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Illusory Policy Implications of Behavioral Law & Economics

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ILLUSORY POLICY IMPLICATIONS OF BEHAVIORAL LAW & ECONOMICS

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Behavioral law and economics has achieved notable policy influence promoting soft paternalism—using nudges to encourage better choices without limiting options. Recently, some behavioral scholars have suggested that positive behavioral models actually support hard paternalism—imposing mandates. This Article challenges the insinuation that behavioral law and economics supports mandates.

Despite regular suggestions to the contrary, positive economic models do not entail distinct normative consequences. The Article illustrates its thesis in the case of retirement savings, a key concern of behavioral policy. The Article examines the diverse behavioral explanations for savings behavior and develops their conflicting policy implications—demonstrating that behavioral analysis fails to supply a definitive policy agenda. The Article provides an original demonstration that the standard behavioral model of present bias cannot justify mandatory savings.

The Article also questions the ripeness of celebrating the impact of behavioral law and economics. Proponents of behavioral law and economics often maintain that it represents an improvement over law and economics because the behavioral approach is more realistic. This position is flawed for two reasons. First, there is no presumption favoring greater realism in assessing scientific theories. Second, the enhanced realism of the behavioral approach remains unconfirmed—a mere (misguided) aspiration. Recent examinations of research practices in psychology call into question the reliability of its published research. Further, the purported empirical success of a behavioral approach is consistent with simply having more potential

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explanatory variables—a bounty of potential psychological biases available to explain economic behavior.

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I. INTRODUCTION

Professor Russell Korobkin observes, "[T]he behavioral economic analysis of law. . . has become *the* economic analysis of law."[1] According to Ryan Bubb and Richard Pildes, "[T]he emerging field of [behavioral law and economics] has the potential to improve dramatically the predictions and prescriptions of

1. Russell Korobkin, *What Comes After Victory for Behavioral Law and Economics?*, 2011 U. ILL. L. REV. 1653, 1655; *cf.* CASS R. SUNSTEIN, THE ETHICS OF INFLUENCE: GOVERNMENT IN THE AGE OF BEHAVIORAL SCIENCE 1 (2016) ("We live in an age of psychology and behavioral economics—the behavioral sciences.").

social-scientifically oriented legal scholars and policy-oriented social scientists."[2] Behavioral law and economics has moved rapidly to contest terrain held by conventional law and economics.

Behavioral law and economics is a reconstruction of law and economics based primarily on behavioral economics. Behavioral economics incorporates psychological theories of judgment and decision making to qualify the rational choice framework of mainstream economics. Behavioral economics emphasizes "the systematic biases that separate the beliefs that people have and the choices they make from the optimal beliefs and choices assumed in rational-agent models."[3] Loss aversion, overconfidence, lack of self-control, and present bias are some notable deviations from rationality identified by behavioral economics.

Some behavioral scholars suggest that research in the field, properly understood, has inexorable policy ramifications. According to Bubb and Pildes, behavioral law and economics "does not always pursue the full [policy] implications of its own underlying social science."[4] These authors contend, "Behavioral findings . . . often point toward policy prescriptions that limit choice or mandate outcomes."[5] Saurabh Bhargava and George Loewenstein maintain: "[S]tructural causes . . . such as the increased decision complexity faced by individuals, demand more aggressive applications of" behavioral economics.[6]

This Article challenges the suggestion that positive behavioral law and economics has, or could have, the sort of policy implications contemplated by Bubb and Pildes and others, and questions the ripeness of celebrating the inroads made by behavioral law and economics. It has now been several decades since behavioral law and economics emerged as an adjunct—or antidote—to law and economics.[7] At an early stage of this behavioral

2. Ryan Bubb & Richard H. Pildes, *How Behavioral Economics Trims Its Sails and Why*, 127 HARV. L. REV. 1593, 1602 (2014).

3. Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioral Economics*, 93 AM. ECON. REV. 1449, 1449 (2003).

4. Bubb & Pildes, *supra* note 2, at 1596.

5. *Id.*

6. Saurabh Bhargava & George Loewenstein, *Behavioral Economics and Public Policy 102*: *Beyond Nudging*, 105 AM. ECON. REV. 396, 400 (2015).

