse doctrine based on “anticompetitive effects.” See generally Daryl Lim, *Patent Misuse and Antitrust: Rebirth or False Dawn?*, 20 MICH. TELECOMM. & TECH. L. REV. 299 (2014).

¹⁷³ *Kimble*, 135 S. Ct. at 2411.

feasible.¹⁷⁴ In Part IV.B.2, this Article examines this schism through the lens of behavioral economics.

The Court also noted that courts in antitrust cases had “exceptional law-shaping authority,” and are “relatively free to revise [their] legal analysis as economic understanding evolves and . . . to reverse antitrust precedents that misperceived a practice’s competitive consequences.”¹⁷⁵ Congress had intended by the Sherman Act’s general formulations to give courts the power to identify or remedy anticompetitive conduct.¹⁷⁶ Courts do so via the common law.¹⁷⁷ But what if the very economic theory that animates the law is itself the cause of its inefficiency?

Neoclassical economics is touted for its simplicity, which works based on the assumption that consumers and firms behave rationally. This is true when decisions are made based on price and output.¹⁷⁸ Dynamic efficiency complicates measuring market power, assessing competitive effects, and formulating remedies. Market shares and concentration levels are misleading indicators for assessing the level of actual and potential competition since that dominance can be wiped out by a new technological platform, as when music streaming replaced CDs, and 4G replaced 3G networks. The analysis requires courts to identify both rivals with the assets and motive to exert competitive pressure on the patentee.

Neoclassical economics further “assumes perfect, symmetric access to information and unqualified utility maximization by consumers.”¹⁷⁹ Yet, it provides no guidance on resolving competing narratives. For instance, in *Microsoft*, the D.C. Circuit noted that “the economic consequences of network effects and technological dynamism act to offset one another,

¹⁷⁴ *FTC v. Actavis, Inc.*, 133 S. Ct. 2223, 2236 (2013).

¹⁷⁵ *Kimble*, 135 S. Ct. at 2412–13.

¹⁷⁶ Herbert Hovenkamp, *Brulotte’s Web*, 17 J. COMPETITION L. & ECON. 3, 16 (2015), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2626758.

¹⁷⁷ Hovenkamp, *supra* note 176, at 16; Max Huffman, *Commissioner Wright and Behavioral Antitrust*, 12 ANTITRUST SOURCE 10, 15 (2013) (“[T]he common-law, evidence-based process by which antitrust develops is ideally suited to adjusting rules incrementally as new learning emerges.”).

¹⁷⁸ Henry C. Su, *Thinking, Fast, Free, and Fashionable: Competition and Consumer Protection in A Mobile Internet World*, 27 ANTITRUST 82, 83 (2012) (“Economic models in which consumers and firms are presumed to behave rationally work best when judgments and decisions are based on price or output because they preserve the models’ simplicity and mathematical rigor.”).

¹⁷⁹ Alan Devlin & Michael Jacobs, *The Empty Promise of Behavioral Antitrust*, 37 HARV. J.L. & PUB. POL’Y 1009, 1058 (2014).

thereby making it difficult to formulate categorical antitrust rules absent a particularized analysis of a given market.”¹⁸⁰ Studies indicate that courts reach arbitrary conclusions in technologically complex cases even with expert testimony.¹⁸¹

Neoclassical economics thus produced a paradox where antitrust has, in the pursuit of efficiency, closed off more promising paths to obtain efficiency. Uncorrected, “over time, [neoclassical economics] threaten[s] the legitimacy and success of the antitrust system as a whole”¹⁸² To remain relevant, antitrust must adjust its rules by considering new learning.¹⁸³ As *Kimble* indicates, courts must drive that effort.

The first step to retooling the rule of reason at the patent-antitrust interface is for courts to be cognizant both of their own cognitive biases and those of the parties appearing before them. In his seminal work, *Thinking, Fast and Slow*, Kahneman suggests that the human mind operates on two tracks.¹⁸⁴ System 1 works fast, is driven by habit, emotion, and intuition. System 2 is deliberative, reflective, and rational.

System 1 thinking using heuristics helps us to structure complex choices to avoid error and make better decisions.¹⁸⁵ At the same time, heuristics can powerfully mask what is obvious, dangerous, or absurd to the uncaptivated mind. In *Willful Blindness: Why We Ignore the Obvious at Our Peril*, Margaret Heffernan describes how, when faced with decisions involving risk and uncertainty, we admit information validating our beliefs while filtering out unsettling or non-task specific information.¹⁸⁶ As we receive more information, we think we see more. The reality is the opposite.

The importance of biases and the tenacity of those who remain willfully blind in light of contrary evidence should not be understated. For instance,

¹⁸⁰ United States v. Microsoft Corp., 253 F.3d 34, 50 (2001).

¹⁸¹ See, e.g., Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535, 1539 (1998).

¹⁸² Baker, *supra* note 128, at 37.

¹⁸³ Huffman, *supra* note 177, at 12; Kovacic, *supra* note 7, at 16 (“The intellectual history of the U.S. competition policy system is marked by the continuous reformulation, refinement, and adaptation of antitrust concepts in light of changes in economic and legal learning.”).

¹⁸⁴ See generally KAHNEMAN, *supra* note 19.

¹⁸⁵ Gerd Gigerenzer & Wolfgang Gaissmaier, *Heuristic Decision Making*, ANNU. REV. PSYCHOL. 62:451–82, 473 (2011), http://citrixweb.mpib-berlin.mpg.de/montez/upload/PaperOfTheMonth/gigerenzer_gaissmaier_2011-1-2.pdf.

¹⁸⁶ MARGARET HEFFERNAN, WILLFUL BLINDNESS: WHY WE IGNORE THE OBVIOUS AT OUR PERIL, 1, 15 (2012) (“[E]verything outside that warm, safe circle is our blind spot.”).

confirmation bias can blind decision makers to evidence that runs contrary to their view of the world, as Galileo learnt a long time ago when he attempted to debunk the Aristotelian geocentric view.¹⁸⁷ In the patent-antitrust context, Professor Mark Lemley revealed that “[t]he most vitriolic attacks I have experienced in more than twenty years as a law professor were directed at the most innocuous-seeming papers—papers that presented data that revealed some uncomfortable facts about the status quo.”¹⁸⁸ To deal with the cognitive dissonance, Professor Lemley observed that “while people will dispute, ignore, or shrug off policy arguments they disagree with, they get really incensed when the data disagrees with them.”¹⁸⁹ He cites that an FTC report on the patent system in 2003 that recommended further study on whether the patent system was working¹⁹⁰ was “most controversial” because “[i]f you like the status quo, the very last thing you want, it seems, is to take a good hard look at whether it is working.”¹⁹¹

At the same time, since willful blindness is willed, we can also learn to see better, not because our brain changes, but because we do. Post-*Actavis* patent and antitrust attorneys who might have talked past each other are compelled to present their arguments in a way that considers a worldview more familiar to the other side. The next section explains what behavioral economics can offer the patent-antitrust intersection.

IV. BEHAVIORAL ECONOMICS & PATENT-ANTITRUST LAW

This section begins by responding to the three objections relevant to implementing behavioral economics in the context of the patent-antitrust interface. Naturally, other objections exist, such as whether behavioral economics amounts to paternalistic intervention when individuals and companies should face the consequences of their decisions, for good or for ill.¹⁹² These sorts of objections have been dealt with by others and are outside the scope of this Article.¹⁹³

¹⁸⁷ Galileo Affair, WIKIPEDIA, https://en.wikipedia.org/wiki/Galileo_affair.

¹⁸⁸ Mark A. Lemley, *Faith-Based Intellectual Property*, 62 UCLA L. REV. 1328, 1335 (2015).

¹⁸⁹ *Id.* at 1335

¹⁹⁰ *Id.* at 1336; Susan DeSanti et. al., FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 2 (Oct. 2003), available at <http://www.ftc.gov/reports/promote-innovation-proper-balance-competition-patent-law-policy>.

¹⁹¹ Lemley, *supra* note 188, at 1336.

¹⁹² See, e.g., CASS R. SUNSTEIN, WHY NUDGE?: THE POLITICS OF LIBERTARIAN PATERNALISM 5 (2014) (arguing that the argument nonintervention fails on several counts,

Suffice to say that incorporating behavioral insights into antitrust law can help decision makers make more accurate judgments and better decisions. The goal is not to curtail individual freedom but to first recognize that the freedom comes at a cost to both the decision maker and to society when he or she makes bad choices, and the role of the law is to reduce those negative externalities. This section then discusses four areas where behavioral economics has great potential to improve analysis at the patent-antitrust interface, and thereby improve the odds of courts reaching dynamically efficient outcomes.

A. *Answering the Critics*

Three of the most potent criticisms against behavioral economics are that: (1) market actors behave rationally;¹⁹⁴ (2) behavioral economics give rise to an infinite range of potential outcomes, some conflicting, making it useless in predicting market behavior;¹⁹⁵ (3) behavioral economics may reveal idiosyncratic quirks but are not generalizable as a theory.¹⁹⁶ In contrast, “[s]tandard antitrust analysis already incorporates actual consumer behavior into its analysis through concepts like market power, the hypothetical monopolist test, and demand elasticities, which measure consumer responsiveness (with or without cognitive biases) to changes in prices and other market conditions.”¹⁹⁷ Part IV.A refutes the three major criticisms of behavioral economics. Part IV.B – E discusses how and why neoclassical economics falls short as a means of navigating the patent-antitrust intersection.

including the fact that it “would rule out many sensible practices that are no in effect, and it would forbid many potentially beneficial reforms.”).

¹⁹³ *Id.*

¹⁹⁴ See, e.g., Maurice E. Stucke, *Behavioral Economists at the Gate: Antitrust in the Twenty-First Century*, 38 LOY. U. CHI. L.J. 513, 514 (2007) (“While tossed against the rocks elsewhere, within the quiet waters of antitrust these rational choice theories stand largely unchallenged.”).

¹⁹⁵ Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law and Economics: Its Origins, Fatal Flaws, and Implications for Liberty*, 106 NW. U. L. REV. 1033, 1040 (2012) (“[I]f behavioral economics is to outperform price theory, its superiority must be proven by its greater predictive power, not merely by the assertion that its underlying assumptions are more ‘realistic.’”).

¹⁹⁶ Issacharoff, *supra* note 22, at 1734 (“The effects identified must be generalizable and not limited to idiosyncratic situation-specific departures from rational model expectations . . .”).

¹⁹⁷ Wright & Stone II, *supra* note 24, at 1549.

1. Irrationality and Willful Blindness

Courts guided by neoclassical economics can fall into the trap of assuming that some forms of unilateral and conspiratorial conduct are irrational and therefore must not have occurred.¹⁹⁸ According to Professor Avishalom Tor, “[t]he extensive use of neoclassical economics has inculcated in the antitrust community a reliance on simplifying assumptions,” in particular its “extensive reliance on the rationality assumption.”¹⁹⁹ These assumptions may derail the court from reaching the right result. Justices on the Supreme Court has cautioned against precisely this sort of blinkered approach. In response to economic evidence that minimum resale price maintenance could be procompetitive and judged under the rule of reason, Justice Breyer, in a forceful dissent joined by Justices Stevens, Souter, and Ginsburg cautioned against a blinkered reliance on economic theory in antitrust law:

Economic discussion, such as the studies the Court relies upon, can *help* provide answers to these questions, and in doing so, economics can, and should, inform antitrust law. But antitrust law cannot, and should not, precisely replicate economists’ (sometimes conflicting) views. That is because law, unlike economics, is an administrative system the effects of which depend upon the content of rules and precedents *only as they are applied by judges and juries in courts and by lawyers advising their clients*. And that fact means that *courts will often bring their own administrative judgment to bear . . .*²⁰⁰

Far from detracting from the “administrative judgment” that courts employ, behavioral economics empowers courts to make better judgements by helping them understand real world behavior.²⁰¹ The danger of willful blindness may be seen in *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*, a 5-4 split decision, where the Court upheld the district court’s grant

¹⁹⁸Leslie, *supra* note 36, at 55 (“This refusal to appreciate the prevalence of so-called irrational behavior in modern economies can distort fact-finding in individual cases.”).

¹⁹⁹Avishalom Tor, *Understanding Behavioral Antitrust*, 92 Tex. L. Rev. 573, 606 (2014).

²⁰⁰*Leegin Creative Leather Prod., Inc. v. PSKS, Inc.*, 551 U.S. 877, 914–15 (2007) (Breyer J., dissenting) (emphasis added).