7. *See, e.g.*, Cass R. Sunstein, *Behavioral Law and Economics*: *A Progress Report*, 1 AM. ECON. REV. 115 (1999); Donald C. Langevoort, *Behavioral Theories of Judgment and Decision Making in Legal Scholarship*: *A Literature Review*, 51 VAND. L. REV. 1499, 1526–27 (1998) ("I suspect that [behavioral research's] appeal thus far to legal scholars has derived only partially from the apparent quality of the underlying empirical research. Another part is the desire to articulate . . . the skepticism about human nature that critics of law and economics . . . have long harbored."); Christine Jolls, Cass

movement, Richard Posner, in reviewing an influential survey of the field, remarked, "[T]hough [behavioral law and economics] prides itself on empirical rigor and predictive accuracy, it is deficient in both qualities. These are remediable deficiencies, however, and I expect that they will be remedied in future work by these and other scholars."[8] With hindsight, it turns out that Posner was too optimistic about the progress, and perhaps the potential for progress, of the movement.

It is not unusual for scholars to suggest that—or proceed as if—certain normative conclusions flow from theoretical or empirical results, but this presumption is unwarranted. Descriptive behavioral economics does not necessarily entail the normative implications that its proponents routinely ascribe to it.[9] Multiple positive models yield equivalent predictions about economic activity yet have different normative implications.

So positive behavioral economics does not validate a particular policy agenda. In any event, it would be premature to celebrate the triumph of behavioral law and economics. Patrons of behavioral economics and behavioral law and economics regularly extoll its greater commitment to realism about human behavior.[10] Realism, however, is rarely the decisive quality favoring a scientific theory. Neither the philosophy of science nor scientific practice indicates that a more realistic theory is presumptively superior.

It is by no means settled that behavioral characterizations of economic decision making rest on firmer empirical foundations than those of mainstream economics. The quality of reported results in psychology journals has come under increasing scrutiny, with some experts on research design estimating that more than half of published findings erroneously claim to have found dependable evidence of a psychological effect. Apart from reliance on psychological research of uneven reliability, the empirical soundness of behavioral economics is suspect considering the copious store of biases and anomalies[11] at the disposal of behavioral models. In a given behavioral model,

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R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998) [hereinafter JST].

8. Richard A. Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551, 1552 (1998) (commenting on JST).

9. Similarly, despite the contrary impression sometimes given by economics textbooks, the key principles of positive mainstream economics do not imply the key principles of normative mainstream economics. *See* Terrance O'Reilly, *Positive & Normative Economic Analysis of Law* (2020) (working paper) (on file with author).

10. *See generally* Sunstein, *supra* note 7.

11. *See, e.g.*, ALAIN SAMSON, *Selected Behavioral Sciences Concepts*, *in* THE BEHAVIORAL ECONOMICS GUIDE 82 (Alain Samson ed., 2017) https://www.behavioraleconomics.com/download/4553/ [perma.cc/SK9S-XMBR] (cataloguing

researchers usually incorporate only a small number from among the bounty of potential deviations from rationality. Statisticians recognize that the larger the stable of potential explanatory variables, the easier it becomes to explain a given set of data, but also the greater the risk that relationships that are identified are spurious.

As indicated in Figure 1, behavioral law and economics evolved from several ancestors: mainstream, neoclassical economics, law and economics, and behavioral economics. Mainstream economics is associated with certain policy implications, such as presumptions in favor of free trade and, more generally, competitive markets. Behavioral economics is associated with qualifications to policy implications associated with mainstream economics—providing some justification for government interventions on account of cognitive limitations and systematic errors on the part of consumers.

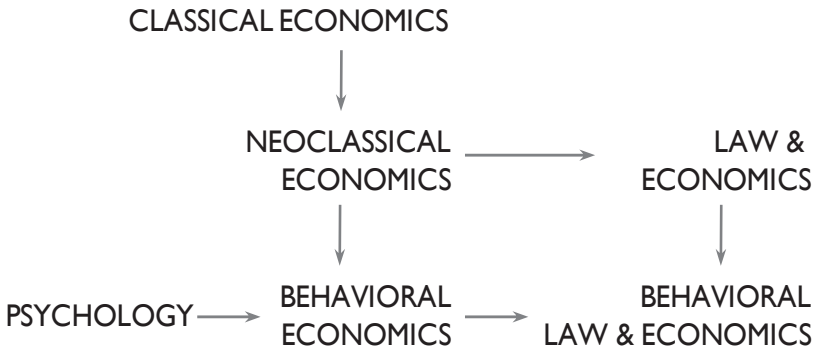

Figure 1. Intellectual Influences

Part II provides an overview of behavioral economics and behavioral law and economics. Part III explains that a positive behavioral economics model is not presumptively suitable for normative analysis.

Part IV illustrates the thesis of Part III by demonstrating the difficulty in deducing retirement savings policy from positive behavioral accounts of savings: the contending behavioral explanations have substantially different policy implications. While Parts III and IV establish the ambiguous normative consequences of even successful behavioral models, Part V examines the

behavioral factors including: affect heuristic, anchoring, availability heuristic, bounded rationality, confirmation bias, decoy effect, Dunning-Kruger effect, diversification bias, ego depletion, empathy gap, endowment effect, extrapolation bias, framing effect, gambler's fallacy, hedonic adaptation, herd behavior, hindsight bias, IKEA effect, inequality aversion, inertia, information avoidance, less-is better effect, licensing effect, loss aversion, optimism bias, planning fallacy, present bias, projection bias, prospect theory, ratio bias, reference dependence, regret aversion, representativeness heuristic, social preferences, status quo bias, sunk cost fallacy and zero price effect).

credibility of existing behavioral economic research and concludes that it does not inspire confidence.

II. THE BEHAVIORAL TURN

A. Behavioral Economics

As Korobkin and others have noted,[12] for some time now, conventional law and economics has been challenged, perhaps overtaken, by behavioral law and economics (some prefer the term *behavioral law*). The foundation of behavioral law is behavioral economics. Behavioral economics applies developments in the field of psychology to mainstream economics.[13] Studies in this vein include financial research that links asset pricing to psychological factors such as investor overconfidence,[14] investor sentiment,[15] and aversion to losses from current wealth[16] and emphasizes constraints on the arbitrage that might otherwise offset these effects.[17]

12. Tomer Broude, *Behavioral International Law*, 163 U. PA. L. REV. 1099, 1156 (2015); Jacob Goldin, *Which Way to Nudge: Uncovering Preferences in the Behavioral Age*, 125 YALE L.J. 226, 229 (2015); Avishalom Tor, *Understanding Behavioral Antitrust*, 92 TEX. L. REV. 573, 576–78 (2014); Alex Stein, *Are People Probabilistically Challenged?*, 111 MICH. L. REV. 855, 857–58 (2013).

13. *See* Matthew Rabin, *An Approach to Incorporating Psychology into Economics*, 103 AM. ECON. REV. 617, 617 (2013); Kahneman, *supra* note 3, at 1449; Colin F. Camerer & George Loewenstein, *Behavioral Economics: Past, Present, Future*, in ADVANCES IN BEHAVIORAL ECONOMICS 3 (Colin F. Camerer, George Loewenstein & Matthew Rabin eds., 2004); Devin G. Pope & Justin R. Sydnor, *Behavioral Economics: Economics as a Psychological Discipline*, *in* 2 THE WILEY BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 800 (Gideon Keren & George Wu eds., 2016).

14. *See generally* Kent D. Daniel, David Hirshleifer & Avanidhar Subrahmanyam, *Overconfidence, Arbitrage, and Equilibrium Asset Pricing*, 56 J. FIN. 921, 922–23 (2001).

15. RICHARD H. THALER, MISBEHAVING: THE MAKING OF BEHAVIORAL ECONOMICS 242 (2015).

16. Laurence Carassus & Miklós Rásonyi, *On Optimal Investment for a Behavioral Investor in Multiperiod Incomplete Market Models*, 25 MATHEMATICAL FIN. 115, 115–16 (2015).

17. *See generally* Nicholas Barberis & Richard Thaler, *A Survey of Behavioral Finance*, *in* 1B HANDBOOK OF THE ECONOMICS OF FINANCE 1053–1128 (George M. Constantinides, Milton Harris & René M. Stulz eds., 2003). According to Richard Thaler: "The behavioral approach to economics has had its greatest impact in finance." THALER, *supra* note 15, at 347.