²⁰¹Christine Jolls, *Behavioral Economics Analysis of Redistributive Legal Rules*, 51 VAND. L. REV. 1653, 1654 (1998) (noting that behavioral economics leads to “better predictions and prescriptions about law based on improved accounts of how people actually behave.”).

of summary judgment and found no genuine issues of material fact in dispute on allegations of a predatory horizontal conspiracy among competitors under Section 1 of the Sherman Act.²⁰²

Matsushita concerned Japanese television manufacturers that allegedly engaged in collective, predatory pricing in the United States.²⁰³ The Court found predatory pricing to be irrational because recoupment would require conspirators to participate in a recoupment strategy resting on illegal price-fixing.²⁰⁴ When the scheme failed, the Court concluded that it never existed.²⁰⁵ The Japanese manufacturers could not have conspired toward a predatory pricing scheme because the American manufacturers were still in the United States' market twenty years later.²⁰⁶ The Court equated irrationality with nonoccurrence, and cautioned that mistaken enforcement of antitrust laws "are especially costly, because they chill the very conduct the antitrust laws are designed to protect."²⁰⁷ Yet, empirical evidence shows that conspiracies like these do in fact occur.²⁰⁸

Lower courts have interpreted *Matsushita* to teach that predatory pricing schemes are irrational and "unlikely to be attempted by rational businessmen[,]"²⁰⁹ and as a result, they routinely granted summary judgment to defendants.²¹⁰ The rationality requirement in *Matsushita* morphed from the threshold to survive summary judgment to a substantive requirement in antitrust law.²¹¹ Soon, plaintiffs had to prove the rationality

²⁰² 475 U.S. 574, 574 (1986).

²⁰³ *Id.* at 577–78.

²⁰⁴ *Id.* at 591–92.

²⁰⁵ *Id.* at 592.

²⁰⁶ *Id.* ("The alleged conspiracy's failure to achieve its ends in the two decades of its asserted operation is strong evidence that the conspiracy does not in fact exist.").

²⁰⁷ *Id.* at 594.

²⁰⁸ *See* Tor, *supra* note 199, at 595.

²⁰⁹ *Stearns Airport Equip. Co. v. FMC Corp.*, 170 F.3d 518, 528 (5th Cir. 1999).

²¹⁰ *See, e.g., Nat'l Parcel Servs., Inc. v. J.B. Hunt Logistics, Inc.*, 150 F.3d 970, 971 (8th Cir. 1998) ("NPS cannot show a dangerous probability of recoupment The district court properly dismissed this claim."); *C.B. Trucking, Inc. v. Waste Mgmt., Inc.*, 944 F. Supp. 66, 69 (D. Mass. 1996) ("[I]t is nevertheless economically implausible to conclude that Waste Management had a 'dangerous probability' of recouping its investment in below-cost prices Waste Management is entitled to summary judgment"), *aff'd* 137 F.3d 41 (1st Cir. 1998).

²¹¹ *See, e.g., Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993) (incorporating requirement into predatory pricing); *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*, 549 U.S. 312, 319 (2007) (incorporating requirement into predatory bidding).

of a monopolist's alleged anticompetitive conduct generally.²¹² This has created a formidable hurdle for plaintiffs to overcome.²¹³

While *Matsushita* is not a patent-antitrust case, it is a stark reminder that “courts may not appreciate the range of objectives that antitrust defendants or firms generally pursue.”²¹⁴ *Matsushita* “reverses the traditional inductive process by which juries have always been instructed to proceed—from empirical data to ultimate fact.”²¹⁵

Professor Max Huffman has argued for a greater role for behavioral economics and observes that “the clearest immediate benefit from behavioral economics to antitrust thought is the development of intuitions about individual conduct that may increase hospitality to evidentiary demonstrations of real-world marketplace events.”²¹⁶ Behavioral economics cautions that antitrust defendants may not properly calculate the expected value of their tactical decisions. Overconfident, risk seeking, or myopic defendants may engage in predatory practices even if the expected value is negative.²¹⁷ And there are at least two other reasons why the rationality requirement imposed by *Matsushita* may mislead a court as it seeks to determine antitrust liability.

²¹² *Clark v. Flow Measurement, Inc.*, 948 F. Supp. 519, 526 (D.S.C. 1996) (“The only way for a plaintiff to show willful acquisition or maintenance of monopoly power is to provide evidence that the business accused of violating antitrust laws had an economically viable scheme in place.”).

²¹³ Tor, *supra* note 199, at 583 (“[T]he 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.”).

²¹⁴ Leslie, *supra* note 6, at 295.

²¹⁵ Eugene Crew, *The Chicago School Teaches the Supreme Court a Dubious Lesson*, ANTITRUST, 1, 11 (1986).

²¹⁶ Huffman, *supra* note 177, at 16.

²¹⁷ Avishalom Tor, *Illustrating a Behaviorally Informed Approach to Antitrust Law: The Case of Predatory Pricing*, ANTITRUST 52, 54 (2003) (“Because loss aversion generates risk seeking for losses, market participants will tend to take high-risk opportunities, such as predatory pricing strategies, against the odds, in the hope of winning a negative expected value gamble and eliminating a painful loss.”). See also KAHNEMAN, *supra* note 19, at 87 (“The confidence that individuals have in their beliefs depends mostly on the quality of the story they can tell about what they see, even if they see little. We often fail to allow for the possibility that evidence that should be critical to our judgment is missing—what we see is all there is. Furthermore, our associative system tends to settle on a coherent pattern of activation and suppresses doubt and ambiguity.”).

First, the defendant may seek to eliminate a rival and credibly deter its potential entry in the long-term.²¹⁸ Once a defendant establishes a credible threat of exclusion, it can then recoup its losses through durable, monopolistic control of the market.²¹⁹ One motivation for this is that firms prioritize market share gains over profits.²²⁰ *Matsushita* assumed Japanese firms make their exporting and pricing decisions based solely on profit expectations.²²¹ Cultural norms come into play. Japanese firms execute their nation's industrial policy,²²² making the spillover benefits to the domestic economy that accrued from successfully excluding rivals rational even if short-term profits may suffer. The Japanese firms in *Matsushita* could therefore have taken a longer time horizon in deciding their pricing strategy.²²³ Their strategy would help them achieve economies of scale in production and cumulative experience that accrued to them as first movers. Patentees are also susceptible to overconfidence bias and attempt to deter rivals.

Second, defendants may wish to develop a reputation for toughness. The availability bias – where rivals overestimate the sustainability of the patentee's low-cost campaigns because they were under the influence of particularly aggressive strategies recently – makes this rationale for

²¹⁸See, e.g., Patrick Bolton et al., *Predatory Pricing: Strategic Theory and Legal Policy*, 88 GEO. L.J. 2239, 2297–98 (2000) (describing a cable company that expended only one million dollars to defeat a new entry, and in doing so avoided losses of \$16.5 million per year).

²¹⁹Leslie, *supra* note 6, at 299 (“Predatory pricing threats are more likely to be credible if similar threats have actually been carried out in the past.”).

²²⁰Leslie, *supra* note 6, at 294; see also JAMES C. ABEGGLEN & GEORGE STALK, Jr., KAISHA, THE JAPANESE CORPORATION 276–77 (1985) (noting that Japanese corporations “constantly search for growth . . . [with] a preoccupation with market share and competitive position in contrast to the Western firm's return on investment objective. Leading market share will provide high margins in time.”).

²²¹See *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 582–83 n. 6 (1986).

²²²*Oversight and Authorization of the Antitrust Division, U.S. Dep't of Justice: Hearings Before the Subcomm. on Econ. and Commercial Law of the H. Comm. on the Judiciary*, 101st Cong. 27, 27 (1989) (statement of Clyde V. Prestowitz, Jr., former Counselor for Japan Affairs to the Secretary of Commerce) (noting that “[T]he thrust of Japanese industrial activity in virtually all areas is to build up initially on the home market, keeping the home market closed, and then to go into international markets, usually utilizing some kind of dumping or predatory pricing method and very often the terms of that competition involve collusion which under U.S. law would be illegal”).

²²³Steven F. Benz, Note, *Below-Cost Sales and the Buying of Market Share*, 42 STAN. L. REV. 695, 714 (1990) (noting that “[s]trategic considerations [make] the long-term buying of market share economically feasible”).

predatory pricing particularly effective.²²⁴ For instance, a patentee that is a patent privateer may have a different profit-motive for innovating than a publicly-funded research institution, such as Wisconsin Alumni Research Foundation (WARF).²²⁵

Behavioral economics teaches that courts should look at empirical evidence instead of relying on assumptions, such as the aphorism that stronger patent rights promotes innovation or that a seemingly irrational patentee poses no antitrust threat.²²⁶ The rule of reason informed by behavioral economics simply takes the facts as a given and focuses on why they take place and the effect a defendant's conduct has on competitive structure rather than dismissing the conduct because it is episodic and irrational.²²⁷

Developing the thought further, an effects-based rule of reason analysis should not be tangled in extraneous considerations of how an irrational patentee should behave in every circumstance, but simply whether it satisfied the elements of causing harm in the exercise of its market power in the case at issue.²²⁸ When theory and data clash it does not mean that the theory is wrong. It simply shows that the data shows that the theory needs

²²⁴ Avishalom Tor & William J. Rinner, *Behavioral Antitrust: A New Approach to the Rule of Reason After Leegin*, 2011 U. ILL. L. REV. 805, 825–26 (“The relevance of availability-based judgments for manufacturers’ estimates is apparent: insofar as their information provides a biased sample of price-cutting events and their vivid and salient negative effects, manufacturers are likely to excessively recall these events and thus overestimate both the probability of price-cutting and the frequency of its harmful manifestations.”).

²²⁵ Daryl Lim, *Unilateral Conduct and Standards*, in JORGE L CONTRERAS ED., *THE CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW, VOL. 1 – ANTITRUST AND PATENTS* (forthcoming 2017) (“The reputation of PAEs are enhanced, not harmed, by a reputation of toughness in corraling settlements.”).

²²⁶ See Walter G. Park & Douglas C. Lippoldt, *Technology Transfer and the Economic Implications of the Strengthening of Intellectual Property Rights in Developing Countries* (2008), available at http://fs2.american.edu/wgp/www/park_lippoldt08.pdf (“[S]tronger levels of patent protection are positively and significantly associated with inflows of *high-tech* products . . . and expenditure on R&D.”).

²²⁷ Leslie, *supra* note 36, at 63 (arguing that “in many ways the entire litigation process is designed to address the deviations from normalcy—the man who robs a bank, the woman who kills her spouse, and the firm that monopolizes a market. The fact that, on average, people may not engage in deviant behavior in no way suggests that the legal process should be blind to the deviations that do occur and punish them when they violate the law.”).

²²⁸ Leslie, *supra* note 36, at 64 (“When evaluating the plausibility of antitrust claims, defendants are neither data points nor opportunities to reject some researcher’s null hypothesis. Policy requires a theory; fact-finding does not.”).

to be refined. As a practical matter, judges should, at a minimum, allow discovery when confronted with facially irrational conduct in summary judgment motions as was the case in *Matsushita*, with motions to dismiss, in formulating substantive rules for antitrust violations.²²⁹

2. Predictability

Critics argue behavioral economics combines biases and gives rise to “an infinite range of potential market outcomes.”²³⁰ Further, it “cannot provide a coherent alternative model of human behavior capable of generating testable predictions and policy conclusions in a wide range of areas.”²³¹ Instead, behavioral economics “is the decidedly prosaic function of explaining phenomena after the fact.”²³² This makes behavioral economics inadequate as a theory to guide legal analysis.²³³ In contrast, neoclassical economics “focuses on what is likely to be the overriding consideration for most firms in most markets: profit. That focus enables it to model and predict future behavior in a way that antitrust analysis can readily and effectively deploy.”²³⁴ There are several responses to this.

First, behavioral economics teaches that biases are systematic and can be modeled.²³⁵ This empowers legal analysis to better predict human reactions to market stimuli.²³⁶ How it does so, however, may surprise some

²²⁹ See *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 556–57 (2007).

²³⁰ Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: Some Evidence of Market Manipulation*, 112 HARV. L. REV. 1420, 1427 (1999) (“behavioral research presents too many conflicting and overlapping biases to make confident overall predictions about consumer perceptions”); Wright, *supra* note 17, at 2257. (“Indeterminate predictions, to be sure, are at least one cause of the reluctance to adopt behavioral economics in the law.”).