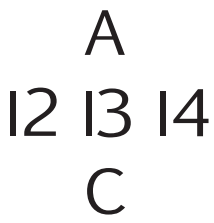

Figure 2. A behavioral economics illustration[18]

Researchers in *behavioral labor economics* suggest that productivity can be affected by perceptions of employer fairness[19] and that labor supply is influenced by inequality aversion.[20] According to scholars in *behavioral industrial organization*, loss aversion explains the lack of price variation among similar products with different costs and features,[21] and consumers' limited capacity for processing information accounts for price rigidity;[22] firms' pricing strategies are studied assuming that consumers are not fully aware of the level of their own consumption.[23] The *behavioral public finance* literature considers whether visibility of sales taxes has an impact on demand[24] and weighs the merits of cigarette excise taxes when consumers have limited capacity for temperance;[25] one study proposes that loss aversion explains a tendency of

18. Adapted from Figure 4, "An Effect of Context on Accessibility," Kahneman, *supra* note 3, at 1454.

19. James B. Rebitzer & Lowell J. Taylor, *Extrinsic Rewards and Intrinsic Motives*: *Standard and Behavioral Approaches to Agency and Labor Markets*, *in* 4 A HANDBOOK OF LABOR ECONOMICS 701, 728 (Orley Ashenfelter & David Card eds., 2011).

20. David Card, Alexandre Mas, Enrico Moretti & Emmanuel Saez, *Inequality at Work*: *The Effect of Peer Salaries on Job Satisfaction*, 102 AM. ECON. REV. 2981, 3001–02 (2012).

21. Paul Heidhues & Botond Kőszegi, *Competition and Price Variation when Consumers are Loss Averse*, 98 AM. ECON. REV. 1245, 1246 (2008). "Loss averse individuals value losses (in comparison to a reference point) more than gains by the same amount." Per Engström, Katrina Nordblom, Henry Ohlsson & Annika Persson, *Tax Compliance and Loss Aversion*, 7 AM. ECON. J.: ECON. POL'Y 132, 133 (2015).

22. Filip Matějka, *Rigid Pricing and Rationally Inattentive Consumer*, 158 J. ECON. THEORY 656, 657 (2015).

23. Michael D. Grubb, *Consumer Inattention and Bill-Shock Regulation*, 82 REV. ECON. STUD. 219, 219 (2015); *see generally* Glenn Ellison, *Bounded Rationality in Industrial Organization*, *in* 3 ADVANCES IN ECONOMICS AND ECONOMETRICS: THEORY AND APPLICATIONS, NINTH WORLD CONGRESS 142 (Richard Blundell, Whitney K. Newey & Torsten Persson eds., 2006).

24. Raj Chetty, Adam Looney & Kory Kroft, *Salience and Taxation*: *Theory and Evidence*, 99 AM. ECON. REV. 1145, 1146 (2009).

25. Jonathan Gruber & Botond Kőszegi, *Tax Incidence when Individuals are Time-Inconsistent*: *The Case of Cigarette Excise Taxes*, 88 J. PUB. ECON. 1959, 1960 (2004); *see* THALER, *supra* note 15, at 87–98 ("Willpower? No Problem.") (discussing analysis of time inconsistency in behavioral economics).

taxpayers to claim deductions more aggressively when they find that, otherwise, withholding would not cover their annual tax liability.[26] *Behavioral contract theory*[27] explores, for instance, the structuring of performance incentives when employees are overconfident about their capacity to meet performance targets[28] and scenarios in which firms would exploit myopic consumers by imposing hidden fees and costs that the firm's competitors would not be motivated to expose.[29] Although Adam Smith has been characterized as a behavioral economist,[30] the modern movement was anticipated more recently by Herbert Simon[31] who considers the implications of economic actors who exhibit "approximate" rationality.[32] Simon[33] skeptically describes the "economic man" of modern mainstream economics as having almost total "knowledge of the relevant aspects of his environment";[34] in addition, the economic man has "a well-organized and stable system of preferences, and a skill in computation that enables him to calculate, for the alternative courses of action that are available to him, which of these will permit him to reach the highest attainable point on his preference scale."[35] Simon emphasizes, in contrast, the limited computational abilities of consumers and managers, favoring an approach "compatible with [their actual] access to information and . . . computational capacities."[36]

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26. Engström, Nordblom, Ohlsson & Persson, *supra* note 21, at 132.

27. *See generally* Botond Kőszegi, *Behavioral Contract Theory*, 52 J. ECON. LITERATURE 1075, 1075 (2014).

28. Leonidas Enrique de la Rosa, *Overconfidence and Moral Hazard*, 73 GAMES & ECON. BEHAV. 429, 429–30 (2009).

29. Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 Q.J. ECON. 505, 505, 512 (2006).

30. Nava Ashraf, Colin F. Camerer and George Loewenstein, *Adam Smith, Behavioral Economist*, 19 J. ECON. PERSPECTIVES 131, 131 (2005).