²³¹ Jennifer Arlen, Comment, *The Future of Behavioral Economic Analysis of Law*, 51 VAND. L. REV. 1765, 1777 (1998).

²³² Devlin & Jacobs, *supra* note 165, at 1051.

²³³ Wright & Stone II, *supra* note 24, at 1527.

²³⁴ Devlin & Jacobs, *supra* note 165, at 1063.

²³⁵ RICHARD H. THALER, *THE WINNER’S CURSE: PARADOXES AND ANOMALIES OF ECONOMIC LIFE* 5 (1992) (“[M]any of the departures from rational choice that have been observed are systematic—the errors tend to be in the same direction. If most individuals tend to err in the same direction, then a theory which assumes that they are rational also makes mistakes in predicting their behavior.”).

²³⁶ Jeffrey J. Rachlinski, *The “New” Law and Psychology: A Reply to Critics, Skeptics, and Cautious Supporters*, 85 CORNELL L. REV. 739, 739 (2000) (noting that it “promise[s] to predict people’s reactions to law more accurately than either law and economics or traditional legal scholarship”).

readers. Studies on clinical predictions show subjective assessments of trained professions were less accurate than statistical predictions made by combining variables according to a rule.²³⁷ That rule can be informed by simple statistics. Princeton economist Orley Ashenfelter devised a means of predicting the future value of Bordeaux wine based on information available in the year they were made.²³⁸ Like antitrust intervention, wine takes time to produce results, and like technology that is heterogeneous, the price of wine from the same product vary dramatically across different vintages.

It was remarkable enough that Ashenfelter's formula provided more accurate forecasts, decades into the future, than the current prices of young wines.²³⁹ Even more remarkable are the implications: experts may be inferior to algorithms, and contrary to neoclassical economics' assumption, the market clearing price may not fully capture the value of the technology sold or licensed, or its lack of value thereof.²⁴⁰ Experts may have performed worse because, according to Kahneman, they "try to be clever, think outside the box, and consider complex combinations of features in making their predictions."²⁴¹ He notes that "[c]omplexity may work in the odd case, but more often than not it reduces validity. Simple combinations of features are better."²⁴² Another reason is that "humans are incorrigibly inconsistent in making summary judgments of complex information. When asked to evaluate the same information twice, they frequently give different answers."²⁴³

The Ashenfelter study indicates that formulas achieve greater predictive accuracy in "low-validity environments."²⁴⁴ What kind of algorithm would

²³⁷ Paul Meehl, "Causes and Effects of My Disturbing Little Book," 50 *Journal of Personality Assessment* 370 (1986), cited in KAHNEMAN, *supra* note 19, at 222 (noting that sixty percent of the studies showed significantly better accuracy for the algorithms, while the others scored a tie). See also KAHNEMAN, *supra* note 19, at 222 (noting that "a tie is tantamount to a win for the statistical rules, which are normally much less expensive to use than expert judgment.").

²³⁸ KAHNEMAN, *supra* note 19, at 223.

²³⁹ *Id.* at 224.

²⁴⁰ *Id.*

²⁴¹ *Id.*

²⁴² *Id.*

²⁴³ *Id.* at 224–25 ("Experienced radiologists who evaluate chest X-rays as 'normal' or 'abnormal' contradict themselves 20% of the time when they see the same picture on separate occasions.").

²⁴⁴ *Id.* at 225–26 ("[T]he experts who evaluate the quality of immature wine to predict its future have a source of information that almost certainly makes things worse rather than better:

a court use? Dominant statistical practice assigns weights to different predictors, thus employing what is known as multiple regression.²⁴⁵ However, it has been shown that one can do as well by selecting valid scores for predicting the outcome and adjusting those values to make them comparable.²⁴⁶ Simplified formulas proved just as accurate in predicting as the multiple regression formula, and even superior because they would be unaffected by sampling errors.²⁴⁷ Kahneman noted that “[t]he surprising success of equal-weighting schemes has an important practical implication: it is possible to develop useful algorithms without any prior statistical research. Simple equally weighted formulas based on existing statistics or on common sense are often very good predictors of significant outcomes.”²⁴⁸ For instance, the Apgar test systematically assesses infants according to five variables and three scores.²⁴⁹ These gave delivery room staff the consistent standards they needed to identify infants at risk and reduce infant mortality. It is still used in every delivery room today.²⁵⁰

Does this mean that patent-antitrust cases should be adjudicated by algorithms rather than experts? The answer seems to be “yes,” but only as a guide, much like a fitness app might track steps and chart health goals, because it would be difficult to image the legal community at present being comfortable with a software program deciding their legal rights, however logical the appeal of that solution might be. The Apgar test also faced

they can taste the wine. In addition, of course, even if they have a good understanding of the effects of the weather on wine quality, they will not be able to maintain the consistency of a formula.”).

²⁴⁵ *Id.* at 225.

²⁴⁶ *Id.* at 226 (citing Robyn M. Dawes, *The Robust Beauty of Improper Linear Models in Decision Making* 34 *American Psychologist* 571–82 (1979)).

²⁴⁷ *See id.* at 225 (citing Jason Dana and Robyn M. Dawes, “The Superiority of Simple Alternatives to Regression for Social Science Predictions,” *Journal of Educational and Behavioral Statistics* 29(3), 317–31 (2004)).

²⁴⁸ *Id.* at 226. *See also* ATUL GAWANDE, *A CHECKLIST MANIFESTO: HOW TO GET THINGS RIGHT* (Metropolitan: Holt 2009) (providing other examples of the virtues of checklists and simple rules.).

²⁴⁹ The variables were heart rate respiration, reflex, muscle tone, and color, and the score (0, 1, or 2, depending on the robustness of each sign. A total score of 8 or above was likely to in good shape. One with a score of 4 or below was probably in need of immediate intervention. *See* Virginia Apgar, *A Proposal for a New Method of Evaluation of the Newborn Infant*, 32 *CURRENT RESEARCHES IN ANESTHESIA AND ANALGESIA* 4, 260–61(1953); Mieczyslaw Finster and Margaret Wood, *The Apgar Score Has Survived the Test of Time*, 102 *ANESTHESIOLOGY* 855 (2005).

²⁵⁰ *Id.* at 227.

hostility and skepticism from clinical psychologists about the notion that algorithms could trump skill in making predications.²⁵¹ That hostility was understandable given that hunches they experienced during therapy sessions were confirmed, which in turn validates their clinical skill. The problem, Kahneman noted was:

[T]hat the correct judgments involve short-term predictions in the context of the therapeutic interview, a skill in which therapists may have years of practice. The tasks at which they fail typically require long-term predictions about the patient's future. These are much more difficult, even the best formulas do only modestly well, and they are also tasks that the clinicians have never had the opportunity to learn properly—they would have to wait years for feedback, instead receiving the instantaneous feedback of the clinical session. However, the line between what clinicians can do well and what they cannot do at all well is not obvious, and certainly not obvious to them. They know they are skilled, but they don't necessarily know the boundaries of their skill.²⁵²

The same might be said of judges and government officials who have to make similar short-term predictions in the context of adjudicating competing narratives of innovation. They fail to make accurate long-term predictions about the future because these are tasks that they never had to learn properly. Like the therapists, they know they are skilled but fail to recognize the limits of that skill in determining that non-intervention is the better option.

Kahneman ends his anecdote about the Agpar test on a note that gives hope to the future of patent-antitrust adjudication. He expects that “hostility to algorithms will probably soften as their role in everyday life continues to expand. Looking for books or music we might enjoy, we appreciate recommendations generated by software.”²⁵³ He cited as examples recommendations by websites on music and books based on past purchasing choices, credit limits that are set of us without human intervention, guidelines such as the ratio between good and bad cholesterol

²⁵¹ *Id.*

²⁵² *Id.* at 228.

²⁵³ *Id.* at 229.

levels and the price a professional football team should pay for rookie players.²⁵⁴ It is past time that legal analysis taps into algorithmic decision making tools, when we use it in so many other more mundane aspects of our lives. At the patent-antitrust interface, the impetus for this should be particularly power since the human decision makers must routinely wade into the uncertain waters each time they adjudicate a case.

How would such an algorithm look like? Kahneman suggests selecting a few traits that are prerequisites for success of antitrust intervention that are as independent from each other as possible. He recommends no more than six, and that those traits may be assessed reliably by asking factual questions. Next, a list of questions should be drawn up for each trait and scored between 1-5, with each representing a degree from “very weak” to “very strong.” Then stick with the outcome, even if there is another one that the decision maker might prefer. How might an algorithm look like in the patent-antitrust context? It should be user-friendly, and attuned to the conduct at the issue and the innovation structure of the industry in question. The specifics of such an algorithm are well beyond the boundaries of this Article and would be more properly undertaken by an appropriate multi-disciplinary group.

Second, behavioral economics need not be predictive for it to be valuable in antitrust analysis.²⁵⁵ It explains the context and market effects of patentee conduct by providing a normative framework explaining how decisions are made.²⁵⁶ At the same time with experience, the predictive decision making process under the rule of reason can be improved.²⁵⁷ The difference between a chess master who walk past a street game and announces, “white mates in three,” on the one hand, and rest of us who can easily detect anger in the first word of a telephone call is that our abilities are more commonly possessed, but they no less remarkable.²⁵⁸ Experience

²⁵⁴ *Id.*

²⁵⁵ See Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy*, 101 MICH. L. REV. 482, 502–503 (2002).

²⁵⁶ See Daryl Lim, *Living with Monsanto*, 2015 MICH. ST. L. REV. 559, 623–24.

²⁵⁷ KAHNEMAN, *supra* note 19, at 35 (“As you become skilled in a task, its demand for energy diminishes. Studies of the brain have shown that the pattern of activity associated with an action changes as skill increases, with fewer brain regions involved. Talent has similar effects. Highly intelligent individuals need less effort to solve the same problems, as indicated by both pupil size and brain activity”). See *id.* at 11 (noting that “[T]he accurate intuitions of experts are better explained by the effects of prolonged practice than by heuristics.”).

²⁵⁸ *Id.* at 11.

has simply enabled the chess master to recognize familiar elements and act appropriately and immediately. The chess master's memory contains a reparatory of guiding principles acquires through a lifetime, offering instantaneous and approximately accurate solutions to chess-related inquiries. To acquire those skills, Kahneman noted that the chess master needed "a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions."²⁵⁹

The common law acts as the collective memory for courts adjudicating patent-antitrust disputes. The percolation of an issue such as the antitrust legality of reverse payments in patent disputes through the judicial hierarchy (from district courts to appeals courts to the Supreme Court) and across circuits courts provides precisely that environment. The feedback across circuits and up and down the hierarchy serves another important purpose. Feedback must be independent and the errors uncorrelated to maximize the useful information derived from multiple sources.²⁶⁰

Dr. Gary Klein, a research psychologist, has advanced the idea of using such "premortem" to overcome group think when the group has almost come to a decision but has yet to commit itself.²⁶¹ The group should imagine the outcome opposite to the one the group is tending toward, which in the legal context would mean the dissenting view, if any.²⁶² One study showed that bias was mitigated when judges were encouraged to consider competing hypotheses.²⁶³ Tribunals with a plurality of decision makers, such as FTC Commissioners, Courts of Appeals, and the Supreme Court can decorrelate spurious errors by separating judgements on an issue before any discussion. Over time, tests formulated under a rule of reason that is informed by both neoclassical and behavioral economics can better balance competing narratives at the patent-antitrust intersection.

The common law provides a good habitant to develop more predictable application of behavioral insights because the federal appellate courts enable issues to percolate. Hence the Supreme Court in *Actavis* directed the lower courts to develop the rule of reason framework for reverse

²⁵⁹ *Id.* at 416.

²⁶⁰ *Id.* at 84.

²⁶¹ *Id.* at 264.

²⁶² *Id.* at 84.