31. *See* THALER, *supra* note 15, at 23.

32. Herbert A. Simon, *A Behavioral Model of Rational Choice*, 69 Q.J. ECON. 99, 114 (1955).

33. *See* Paul Lewis, *Herbert A. Simon Dies at 84; Won a Nobel for Economics*, N.Y. TIMES (Feb 10, 2001), http://www.nytimes.com/2001/02/10/business/herbert-a-simon-dies-at-84-won-a-nobel-for-economics.html [https://perma.cc/6CMY-6W5U] ("Professor Simon challenged the classical economic theory that economic behavior was essentially rational behavior in which decisions were made on the basis of all available information with a view to securing the optimum result possible for each decision maker.").

34. Simon, *supra* note 32, at 99.

35. *Id.*

36. *Id.*; *cf.* Herbert A. Simon, *Rational Choice and the Structure of the Environment*, 63 PSYCH. REV. 129, 129 (1956); HERBERT A. SIMON, ADMINISTRATIVE BEHAVIOR: A STUDY OF DECISION-MAKING PROCESSES IN ADMINISTRATIVE ORGANIZATION xxiv (2d ed. 1957).

Herbert Simon's notion of bounded rationality remains an important element of behavioral economics.[37] Simon's methodological agenda has been less influential.[38] Simon's approach would dispense with the standard assumptions in economics that consumers maximize conventional preferences and that executives maximize profits.[39] Simon argues that economic actors set a target level of well-being or profits and seek effective means of attaining the goal (satisficing[40]). In general, once a goal is met, an economic actor does not consider whether an even higher level might be attainable because obtaining and processing the information needed to determine the maximum level is not feasible.[41] Simon thinks it is important that the process of reaching an objective be considered as part of economic analysis.[42] He is not persuaded that bounded rationality could be cast as a modified form of maximization.[43]

Contemporary behavioral economics, however, follows the maximization (optimization) approach that Simon emphatically rejects.[44] The dominant school of behavioral economics deviates from earlier mainstream economics by abandoning the assumption that what economic actors maximize are conventional preferences or profits. Often these behavioral economic models introduce an element of irrationality or error into actors' behavior.[45] Yet Simon

37. *See, e.g.*, THALER, *supra* note 15, at 257–58; Kahneman, *supra* note 3, at 1449.

38. Ronald M. Harstad & Reinhard Selten, *Bounded-Rationality Models*: *Tasks to Become Intellectually Competitive*, 51 J. ECON. LITERATURE 496, 498 (2013); Matthew Rabin, *Incorporating Limited Rationality into Economics*, 51 J. ECON. LITERATURE 528, 531 n.4 (2013); *see* Vincent P. Crawford, *Boundedly Rational versus Optimization-Based Models of Strategic Thinking and Learning in Games*, 51 J. ECON. LITERATURE 512, 513 (2013); *cf.* Kőszegi, *supra* note 27, at 1076 (excluding from survey "the very interesting literature on bounded rationality . . . which does not yet seem to be based solidly on psychology interpretation and evidence").

39. Herbert A. Simon, *The Logic of Rational Decision*, 17 BRIT. J. FOR PHIL. SCI. 169, 171 (1965).

40. *Id.* at 186.

41. *See* Reinhard Selten, *What is Bounded Rationality?*, *in* BOUNDED RATIONALITY: THE ADAPTIVE TOOLBOX 15 (Gerd Gigerenzer & Reinhard Selten eds., 2001).

42. Simon, *supra* note 39, at 186.

43. *See* Gerd Gigerenzer, *Striking a Blow for Sanity in Theories of Rationality*, *in* MODELS OF MAN: ESSAYS IN MEMORY OF HERBERT A. SIMON 389 (Mie Augier & James G. March eds., 2004); Herbert A. Simon, Carnegie-Mellon Univ., Nobel Memorial Lecture on Rational Decision-Making in Business Organizations (Dec. 8, 1978), *in* ECON. SCIS. 343, 349 https://www.nobelprize.org/uploads/2018/06/simon-lecture.pdf [https://perma.cc/H8Z2-N7V3].

44. *E.g.*, Rabin, *supra* note 38; Crawford, *supra* note 38, at 513. The term optimization is synonymous with maximization, but the former term emphasizes that economic maximization is undertaken subject to significant constraints.