²⁶³ *Id.* at 264 (citing J. Edward Russo and Paul J. H. Schoemaker, *Managing Overconfidence*, 33 SLOAN MGMT. R. (1992)).

payments.²⁶⁴ And in *Kimble*, the Court reminded courts of their “exceptional authority” to shape antitrust law and reconsider precedent based on new economic learning.²⁶⁵

Third, there will inevitably be a degree of uncertainty in any decision involving the future because the world is unpredictable. All antitrust cases except mergers are decided “after the fact.”²⁶⁶ Neoclassical economics adds nothing to the ability of courts to prognosticate innovation trajectories and forecast dynamically efficient outcomes. Instead, its mantra is “sit still and do nothing.” Further, it was the neoclassical movement that rallied courts to abandon predictable rules of per se illegality in favor of the amorphous rule of reason.²⁶⁷

Precision has come at a price for the rule of reason, which “provides little predictability to market participants. It subjects litigants and trial courts to the purgatory of ‘sprawling, costly, and hugely time-consuming’ discovery.”²⁶⁸ The undertaking requires courts to marry fact-finding with econometrics.²⁶⁹ To operationalize the rule of reason, countervailing effects must be assessed on complicated qualitative and quantitative dimensions.²⁷⁰

²⁶⁴ *FTC v. Actavis, Inc.*, 133 S. Ct. 2233, 2238 (2013).

²⁶⁵ *Kimble v. Marvel Entm’t, LLC*, 135 S. Ct. 2401, 2405 (2015).

²⁶⁶ *Saint Alphonsus Med. Ctr.-Nampa Inc. v. St. Luke’s Health Sys., Ltd.*, 778 F.3d 775, 783 (9th Cir. 2015) (“requir[ing] not merely an appraisal of the immediate impact of the merger upon competition, but a prediction of its impact upon competitive conditions in the future; this is what is meant when it is said that the amended § 7 was intended to arrest anticompetitive tendencies in their incipency”) (citation omitted).

²⁶⁷ *See, e.g., State Oil Co. v. Khan*, 522 U.S. 3, 4–5 (1997) (“[T]his Court has reconsidered its decisions construing the Sherman Act where, as here, the theoretical underpinnings of those decisions are called into serious question.”) (overruling *Albrecht v. Herald Co.*, 390 U.S. 145 (1968) (holding that maximum resale price maintenance is not illegal per se)); *Leegin Creative Leather Prods., Inc., v. PSKS, Inc.*, 551 U.S. 877, 907 (2007) (overruling *Dr. Miles Med. Co. v. John D. Park & Sons Co.*, 220 U.S. 373 (1911) (holding that maximum resale price maintenance is not illegal per se)); *Cont’l T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 47–49 (overruling *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967) (holding that vertical nonprice restrictions are not illegal per se)).

²⁶⁸ *Stucke, supra* note 164, at 1384.

²⁶⁹ *Kate, Sr., supra* note 44, at 5 (“Few people are fully aware of the difficulties involved in estimating the magnitude of effects. People tend to think that it is just a matter of some fact finding and hiring in an econometrician.”).

²⁷⁰ *Kate, Sr. supra* note 44, at 4 (“[There has been a] loss of predictability and [a] concomitant loss of legal certainty for the business community, which result[ed] from the rule-of-reason approach. . . . I have serious doubts about the capability of our dismal science to estimate them

The rule of reason's standard of "reasonableness" requires value judgments to give meaning to it.²⁷¹ Judges must choose between alternatives, each with its own set of trade-offs.²⁷² In patent-antitrust cases, "a judge or scholar's instincts about whether to second-guess 'innovations' in antitrust and IP cases depends largely on the individual's normative views about the importance of the interests on the other side."²⁷³

One may ask if behavioral economics is predictably pro-enforcement because it challenges the self-correcting nature of markets and the assumption that intervention is likely to be more harmful than helpful. The answer is "no." Good choice architecture aims to promote competition rather than squelch it. By providing information about risks, or using default rules, competition should be enhanced, not reduced.²⁷⁴ Behavioral economics simply aims to provide a more reliable basis for decision-making within the existing legal framework. Professor Andreas Heinemann summed up that "as a methodological tool, it is neutral with respect to the outcome."²⁷⁵ However, since neoclassical antitrust's pursuit of dynamic efficiency seems to have led to a pro-patentee tilt, recalibrating so more cases survive preliminary motions to dismiss or summary judgment motions to consider the facts more carefully would be a welcome change.

3. Generalizability

Critics argue the empirical results of behavioral economics have never made it out of the laboratory setting and are not ready for the "prime time" of real world decision making.²⁷⁶ In contrast, neoclassical economics' simplifying assumptions offers "an organizing principle" so policymakers

with any degree of precision. In my view, antitrust economists suggesting the opposite are insufficiently realistic.").

²⁷¹ V.K. Rajah, Op-Ed, *Interpreting the Constitution*, THE STRAITS TIMES (Singapore), May 30, 2015, <http://www.straitstimes.com/opinion/interpreting-the-constitution> ("[T]he process involves a degree of judicial lawmaking, occurring in the interstices of the written law . . .").

²⁷² *Id.* (Courts may be well-placed to reach a decision, and "so long as the judge is guided by proper textual considerations, properly articulated, the interpretation that he reaches will be a legitimate one, even though another judge might legitimately reach a different conclusion.".)

²⁷³ Stacey Dogan, *The Role of Design Choice in Intellectual Property and Antitrust Law*, 15 COLO. TECH. L.J. 27, 30 (2016).

²⁷⁴ See SUNSTEIN, *supra* note 192, at 113.

²⁷⁵ Heinemann, *supra* note 11, at 30.

²⁷⁶ Wright & Stone II, *supra* note 24, at 1548 ("Behavioral Antitrust Is Not Ready for Prime Time.").

can act analytically rather than merely descriptively.²⁷⁷ At the same time, those same critics concede that “[a]lthough modern economic theory and econometrics yield powerful insights into the market effects of complex business phenomena, much of the information necessary to resolve certain antitrust questions remains unknown and unavailable.”²⁷⁸

First, there is a large and growing body of evidence from the field documenting consumer behavioral biases of in real markets.²⁷⁹ If people are required to buckle their seatbelts while driving, the rule will increase net welfare in spite of population heterogeneity.²⁸⁰ Second, the value of behavioral economics does not lie in prognosticating irrational conduct generally, but in sensitizing courts to anticompetitive effects that result from deviations from rationality when they occur. By questioning the unconscious, behavioral economics empowers parties to help courts better decipher how dynamic markets work.²⁸¹ Third, the court is only concerned about the allegations of anticompetitive harm perpetrated by the defendant before it and determines if it meets the standard of proof, not to generalize the conduct into a theory.²⁸² Given the heterogeneity of innovation incentives, imposing a one-size-fits all solution will reduce net welfare.²⁸³ In such instances, default rules for specific types of industries or licensing arrangements could work better.

Critics also overlook the fact that the law lags theory. Neoclassical economics became dominant “more by drip than by torrent.”²⁸⁴ Even critics of behavioral economics have conceded that “[b]ehavioral economics is likely to adapt and change over time, make important discoveries, and focus

²⁷⁷ Devlin & Jacobs, *supra* note 165, at 1060.

²⁷⁸ Devlin & Jacobs, *supra* note 165, at 1062.

²⁷⁹ Valerie P. Hans, *The Jury's Response to Business and Corporate Wrongdoing*, 52 LAW & CONTEMP. PROBS. 177, 196 (1989) (“Sociologists and other scholars have demonstrated numerous instances in which corporations violate principles of rationality.”); Michael D. Grubb, *Behavioral Consumers in Industrial Organization*, 47 REVIEW OF INDUS. ORG. 247, 253 (2015).

²⁸⁰ SUNSTEIN, *supra* note 192, at 97.

²⁸¹ See *infra* Part IV.C–E.

²⁸² Leslie, *supra* note 36, at 64 (“The Judiciary’s function is not to fit the defendant’s conduct into a larger theoretical construct. . . . Policy requires a theory; fact-finding does not.”).

²⁸³ SUNSTEIN, *supra* note 192, at 97.

²⁸⁴ Huffman, *supra* note 177, at 12. See also Wright, *supra* note 17, at 2224 (“the evolution of the Sherman Antitrust Act has been a tale of measured integration of neoclassical microeconomic analysis into the vague contours of the Sherman Act”); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 926 (1979) (describing the incremental adoption of modern antitrust economics into the law in terms).

on new problems.”²⁸⁵ Like other theories in search of practical applications, behavioral economics will experience a similar lag. It took some time before the theory of relativity was adapted and applied to Global Positioning Systems for smartphones. However, that did not warrant rejecting it in favor of staying with Newtonian physics.²⁸⁶ The vitality of antitrust law ultimately depends on those it was created by and for – the judges themselves. If antitrust law is to be successfully retooled, judges must develop it through trial and error.

Even at this relatively nascent stage of development, behavioral economics can already help judges recognize evidence in determining whether an anticompetitive agreement or monopolistic conduct is plausible.²⁸⁷ It also helps sidestep the elusive balancing process under the rule of reason by developing burden shifting and proxies of anticompetitive harm or procompetitive benefit to reach more dynamically efficient outcomes. These ideas are explored below.

B. Anticompetitive Harm and Procompetitive Justifications

Antitrust plaintiffs must prove that the practice harmed the competitive process and thereby harmed consumers rather than competitors alone.²⁸⁸ The defendant must then offer a procompetitive justification for its act.²⁸⁹ Some courts frame this as “a nonpretextual claim that its conduct is indeed a form of competition on the merits because it involves, for example, greater efficiency or enhanced consumer appeal.”²⁹⁰ The plaintiff must then rebut it or show that the anticompetitive harm outweighs it.²⁹¹ This section shows how behavioral economics helps explain the reasoning and outcomes of key cases at the patent-antitrust intersection, and distills lessons from the discussion.

²⁸⁵Wright & Stone II, *supra* note 24, at 1549.

²⁸⁶Richard W. Pogge, *Real-World Relativity: The GPS Navigation System*, <http://www.astronomy.ohio-state.edu/~pogge/Ast162/Unit5/gps.html>.

²⁸⁷*In re Baby Food Antitrust Litig.*, 166 F.3d 112, 122 (3d Cir. 1999) (“‘[P]lus factors’ refers to ‘the additional facts or factors required to be proved as a prerequisite to finding that parallel action amounts to a conspiracy’ The plus factors may include, and often do, evidence demonstrating that the defendants: (1) acted contrary to their economic interests, and (2) were motivated to enter into a price fixing conspiracy.”).

²⁸⁸*Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489 (1977).

²⁸⁹*United States v. Microsoft Corp.*, 253 F.3d 34, 58–59 (2011).

²⁹⁰*Id.* at 59.

²⁹¹*Id.*

1. *Microsoft* and *Rambus*

Microsoft and *Rambus* illustrate how the D.C. Circuit took diametrically opposite approaches in two landmark cases to achieve dynamic efficiency in the face of uncertain outcomes. In *Microsoft*, the D.C. Circuit expressed concern over how Microsoft's tying practice might exclude nascent competition from web-based programs running Java that would allow app developers to bypass Windows.²⁹² The viability of Java as a rival was uncertain and unreliable, and evidence-based answers were unavailable. The court turned the clock back to make the judgment call based on market concentration, competitive market structures, and the acceptable level of appropriation through closed systems compared with open-source systems.²⁹³

The D.C. Circuit bypassed the usual proxies of higher prices and lower output, and was prepared to “infer causation when exclusionary conduct is aimed at producers of nascent competitive technologies,” because “neither plaintiffs nor the court can confidently reconstruct a product's hypothetical technological development in a world absent the defendant's exclusionary conduct.”²⁹⁴ It found that Microsoft should not be given “free reign to squash nascent, albeit unproven, competitors at will—particularly in industries marked by rapid technological advance and frequent paradigm shifts.”²⁹⁵ Instead, it should be “made to suffer the uncertain consequences of its own undesirable conduct.”²⁹⁶ The lynchpin of liability was “undesirable” conduct that hurt nascent rivals without any obvious consumer benefit, such as a demonstrably better product. *Microsoft* rejected imposing a requirement that the antitrust plaintiff must prove a counterfactual, calling such a test “edentulous.” and noting that “it would be inimical to the purpose of the Sherman Act to allow monopolists free reign to squash nascent, albeit unproven, competitors at will.”²⁹⁷

Professor Stacey Dogan noted that “the *Microsoft* court gives a nod to concerns about judicial meddling with innovation, [but] it views those concerns as cautionary rather than immobilizing.”²⁹⁸ *Microsoft* may have

²⁹² *Id.* at 79.

²⁹³ Devlin & Jacobs, *supra* note 165, at 36–37.

²⁹⁴ *Microsoft*, 253 F.3d at 79.

²⁹⁵ *Id.*

²⁹⁶ *Id.*

²⁹⁷ *Id.*

²⁹⁸ Dogan, *supra* note 273, at 127.

recognized, as she did, that “non-interference has its own costs and risks, both in a static sense (by immunizing conduct with net social costs) and through its impact on incentives and norms.”²⁹⁹ Here, the court first recognized that it had to reach an outcome that promoted innovation in the face of uncertainty.³⁰⁰ However, instead of opting for inaction as counseled by neoclassical economics, the court decided to shift the burden of the uncertainty onto the defendant to provide the information to resolve the issue.³⁰¹

Shifting the burden makes sense because the patentee has both the information and incentive to be as helpful as possible.³⁰² The patentee is in a superior position to produce documentation of procompetitive justifications and, without the burden shift, antitrust law would require a proponent to prove a negative. It is settled law that “fairness dictates that a litigant ought not have the burden of proof with respect to facts particularly within the knowledge of the opposing party.”³⁰³ A practice tip is to find out which technologies or enterprises target firm leaders identify as threats to the firm or its industry and what leaders in other firms indicate possessing the potential to replace the product or service at issue. Courts “should take those concerns and hopes seriously; these often will turn out to be more instructive than carefully crafted extrapolations from industry trends and published forecasts.”³⁰⁴

Microsoft should be contrasted with *Rambus*, decided by the same court seven years later.³⁰⁵ The FTC investigated Rambus for breaching disclosure obligations under standard-setting organization (SSO) policies when it failed to disclose its interest in patents related to the standardization efforts and stated that “disclosures it did make were misleading.”³⁰⁶ According to the D.C. Circuit, there was no “cognizable violation of the Sherman Act when a lawful monopolist’s deceit has the effect of raising prices (without

²⁹⁹ *Id.* at 129.

³⁰⁰ *Microsoft*, 253 F.3d at 58–59.

³⁰¹ *Id.* at 59.

³⁰² Lim, *supra* note 172, at 367.

³⁰³ *Adobe Sys. Inc. v. Christenson*, 809 F.3d 1071, 1079 (9th Cir. 2015); *see also* *United States v. N.Y., New Haven & Hartford R.R. Co.*, 355 U.S. 253, 256 n.5 (1957) (“The ordinary rule, based on considerations of fairness, does not place the burden upon a litigant of establishing facts peculiarly within the knowledge of his adversary.”).

³⁰⁴ Cass, *supra* note 7, at 198.

³⁰⁵ *Rambus Inc. v. FTC*, 522 F.3d 456 (D.C. Cir. 2008).

³⁰⁶ *Id.* at 461.

an effect on competitive structure)”³⁰⁷ The FTC must have concluded that JEDEC (the SSO) would not have adopted a proprietary technology at all.³⁰⁸ The result in *Rambus* was a triumph for the defendant – not on the strength of its evidence but by a court that deprived itself of the opportunity to consider evidence from the party best able to provide it, leading the court to find a lack of anticompetitive harm because it forced upon the plaintiff an insurmountable task of proving a counterfactual.

Rambus “has been criticized, both on the basis of its antitrust analysis and as a matter of public policy, inasmuch as it failed to sanction conduct that was widely condemned as deceptive.”³⁰⁹ As Professor Jay Kesan and Carol Hayes note, the court’s reading “is potentially broad enough to restrict or eliminate the application of antitrust law in cases involving patents that are part of a standard.”³¹⁰ Further, consistent with the neoclassical view, the outcome reflected institutional suspicions of the ability of courts to police ambushes – the hallmark of neoclassical antitrust.³¹¹ *Rambus* also ignored *Microsoft*’s rejection of a “but-for” standard in favor of acts that “reasonably appear capable of making a significant contribution to monopoly”³¹²

If the FTC had provided insufficient evidence that JEDEC would have adopted an alternative standard, the D.C. Circuit should have rejected the issue on an evidentiary basis.³¹³ Instead, it adopted a causation standard that effectively eliminates an antitrust response to deception even when the IP policies are clear.³¹⁴ It also did not seem to matter to the D.C. Circuit, who took the reins of monopoly power or how they obtained that power. The point was that firms remained free to extract monopoly rents once

³⁰⁷ *Id.* at 466.

³⁰⁸ *Id.*

³⁰⁹ Jorge L. Contreras, *Implementing Procedural Safeguards for the Development of Bioinformatics Interoperability Standards*, 39 N. KY. L. REV. 87, 105 (2012).

³¹⁰ Jay P. Kesan & Carol M. Hayes, *FRAND’s Forever: Standards, Patent Transfers, and Licensing Commitments*, 89 IND. L.J. 231, 269 (2014).

³¹¹ *Id.*

³¹² Ankur Kapoor, *What Is the Standard of Causation of Monopoly?*, ANTITRUST, Summer 2009, at 38 (citation omitted).

³¹³ M. Sean Royall, et al., *Deterring “Patent Ambush” in Standard Setting: Lessons from Rambus and Qualcomm*, ANTITRUST, Summer 2009, at 35–36.

³¹⁴ *Id.* at 35.

standardization took place.³¹⁵ Deception made no difference to the market, since implementers and consumers had to pay one patentee or another. It is not higher royalties per se, but the manner through which they achieve their ability to extort the industry that warrants scrutiny.³¹⁶ Efforts to obscure “information desired by consumers for the purpose of determining whether a particular purchase is cost justified is likely enough to disrupt the proper functioning of the price-setting mechanism of the market that it may be condemned” under antitrust law.³¹⁷

Microsoft and *Rambus* illustrate how courts can choose to use burden shifting as a proxy to reach more dynamically efficient outcomes, and what happens when they do not. The proxy functions like a heuristic to cut through the complex knowns and known unknowns. In the discussion that follows, *Actavis* and *Kimble* illustrate how heuristics and biases affect the Supreme Court in its antitrust analysis as well.

2. *Actavis* and *Kimble* Revisited

Actavis held that large and unjustified reverse payments may violate antitrust laws under a rule of reason analysis.³¹⁸ A large and unexplained payment tied to a delay in entry from the date of settlement could be an improper agreement to delay entry and split the proceeds of an otherwise unjustified agreement to maintain the patent monopoly in a situation where there is an invalid, or arguably invalid, patent.³¹⁹ The settlement’s anticompetitive effects must be weighed against any legitimate justifications including “avoided litigation costs or fair value for services”³²⁰ Indeed, “there is not the same concern that a patentee is using its monopoly profits to avoid the risk of patent invalidation or a finding of noninfringement.”³²¹

The Court pointed out that “the payment (if otherwise unexplained) likely seeks to prevent the risk of competition. And, as we have said, that

³¹⁵ Jonathan Hillel, *Standards x Patents ÷ Antitrust = ∞: The Inadequacy of Antitrust to Address Patent Ambush*, DUKE L. & TECH. REV. 17 § 56 (2010).

³¹⁶ Lim, *supra* note 122, at 582–83.

³¹⁷ FTC v. Ind. Fed’n of Dentists, 476 U.S. 447, 461–62 (1986).

³¹⁸ FTC v. Actavis, Inc., 133 S. Ct. 2223, 2236 (2013).

³¹⁹ *See id.*

³²⁰ *Id.*

³²¹ *Id.*

consequence constitutes the relevant anticompetitive harm.”³²² The quick look approach in antitrust law shifts the burden to the defendant on proof of an agreement. This amounts to the same thing, with the plaintiff only showing that there was a large payment that accompanied the agreement, which would shift the burden to the defendants to explain the reasons for that payment.³²³ The Court thus adopts “large and unjustified payment” as a proxy in place of proof of a horizontal market division agreement.

This should not be a failure of the rule of reason analysis. Rather, it is a triumph of heuristics. A full-blown balancing exercise would have been tremendously complicated, analytically vague, and subjective. By placing the burden on the parties best placed to discharge it, the framework mirrors *Microsoft* in achieving both precision and efficiency.³²⁴ The Court’s approach places the burden on the defendant to explain itself where the conduct is more likely than not to be harmful.

Post-*Actavis*, lower courts have developed this heuristic to provide some guidance on the outer boundaries of antitrust liability. First, patentees who lose on contentions on patent validity, infringement, or inequitable conduct, may face “serious and dramatic repercussions in the subsequent resolution of the antitrust challenge to the reverse payment settlement.”³²⁵ Second, non-cash considerations may amount to reverse payments, including patentees agreeing not to launch an authorized generic product during the first-filer’s exclusivity period.³²⁶ Third, even if a private plaintiff can prove

³²² *Id.*

³²³ *Id.* (“Where a reverse payment reflects traditional settlement considerations, such as avoided litigation costs or fair value for services, there is not the same concern that a patentee is using its monopoly profits to avoid the risk of patent invalidation or a finding of noninfringement.”).

³²⁴ Lim, *supra* note 256, at 565 (“Where appropriate, the court may truncate the inquiry by shifting the burden onto the patentee to explain its conduct. This will incentivize the party best placed to provide the information to the court to do so.”).

³²⁵ Brian Sodikoff, James J. Calder, Thomas Maas, Reverse Payments After *Actavis*, Bloomberg BNA (Mar. 31, 2017), referring to *In re Modafinil Litigation*, 06-cv-1797, 06-cv-1833, 06-cv-2768, 08-cv-2141 (E.D. Pa.); 153475 (3d Cir.).

³²⁶ King Drug Co. of Florence, Inc. v. SmithKline Beecham Corp., 791 F.3d 388, 403–406 (3d Cir. 2015). *In re Lidoderm Antitrust Litig.*, 14-md-2521 (N.D. Cal.); *In re Opana ER (Oxymorphone Hydrochloride) Antitrust Litig.*, MDL No. 2580, Case No. 14-cv-10150 (N.D. Ill.) (including *Value Drug Co. v. Endo Health Solutions Inc.*, 14-cv-2630 (N.D. Cal.); *In re Lamictal Direct Purchaser Antitrust Litig.*, 12-cv-995 (D.N.J.); *In re Loestrin 24 Antitrust Litig.*, 13-md-2472 (D.R.I.).

that a reverse payment is anticompetitive, it may still need to prove facts in a “but for world” scenario, such as generic launch, regulatory approval, or other factors.³²⁷ However, as noted in Part III. A., these data points fall short of giving attorneys the certainty they need to properly counsel their clients.

Kimble illustrates not a heuristic, but a bias with respect to the rule of reason. Two years before *Kimble*, the FTC in *Actavis* had argued that the quick look approach should be applied since these agreements essentially amounted to collusion to divide up the market between the brand and generic.³²⁸ The *Actavis* Court disagreed, holding that the legality of a reverse payment must be judged by the rule of reason, which it characterized as “feasible administratively.”³²⁹

Two years later in *Kimble*, the same Court rejected the rule of reason as a tool for assessing the competitive merits of post expiration royalties, dismissing it as an “‘elaborate inquiry’ produc[ing] notoriously high litigation costs and unpredictable results.”³³⁰ The majority instead preferred the per se rule of illegality which “is simplicity itself to apply.”³³¹ Notably, Chief Justice Roberts and Justice Thomas, who dissented in both *Actavis* and *Kimble*, criticized the rule of reason as “unruly” in *Actavis*³³² while embracing it in *Kimble* – a remarkable change of heart.³³³

How does one explain this shift? Behavioral economics provides the answer—substitution bias. The Justices had a result in mind and sought the reasoning that best allowed them to support that outcome. The Justices sought information consistent with their preexisting schemas while

³²⁷ See *United Food & Commercial Workers Local 1776 & Participating Emp’rs Health & Welfare Fund v. Crosby Tugs, LLC (In re Actos End-Payor Antitrust Litig.)*, 848 F.3d 89, 93–94 (2d Cir. 2017); *Am. Sales Co., LLC v. Astrazeneca LP (In re Nexium (Esomeprazole) Antitrust Litig.)*, 845 F.3d 470, 476 (1st Cir. 2017); *In re Asacol Antitrust Litig.*, No. 15-12730-DJC, 2017 U.S. Dist. LEXIS 952 at *12–13 (D. Mass. Jan. 4, 2017); *In re Actos End Payor Antitrust Litig.*, No. 13-CV-9244 (RA), 2015 U.S. Dist. LEXIS 127748 at *57–58 (S.D.N.Y. Sep. 22, 2015); *In re Nexium (Esomeprazole) Antitrust Litig.*, 968 F. Supp. 2d 367, 390 (D. Mass. 2013).

³²⁸ *Actavis*, 133 S. Ct. at 2237.

³²⁹ *Id.* at 2236 (“An antitrust defendant may show in the antitrust proceeding that legitimate justifications are present, thereby explaining the presence of the challenged term and showing the lawfulness of that term under the rule of reason.”).

³³⁰ *Kimble v. Marvel Entm’t, LLC*, 135 S. Ct. 2401, 2411 (2015) (citation omitted).

³³¹ *Id.*

³³² *Actavis*, 133 S. Ct. at 2245.

³³³ *Kimble*, 135 S. Ct. at 2416.

rejecting disconfirming evidence. We tend to revise the remembered history of our beliefs. As Kahneman explains:

Many psychologists have studied what happens when people change their minds. Choosing a topic on which minds are not completely made up—say, the death penalty—the experimenter carefully measures people’s attitudes. Next, the participants see or hear a persuasive pro or con message. Then the experimenter measures people’s attitudes again; they usually are closer to the persuasive message they were exposed to. Finally, the participants report the opinion they held beforehand. This task turns out to be surprisingly difficult. Asked to reconstruct their former beliefs, people retrieve their current ones instead—an instance of substitution—and many cannot believe that they ever felt differently.

Your inability to reconstruct past beliefs will inevitably cause you to underestimate the extent to which you were surprised by past events.³³⁴

Bias can also occur within the same case. The majority in *Kimble* adhered to stare decisis despite criticism that the patent conferred no market power post-expiration and that since the licensee paid the aggregate of whatever it valued over the license term, how it was structured did not affect the aggregate amount paid.³³⁵ The majority held that stare decisis in patent law was “superpowered.”³³⁶ Because it framed the cases as being rooted in patent policy, the basis for that determination was based on the “categorical principle” that royalties end when the patent term expires and not on the competitive significance of post expiration royalties.³³⁷ In contrast, the *Kimble* dissent framed the facts as “purporting to apply [the Patent Act], [but are] actually based on policy concerns.”³³⁸ Despite there being no antitrust question before the Court, the dissent maintained that the

³³⁴ KAHNEMAN, *supra* note 19, at 202.

³³⁵ *Kimble*, 135 S. Ct. at 2409 (noting that stare decisis rests on the idea “that it is usually more important that the applicable rule of law be settled than that it be settled right”) (citation omitted).

³³⁶ *Id.* at 2410.

³³⁷ *Id.* at 2405.

³³⁸ *Id.* at 2418.

guiding precedent was “an antitrust decision masquerading as a patent case”³³⁹ premised on a “debunked” economic theory.³⁴⁰ It also noted that *stare decisis* does not require the retention of a “baseless and damaging precedent.”³⁴¹ This schism too may be explained by confirmation bias where two sides see the same issue but frame it differently.³⁴²

The schisms over the rule of reason in *Actavis* and *Kimble*, as well as the burden shifting in the face of unpredictable innovation trajectories in *Microsoft* and *Rambus*, illustrate how the same court in two different cases can take markedly different positions, debunking the predictability avowed by neoclassical theorists. These cases illustrate the importance of placing greater weight on articulating *why* exactly a court thinks that its intervention or abstention would further dynamic efficiency.

3. A Word on Procompetitive Justifications

In unifying antitrust and patent policy, *Actavis* forces courts to confront the question of what it takes for patentees to innovate in applying the rule of reason. When it comes to demanding exclusive rights to secure returns on innovation, pharmaceutical companies arguably have the best case on their side.³⁴³ Yet Professor Cynthia Ho observed that drug companies distort conventional wisdom that every drug requires a billion dollars to develop, “when the reality is that most new drugs cost a fraction of that price.”³⁴⁴ Similarly, drug companies tout their innovativeness “when in reality, most of the ‘new’ drugs they produce are modest improvements that often have little therapeutic value.”³⁴⁵ These cognitive biases reinforce and perpetuate

³³⁹ *Id.*

³⁴⁰ *Id.* at 2415.

³⁴¹ *Id.*

³⁴² KAHNEMAN, *supra* note 19, at 413 (“[T]he framing of the individual’s decision—Thaler and Sunstein call it choice architecture—has a huge effect on the outcome.”).

³⁴³ Ho, *supra* note 33, at 426–27 (“It is undisputed that patents are valuable and even essential to pharmaceutical companies, unlike other areas of technology, such as software, where other issues, such as first-mover advantage, are more important.”).

³⁴⁴ *Id.* at 426 (“Admittedly, even a fraction of \$1 billion is still quite expensive, but the exaggerated number has important implications for how policymakers and scholars consider ways that patent law should be tailored to promote innovation.”).

³⁴⁵ *Id.* (“Although small innovation is better than none at all, the assumption that most new drugs are highly innovative also implicates patent law and policy.”).

the belief that ironclad levels of patent protection are required to promote innovation.³⁴⁶

What is of concern is that the beliefs may be based on flawed evidence. For instance, Professor Ho traces the billion-dollar figure to a press release that was repeatedly circulated and even “presented as an undisputed fact” in the *Wall Street Journal* and *Forbes* magazine.³⁴⁷ Similarly, a report by the National Institute for Health Care Management concluded that “only 15% of new drugs were highly innovative and the percentage of new drugs that were highly innovative was decreasing over time, with companies mostly developing drugs that were incremental modifications to existing drugs.”³⁴⁸ As such, the empirical basis for any procompetitive innovation-based arguments must be carefully examined and appropriately “de-biased” before being accepted.

C. Intent: Valuing the Conscious

Intent is already relevant in antitrust analysis.³⁴⁹ A non-IP case that illustrates this principle is *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*³⁵⁰ The Aspen ski area consisted of four mountain areas.³⁵¹ The defendant owned three of those areas, and the plaintiff owned the fourth.³⁵² They cooperated for years in issuing a joint, multiple-day, all-area ski ticket.³⁵³ When the defendant repeatedly failed to negotiate an increased share of the proceeds, it canceled the joint ticket.³⁵⁴ The plaintiff was concerned that skiers would bypass its mountain without some joint

³⁴⁶ *Id.* at 429 (“[C]urrent patent law and policy, in conjunction with existing cognitive biases, contribute to duplication in some areas and inadequate development in others.”).

³⁴⁷ *Id.* at 453.

³⁴⁸ *Id.* at 459.

³⁴⁹ *See, e.g.,* *Chi. Bd. of Trade v. United States*, 246 U.S. 231, 238 (1918) (“[K]nowledge of intent may help the court to interpret facts and to predict consequences.”); *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966) (requiring “the willful acquisition or maintenance of [monopoly] power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident”); *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993) (attempted monopolization requires predatory or exclusionary conduct with a specific intent to monopolize).

³⁵⁰ 472 U.S. 585 (1985).

³⁵¹ *Id.* at 587–88.

³⁵² *Id.* at 589.

³⁵³ *Id.* at 590–91.

³⁵⁴ *Id.* at 592–93.

offering and offered to buy the defendant's tickets at retail price.³⁵⁵ The defendant refused.³⁵⁶

The Supreme Court held that “[the defendant] elected to forgo these short-run benefits because it was more interested in reducing competition . . . over the long run by harming its smaller competitor.”³⁵⁷ In finding for the plaintiff, the Court held that this refusal to sell, even at its own retail price, “suggest[ed] a calculation that its future monopoly retail price would be higher.”³⁵⁸

A commitment to improving the understanding of how defendants decide means a prominent role for an inquiry into the intent their allegedly anticompetitive acts. Intent provides context and an anchor to unify the rules around an intelligible norm. This is consistent with Professor Maurice Stucke's argument that “antitrust law should blend rules with general principles to enhance predictability for ordinary cases while preserving flexibility for novel restraints.”³⁵⁹ Such a “framework would reduce the cost of error under the Court's per se rule, without imposing the high litigation costs and risk of false positives and negatives under the rule of reason.”³⁶⁰

1. A Bigger Role for Intent

The current mantra is generally that uncharitable intent toward rivals, even a wish to “destroy” them, is legal under antitrust law.³⁶¹ Courts reason that “[c]ompetition is a ruthless process”³⁶² and antitrust laws are not “designed to be a guide to good manners.”³⁶³ Their concern is that if “intent to harm a competitor alone [becomes] the marker of antitrust liability, the law would risk retarding consumer welfare by deterring vigorous competition—and wind up punishing only the guileless who haven't figured

³⁵⁵ *Id.* at 593–94 & n.14.

³⁵⁶ *Id.* at 593.

³⁵⁷ *Id.* at 608.

³⁵⁸ *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 409 (2004) (discussing *Aspen*, 472 U.S. 585).

³⁵⁹ Stucke, *supra* note 164, at 1479.

³⁶⁰ Reeves & Stucke, *supra* note 34, at 1582.

³⁶¹ *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001).

³⁶² *Ball Mem'l Hosp., Inc. v. Mut. Hosp. Ins., Inc.*, 784 F.2d 1325, 1338 (7th Cir. 1986).

³⁶³ *Novell, Inc. v. Microsoft Corp.*, 731 F.3d 1064, 1078 (10th Cir. 2013); *see also Olympia Equip. Leasing Co. v. W. Union Tel. Co.*, 797 F.2d 370, 379 (7th Cir. 1986).

out not to write such things down despite (no doubt) the instructions they received in countless ‘antitrust compliance’ seminars.”³⁶⁴

Other courts look more charitably on the role of intent. For instance, in *McWane, Inc. v. FTC*, the Court of Appeals for the Eleventh Circuit found that “clear anticompetitive intent . . . supports the inference that it harmed competition.”³⁶⁵ It observed that “[e]vidence of intent is highly probative ‘not because a good intention will save an otherwise objectionable regulation or the reverse; but because knowledge of intent may help the court to interpret facts and to predict consequences.’”³⁶⁶ When approaching licensing restraints,

the court must ordinarily consider the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable. The history of the restraint, the evil believed to exist, the reason for adopting the particular remedy, the purpose or end sought to be attained, are all relevant facts. This is not because a good intention will save an otherwise objectionable regulation or the reverse; but because knowledge of intent may help the court to interpret facts and to predict consequences.³⁶⁷

For a monopolization charge, and in particular “whether the challenged conduct is fairly characterized as ‘exclusionary’ or ‘anticompetitive’ . . . there is agreement on the proposition that ‘no monopolist monopolizes unconscious of what he is doing.’”³⁶⁸ On the facts, *McWane* found “particularly powerful” evidence of anticompetitive intent.³⁶⁹ The defendant’s exclusive dealing scheme was a “deliberate plan” to prevent its rival from reaching the critical market mass necessary to

³⁶⁴ *Novell, Inc.*, 731 F.3d at 1078.

³⁶⁵ 783 F.3d 814, 840 (11th Cir. 2015).

³⁶⁶ *Id.* (citation omitted); see also *Microsoft*, 253 F.3d at 59 (“Evidence of the intent behind the conduct of a monopolist is relevant only to the extent it helps us understand the likely effect of the monopolist’s conduct.”).

³⁶⁷ *Major League Baseball Props., Inc. v. Salvino, Inc.*, 542 F.3d 290, 316 (2d Cir. 2008) (quoting *Chi. Bd. of Trade v. United States*, 246 U.S. 231, 238 (1918)).

³⁶⁸ *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 602 (1985).

³⁶⁹ *McWane, Inc.*, 783 F.3d at 840.

invest and receive a profitable return.³⁷⁰ This allowed the court to infer that “the witnessed price behavior was the (intended) result” even if “[n]ot all of the evidence adduced in this case uniformly points against [the defendant].”³⁷¹

Similarly in *Intellectual Ventures I LLC v. Capital One Financial Corp.*, the U.S. District Court for the District of Maryland found that the patentee’s intent was highly relevant in answering the antitrust question.³⁷² At a motion to dismiss stage, the court believed that the patentee could have intentionally acquired “a massive patent portfolio,” encompassing 3,500 patents related to the financial services industry “so that it could hold up banks that have substantially invested in those existing product designs.”³⁷³ It “start[s] from widely adopted and existing technology” and “us[es] the designs of existing products as . . . custom-built patent portfolios . . .”³⁷⁴ Thus, the patentee capitalized on “substantial sunk investments” their alleged infringers made in existing product designs.³⁷⁵ In this way, the patent aggregation was aimed at holding up the banks rather than seeking a return on its inventions.³⁷⁶

Cases such as *Aspen Skiing*, *McWane*, and *Intellectual Ventures* recognized that intent helps evaluate the credibility of anticompetitive harm. Incentivizing innovation does not prevent courts from acting against parties with illicit motives. If the evidence shows that patentees intended to exclude rivals, condemning them will not discourage budding innovators from developing and commercializing their innovations. Only those who intend to exclude rivals by their conduct need to fear. In this way, courts can reduce false positives while ensuring more robust enforcement where the facts warrant it.

³⁷⁰ *Id.*

³⁷¹ *Id.*

³⁷² See 99 F. Supp. 3d 610, 626 (D. Md. 2015).

³⁷³ *Id.* (citation omitted).

³⁷⁴ *Id.* (citation omitted).

³⁷⁵ *Id.* (citation omitted).

³⁷⁶ *Id.*

2. How Intent Makes Judging Easier

Seventh Circuit Chief Judge Diane Wood candidly warned that parties who spew economic jargon do so “at their peril.”³⁷⁷ For the judge, navigating neoclassical antitrust’s rule of reason can be like a “ramble through the wilds of economic theory.”³⁷⁸ Antitrust attorney Richard Steuer observed that “[t]o a large degree, the backlash against antitrust enforcement is in reaction to the complexity, and resulting confusion, that has fostered bad policy decisions, bad enforcement decisions, and bad judicial decisions.”³⁷⁹ This complexity stems from neoclassical economics’ “inability to translate the rule of reason into simple norms.”³⁸⁰

The technocratic way antitrust jurisprudence has developed has led courts to shun evidence of intent, preferring instead to point to the plaintiff’s failure to pierce through the presumptive legality of the defendant’s conduct. Judges have little understanding of marketplace economics, whether an agreement keeps the cartel stable, or whether siding with the patentee will optimize innovation. Even its non-interventionist rule of reason analysis provides little certainty as to whether courts will find their conduct reasonable on balance.³⁸¹

Former FTC Commissioner Thomas Rosch observed that judges without training find economic evidence more persuasive if “communicated in a way that a generalist can understand and must be consistent with other evidence.”³⁸² This includes the introduction of non-price evidence such as

³⁷⁷ Diane P. Wood, *Generalist Judges in a Specialized World*, 50 SMU L. REV. 1755, 1767 (1997) (“Economic mumbo-jumbo is already prevalent in the field, but lawyers talk of the trade-off between the deadweight loss ‘triangle’ and the income transfer ‘rectangle’ at their peril in front of a judge who does not live and breathe the field.”).

³⁷⁸ *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 609–10 n.10 (1972).

³⁷⁹ Richard M. Steuer, *The Simplicity of Antitrust Law*, 14 U. PA. J. BUS. L. 543, 557 (2012).

³⁸⁰ Stucke, *supra* note 164, at 1422; *see also* Cavanagh, *supra* note 74, at 125 (“Notwithstanding the simplicity of the statutory formulations, application of the antitrust laws to day-to-day business practices has proven to be no facile undertaking.”).

³⁸¹ *See* *FTC v. Actavis, Inc.*, 133 S. Ct. 2223, 2238, 2245 (Roberts, C.J., dissenting) (describing the rule of reason as “unruly” and “amorphous”); Stucke, *supra* note 164, at 1422 (“The rule of reason simply does not give market participants enough certainty.”).

³⁸² Commissioner J. Thomas Rosch, “Intel, Apple, Google, Microsoft, and Facebook: Observations on Antitrust and the High-Tech Sector,” remarks presented at the ABA Antitrust Section Fall Forum (Nov. 18, 2010), *available at* http://www.ftc.gov/sites/default/files/documents/public_statements/intel-apple-google-microsoft-and-facebook-observations-antitrust-and-high-tech-sector/101118fallforum.pdf (“Complex economic theories are simply not comprehensible to many specialists like myself, let alone to a generalist.”).

intent. By developing a better understanding of the defendant's intent, judges can build on a skillset they already use in other types of cases they routinely adjudicate. Behavioral economics simplifies antitrust analysis by focusing on qualitative rather than quantitative analysis and provides explanatory narrative. To the extent that judges need to take into quantitative evidence, Part IV.A.2 explained why and how algorithms can be developed to help them crunch data and avoid biases.

Developing our understanding of behavioral economics allows judges to tap on heuristics to reconcile the benefits of greater sophistication with simplicity in antitrust adjudication. From the baseline of prohibiting "ganging up" and "bullying," courts and agencies can develop other subcategories that target more specific forms of anticompetitive behavior.³⁸³ Reducing the law to norms tech executives can internalize into their daily business behavior would also help foster a "culture of competition."³⁸⁴

Finally, simplifying the rule of reason analysis would also facilitate better access to and administration of justice. A rule that is intuitive to the lay juror or non-expert judge will give both the parties and decision makers more confidence that a just result was reached. Doing so would reduce the hurdles that courts need to put in front of plaintiffs to guard against vexatious suits by plaintiffs. Parties can ascertain the strength of their respective positions. If they fail to agree, a judge can do so on a motion to dismiss or summary judgment. The cost and complexity of litigation would also be reduced.

D. Market Power and Aftermarkets

Market power reflects the patentees' power "to raise price[s], reduce output, diminish innovation, or otherwise harm consumers as a result

³⁸³ Steuer, *supra* note 379, at 557 ("It would suffice for counselors, enforcers, and judges to understand that the beacon of antitrust and competition law is not just maximizing consumer welfare and economic efficiency, but achieving that goal by confining enforcement to preventing bullying and ganging up that seriously threatens competition. When decision-makers train the weapons of the antitrust arsenal on other practices, they run the risk of both reaching the wrong results and losing public support. When their aim is true, everyone is better off.").

³⁸⁴ Stucke, *supra* note 164, at 1423 ("But without this simplicity, the rule of reason leaves businesses searching in the dark."); *see also* Thomas A. Piraino, Jr., *A New Approach to the Antitrust Analysis of Mergers*, 83 B.U. L. REV. 785, 807 (2003) (arguing rule of reason had "become so confusing that it precluded antitrust practitioners from advising their clients as to the legality of particular conduct").

diminished competitive constraints or incentives.”³⁸⁵ The first step in analyzing a merger’s competitive effects is to define the geographic and product markets.³⁸⁶ Market definition is often decisive to the outcome of a case.³⁸⁷ Those markets encompass the “‘area of effective competition’ . . . where buyers can turn for alternate sources of supply.”³⁸⁸

1. Market Power

Products such as drugs and electronics are often patented, with the differentials softening price competition.³⁸⁹ Patented products are nonhomogeneous, and their pricing can exacerbate boundedly rational decisions even in competitive markets. Licensees and consumers subject to overconfidence biases systematically miscalculate product price and quality. As firms race to exploit the Big Data available on their consumers, consumers themselves lack the ability or sophistication to pace sellers and translate it to aid their decision-making as effectively.³⁹⁰ Customers respond by ignoring quality revealing information, instead “making choice decisions mostly based on prior beliefs.”³⁹¹

It seems odd that in an era where information about products is abundantly available, the informational asymmetry between patentees and licensees has never been larger. Firms have a natural head start, since they

³⁸⁵ U.S. Dep’t of Just. & Fed. Trade Comm’n, Horizontal Merger Guidelines (2010) § 1 at 2.

³⁸⁶ *United States v. Gen. Dynamics Corp.*, 415 U.S. 486, 510 (1974).

³⁸⁷ *Stucke*, *supra* note 164, at 1426 (“Debates over market definition needlessly consume litigation resources to such a degree that the litigation’s outcome often hinges on whether the court adopts the plaintiff’s or defendant’s proposed market definition.”).

³⁸⁸ *Morgan, Strand, Wheeler & Biggs v. Radiology, Ltd.*, 924 F.2d 1484, 1490 (9th Cir. 1991) (citing *Oltz v. St. Peter’s Cmty. Hosp.*, 861 F.2d 1440, 1446 (9th Cir. 1988)).

³⁸⁹ Tamer Boyacı & Yalçın Akçay, *Pricing when Customers have Limited Attention* 40 (ESMT, Working Paper 16-01, 2016), available at http://static.esmt.org/publications/working_papers/ESMT-16-01.pdf. (“The benefit of increasing the customer’s ability to distinguish the products is the softening of price competition, which is already amplified due to difficulties in learning the true qualities of the products.”).

³⁹⁰ *Id.* at 2, 5 (“[A]lmost by default, customers not only have limited time and attention, but also limited capability to process the information that is acquired. . . . The impact of customer’s cost of information can be translated into suitable information provision strategies for the firm.”); see also *Currie*, *supra* note 21, at 6 (“[S]mart clued-up companies can and will exploit these predictable deviations. And their capability to do so has increased with the rise of big data and the huge computing power that can now be deployed. The result can be poor market outcomes that persist, in which consumer benefit is lower than it could be.”).

³⁹¹ Boyacı & Akçay, *supra* note 389, at 40.

have “more experience with the product and [know the] exact quality [of the products].”³⁹² Behavioral economics highlights the importance of non-price variables in influencing consumer perceptions of patented technology. A free good or service would remove the need to measure it against consumers’ valuation for it and skew their evaluation of its quality.³⁹³ Consequently, it fine-tunes the implementation of antitrust law to prevent patentees from exploiting information asymmetries to create “short-term shift in the demand curve, altering consumers’ views of their own utility functions long enough to induce a hard (contractual) commitment to the transaction.”³⁹⁴

2. Aftermarkets

Nearly every IP product has an aftermarket to which the owner can tie its sale. The key question is whether antitrust intervention in the aftermarket is justified even if there is effective competition on the primary market. Neoclassical economics regards aftermarket restrictions as “harmless if there is effective competition in the primary market.”³⁹⁵ The argument goes that consumers would consider the price and quality of after-sales parts in making their initial purchase.³⁹⁶ Clients dissatisfied with their deal on the secondary market can simply opt for a rival product in the primary market. The overall competition between primary products and their aftermarkets is what counts. Otherwise antitrust could be hijacked to escape contracts that consumers carelessly entered.

Yet, aftermarket distortions can occur when consumers underestimate how often they will need secondary products or how much they cost in aggregate over the life of the primary market product.³⁹⁷ If competitive pressure from savvy clients is insufficient, behavioral economics provides additional argument in favor of intervention. For instance, in *Eastman Kodak Co. v. Image Technical Services, Inc.*, Kodak sold photocopiers and

³⁹²*Id.* at 4.

³⁹³Su, *supra* note 178, at 83 (“The absence of an explicit price may change consumers’ initial perceptions and attitudes toward a good or service, by eliminating the cognitive strain that comes with having to decide how well a set price accords with one’s own sense of intrinsic value of that good or service.”).

³⁹⁴Max Huffman, *Marrying Neo-Chicago with Behavioral Antitrust*, 78 ANTITRUST L.J. 105, 133 (2012).

³⁹⁵Heinemann, *supra* note 11, at 13.

³⁹⁶*See Eastman Kodak Co. v. Image Tech. Servs. Inc.*, 504 U.S. 451, 465–66 (1992).

³⁹⁷Heinemann, *supra* note 11, at 13–14.

provided repair services and parts.³⁹⁸ Independent service organizations accused Kodak of tying repair services to their photocopiers, which were protected by its IP.³⁹⁹ The law on tying requires the plaintiff to prove market power in the tying (repair) market, which in turn depended on whether lock-in effect created by photocopiers gave it market power.⁴⁰⁰

In a decision ahead of its time, the Supreme Court wrote “[l]egal presumptions that rest on formalistic distinctions rather than actual market realities are generally disfavored in antitrust law.”⁴⁰¹ The patentee could have market power in the aftermarket, which it controlled through its patents, even where the equipment market was highly competitive.⁴⁰² The Court noted that informational asymmetries and switching costs could reduce the cross-elasticity and allow the exercise of market power in the aftermarket.⁴⁰³

Kodak had that information but had no incentive to disclose it to its customers. Potential customers lacked that knowledge and acquiring it would be difficult, since “[t]he information on those costs that is available to purchasers tends to be anecdotal, and service providers lack incentive to disclose the data that they possess.”⁴⁰⁴ Therefore, buyers decide to do so based on a competitive advertised price and not on the total lifecycle cost. In situations like *Kodak*, consumers are vulnerable to hyperbolic discounting, where future utility is heavily discounted, whereas neoclassical economics predicts an omniscient consumer who can meter use from the time of purchase to its disposal.⁴⁰⁵ Consumers may wrongly anticipate that they would switch to a new photocopier, but in fact will not do so. A buyer who is later told there is an additional, undisclosed charge will be more

³⁹⁸ 504 U.S. at 455.

³⁹⁹ *Id.* at 455–56.

⁴⁰⁰ *Id.* at 464.

⁴⁰¹ *Id.* at 466–67.

⁴⁰² *Id.* at 471 (“The fact that the equipment market imposes a restraint on prices in the aftermarkets by no means disproves the existence of power in those markets.”); *see also id.* at 466–67 (“Legal presumptions that rest on formalistic distinctions rather than actual market realities are generally disfavored in antitrust law. This Court has preferred to resolve antitrust claims on a case-by-case basis, focusing on the ‘particular facts disclosed by the record.’”).

⁴⁰³ *See id.* at 473–78.

⁴⁰⁴ Huffman, *supra* note 394, at 137.

⁴⁰⁵ Avishalom Tor, *Understanding Behavioral Antitrust*, 92 TEX. L. REV. 573, 588 (2014). (“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.”).

inclined to pay that charge than one who learns of the charge before becoming committed to the purchase. “[B]ehavioral economics suggests that even small switching costs can have significant effects on consumer behavior in the presence of consumer inertia, endowment effects, and default bias. This can, in turn, make foreclosure more likely to occur through tying and bundling.”⁴⁰⁶

Switching costs come from sunk costs. Neoclassical economics assumes people ignore sunk costs once a decision is made to invest in research and development, and subsequent decisions revolve around marginal losses and gains.⁴⁰⁷ However, behavioral research shows that consumers do care about sunk costs, with one experiment showing that sports fans are more likely to endure a blizzard if they have already bought a ticket,⁴⁰⁸ while another shows that people are more likely to go to every theatre group performance the more they paid for a season ticket.⁴⁰⁹ Customers may be “locked-in” because they are disengaged, amplifying patentee’s market power.⁴¹⁰ The solution to this is to encourage consumer search through disclosure of pertinent information in an easily understood manner, and prompts to consider switching, in order to counter consumer inertia. Despite these efforts, infrequent purchases may limit learning or losses are individually de minimis even though they are cumulatively significant.

The same issues occur in litigation to resolve disputes over patentee obligations to license on “fair, reasonable and nondiscriminatory” (FRAND) rates.⁴¹¹ Patentees can hold standard essential patents (SEPs) when implementers’ products read on the patented technology when they conform to the standard.⁴¹² SEP owners can leverage the need to comply with the standard to augment their market power, and can “holdup”

⁴⁰⁶ Matthew Bennett, et al., *What Does Behavioral Economics Mean for Competition Policy?*, 6 COMPETITION POLICY INTERNATIONAL 111, 121 (2010).

⁴⁰⁷ Heinemann, *supra* note 11, at 7.

⁴⁰⁸ Richard H. Thaler, *Mental Accounting Matters*, 12 J. BEHAV. DECISION MAKING 183, 190 (1999).

⁴⁰⁹ Hal R. Arkes & Catherine Blumer, *The Psychology of Sunk Cost*, 35 ORGANIZATIONAL BEHAV. AND HUM. DECISION PROCESSES 124, 127–28 (1985).

⁴¹⁰ Currie, *supra* note 21, at 7 (“[D]isengaged consumers can provide firms with local market power. If there are many consumers who can’t or won’t search or switch for a better deal, then our usual assumptions about the efficacy of the competitive process may fail.”).

⁴¹¹ Daryl Lim, *Standard Essential Patents, Trolls, and the Smartphone Wars: Triangulating the End Game*, 119 PENN ST. L. REV. 1, 4 (2014).

⁴¹² *Id.* at 3–4.

implementers by charging implementers more than the value of their technology due to resulting switching costs.⁴¹³ SSOs mitigate the risk of holdups by requiring SEP owners to license on FRAND terms as a condition of impregnating the standard with their technology.⁴¹⁴ While SEP owners hold the ledger of its licensing terms, implementers have no access to it, and prior licensees are usually prevented from disclosing those terms by confidentiality agreements.⁴¹⁵ Elsewhere, I have explored the suggestion of creating a clearinghouse arbitration as a means of addressing this information asymmetry.⁴¹⁶

Further, behavioral economics teaches that the court may be biased based on the way the royalty is framed. While ten percent of \$100 is numerically identical to one percent of \$1,000, the former seems large in relation to the latter. Accordingly, if the entire market value (EMV) is used as a base, the concern is that SEP owners may be overpaid as courts will favor a cognitively more “reasonable” outcome. Behavioral economics cautions a more nuanced analysis here. It does not purport to provide an answer to what the “right” royalty should be. Using the “smallest salable patent-practicing unit” (SSPU) as a base may also result in undercompensating patentees. One way is to reframe the royalty rate as one dollar for every \$1,000 to simplify the analysis and ameliorate the biases. Culpability could center around patentee conduct that artificially limits consumer choice by exploiting information asymmetries and cognitive limitations resulting in higher prices by making consumers and licensees less price-sensitive, like tying and exclusive dealing. Such a theory would fit within the four corners of modern antitrust law’s effects-based approach.

E. Smarter Remedies

Behavioral economics tell us that courts and agencies should be more creative with antitrust remedies. Nudging, is one such policy instrument.⁴¹⁷

⁴¹³ *Id.* at 4.

⁴¹⁴ *Id.*

⁴¹⁵ *Id.* at 50.

⁴¹⁶ *Id.* at 52.

⁴¹⁷ Della Bradshaw, *How a Little Nudge Can Lead to Better Decisions*, FINANCIAL TIMES, Nov. 15, 2015, <https://www.ft.com/content/e98e2018-70ca-11e5-ad6d-f4ed76f0900a>; see also Peter Ong, *How the Right Nudge Can Lead to Constructive Social Behavior*, TODAY ONLINE, June 26, 2015, <http://www.todayonline.com/commentary/how-right-nudge-can-lead-constructive-social-behaviour> (telling university students that ninety percent of their peers consumed less than four drinks during a night out reduced social pressure to binge drink); *id.* (job seekers who had to

Measuring the wisdom of imposing a behavioral or structural remedy involves the same kind of uncertainty about the remedy's effects on the relevant market as determining whether intervention is appropriate in the first place.⁴¹⁸ The deficiencies of antitrust remedies in high-tech cases have been criticized as being "painfully apparent" when compared with market forces and third-party innovation.⁴¹⁹ *Microsoft* imposed interoperability and other requirements to dilute its market power in the Operating System (OS) market. Those remedies were criticized as being "an abject failure."⁴²⁰ Google and Apple eroded its market share,⁴²¹ and during the smartphone wars, Microsoft found itself railing against anticompetitive practices of other tech companies.⁴²²

In Europe, Microsoft was found to have technologically tied its Internet browser and media player app to its operating system.⁴²³ Behavioral economics teaches that consumers tend to stick with the default option because it is perceived to be the normal choice. Deviating is an act of commission that requires effort.⁴²⁴ Professor Cass Sunstein observed the powerful influence of what she termed "choice architecture" on the decisions we make.⁴²⁵ For instance, people use significantly less paper when printers are set to the double- rather than single-sided setting.⁴²⁶

sign off on each step of the process had a higher success rate in completing the application process than the control group as they found the tasks more easily attainable.); Press Release, Competition and Mkts. Auth., CMA Sets Out Case for Energy Market Reform (July 7, 2015), <https://www.gov.uk/government/news/cma-sets-out-case-for-energy-market-reform> (when an energy regulator replaced complex energy bills with easy-to-understand bills and made supplier switching easier, consumers became more aware of the costs involved in their energy usage options and saved \$1.9 billion annually).

⁴¹⁸ Sturiale, *supra* note 100, at 609 ("[A]ssessing the net value of any remedy, including a compulsory license, involves a great deal of uncertainty about the remedy's future effects on the relevant market or markets.").

⁴¹⁹ Devlin & Jacobs, *supra* note 165, at 22–23.

⁴²⁰ *Id.* at 23.

⁴²¹ *Microsoft: Middle-Aged Blues*, *ECONOMIST*, June 11, 2011, at 68.

⁴²² See Steve Lohr, *Antitrust Cry from Microsoft*, *N.Y. TIMES*, Mar. 31, 2011, at B1.

⁴²³ Emanuele Ciriolo, *Do Behavioural Insights Matter for Competition Policy?*, *COMPETITION POLICY INT'L* (July 2016), at 3.

⁴²⁴ KAHNEMAN, *supra* note 19, at 413.

⁴²⁵ SUNSTEIN, *supra* note 192, at 15 ("[I]nfluences on our choices are omnipresent, and we may not even see them.").

⁴²⁶ Cass R. Sunstein & Lucia A. Reisch, *Automatically Green: Behavioral Economics and Environmental Protection*, 38 *HARV. ENVTL. L. REV.* 127, 133 (2014).

In the European *Microsoft* case, most users (seventy-five percent) did not download alternative browsers.⁴²⁷ The question then becomes as much about consumers' inability to make economically rational choices due to cognitive limitations as it does a dominant patentee coercing customers through tying and bundling. That means that fines may not be the best way to address the issue. Instead, behavioral remedies would be a better option.

Departing from its usual practice of issuing a fine, the European Commission mandated that Windows users be allowed to choose an alternative browser through an on-screen ballot box.⁴²⁸ In doing so, the Commission nudged consumers away from a status quo bias to make an active choice as to their preferred browser, which one in four did.⁴²⁹ As a further indication of the efficacy of this remedy, Microsoft's market share in the browser market dropped from forty-seven to seventeen percent in Europe, compared to fifty-five to thirty-two percent in North America, where no similar measure was adopted.⁴³⁰ The reason for its efficacy was that the remedy tackled the demand side where consumer behavior was an important factor in facilitating the anticompetitive harm.

V. CONCLUSION

Regulating innovation involves making hard choices, but hard choices are also opportunities for courts to articulate their beliefs and examine the reasons that govern their choices. Antitrust analysis needs to find the line separating acceptable conduct from those that should be censured, and behavioral economics offers an important, but incremental patch to improve the design and application of antitrust policies to help courts and government agencies get there. The first step is for decision makers to recognize the signs that they are in a minefield of biases, slow down, and tap on the insights behavioral economics offers. It links causation to theory. It gives more weight to qualitative evidence rather than rely primarily on abstract econometric data. Market power analysis can be made more sensitive to evidence of lock-ins and the inability of licensees to engage in life-cycle pricing. Courts are empowered to use intent evidence, and determine if a patentee's procompetitive justifications are merely pretextual.

⁴²⁷ Ciriolo, *supra* note 423, at 3.

⁴²⁸ *Id.*

⁴²⁹ *Id.*

⁴³⁰ *Id.*

In developing behavioral economics at the patent-antitrust intersection, the FTC and DOJ would be natural laboratories to test and refine its various applications to cartel, monopolization, and merger scenarios.⁴³¹ The process of developing behavioral antitrust works best at the agencies “where it is possible to test a default rule repeatedly and understand how individuals will react to that default rule.”⁴³² The FTC has used behavioral economics in its consumer protection cases.⁴³³ There are PhD-level economists that can marshal their expertise toward developing algorithms and choice architecture frameworks for adjudicating patent-antitrust disputes that courts can consider, and in appropriate cases, endorse.⁴³⁴ Both agencies have expertise in complex and important industries undergirded by patents such as pharmaceuticals and consumer electronics. Federal appellate courts also serve a critical role in that they let district courts and parties test drive rules informed by behavioral economics and see if they succeed in “nudging” the market in the right direction. Like personalized medicine that refines a “one-size-fits-all” approach to healthcare, behavioral antitrust does not displace the neoclassical antitrust analysis. Rather, like a patch, it fine-tunes its implementation.

⁴³¹ DANIEL A. CRANE, *THE INSTITUTIONAL STRUCTURE OF ANTITRUST ENFORCEMENT* 27–48 (Oxford Univ. Press 2011) (describing the formative role of the two U.S. federal antitrust agencies in shaping norms of business behavior).

⁴³² Amanda P. Reeves, *Behavioral Antitrust: Unanswered Questions on the Horizon*, 9 *THE ANTITRUST SOURCE* 1, 5 (2010) (“Behavioral economics has likely proven useful in these rulemaking settings because its discrete, fact-specific insights align with the discrete and fact-specific nature of regulatory decision making.”).

⁴³³ Kevin W. Christensen, *Interview with Howard Shelanski, Director, FTC Bureau Of Economics*, *ANTITRUST SOURCE*, Dec. 2012, at 12 (“Behavioral economics has much to say about the ability of consumers to understand what they are buying, to make calculations about what the total price of a product is when they’re subject to drip pricing.”).

⁴³⁴ Salinger, et al., *supra* note 32, at 25–26.