45. *See, e.g.*, Richard H. Thaler, *Mental Accounting Matters*, 12 J. BEHAV. DEC. MAKING 183, 189, 201 (1999); Daniel Kahneman, *New Challenges to the Rationality Assumption*, 150 J. INST. & THEO. ECON. 18, 27 (1994); RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING

insists, "Bounded rationality is not irrationality."[46] Heuristics play a role in both sorts of behavioral economics, but the optimization strand emphasizes that heuristics "lead to systematic and predictable errors":[47] "[P]eople may judge the probabilities of future events based on how easy those events are to imagine or to retrieve from memory. This 'availability heuristic' contributes to many specific further biases."[48] Followers of Simon's approach, on the other hand, stress the efficacy of heuristics. According to the German psychologist Gerd Gigerenzer, "[T]he use of simple heuristics by economic agents should not be attributed to mere deliberation costs or even irrationality. Instead, it should be recognized that some degree of bias actually enables better performance in situations of uncertainty."[49]

B. Behavioral Law & Economics

Although the designations *law and economics* and *economic analysis of law* might reasonably apply to any application of economics to legal issues, these terms are commonly understood to represent a particular perspective. The core of mainstream law and economics considers the nature and effects of legal rules in the common law domains of contract, property, and torts evaluated in terms

DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 7 (2008); Jeremy C. Stein, *Rational Capital Budgeting in an Irrational World*, 69 J. BUS. 429, 434 (1996).

46. Herbert A. Simon, *Human Nature in Politics: The Dialogue of Psychology with Political Science*, 79 AM. J. POL. SCI. 293, 297 (1985) (quoting heading, internal capitalization removed); *see also* Selten, *supra* note 41, at 15 ("Bounded rationality is not irrationality.").

47. Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty*: *Heuristics and Biases*, 185 AM. ASS'N ADVANCEMENT SCI. 1124, 1131 (1974); Kahneman, *supra* note 3, at 1460 ("This article introduced three heuristics—representativeness, availability and anchoring—that were used to explain a dozen systematic biases in judgment under uncertainty . . . .").

48. Camerer & Loewenstein, *supra* note 13, at 10.

49. Gerd Gigerenzer, *Towards a Rational Theory of Heuristics*, *in* MINDS, MODELS AND MILIEUX 55 (Roger Frantz & Leslie March eds., 2016); *see also* Peter B.M. Vranas, *Gigerenzer's Normative Critique of Kahneman & Tversky*, 76 COGNITION 179, 180 (2000).

of efficiency.[50] Similar methods are now also applied in corporate law,[51] environmental law,[52] tax law,[53] and other legal fields.

Just as law and economics is not a generic intersection of the fields of economics and law, behavioral law and economics is not merely the intersection of law and behavioral economics. Behavioral law and economics developed as a program to challenge principles of law and economics through the application of behavioral economics.[54]

Contracts—Melvin Eisenberg, for example, has suggested that numerous principles of contract law, such as the scrutiny of liquidated damages[55] and express conditions,[56] reflect the bounded rationality and rational ignorance of contracting parties. Tess Wilkinson-Ryan finds that fluid reciprocity norms may temper pecuniary motives in mortgagees' contemplation of breach.[57] She conducts online surveys and evaluates participants' willingness to default on a mortgage depending on the frequency of foreclosures, whether the lender received a government bailout, the aggressiveness of a lender's lending practices, and whether the lender originated the mortgage.[58] Oren Bar-Gill states that legal intervention in the credit card market may be justified because of consumers' behavioral biases that lead them to underestimate the debt that they will incur.[59] According to Bar-Gill, consumers are overconfident about

50. *See* Louis Kaplow & Steven Shavell, *Economic Analysis of Law*, *in* 3 HANDBOOK OF PUBLIC ECONOMICS 1665, 1686 (Alan J. Auerbach & Martin Feldstein eds., 2002); R.H. COASE, THE FIRM, THE MARKET AND THE LAW 178 (1988); Thomas J. Miceli, *Property*, *in* THE ELGAR COMPANION TO LAW AND ECONOMICS 246 (Jürgen G. Backhaus ed., 2d ed. 2005); Omri Ben-Shahar & Erick A. Posner, *The Right to Withdraw in Contract Law*, 40 J. LEGAL STUD. 115, 122 (2011); Eric A Posner, *Economic Analysis of Contract Law After Three Decades*: *Success or Failure?*, 112 YALE L.J. 829, 833–34 (2003).

51. *See, e.g.*, FRANK H. EASTERBROOK & DANIEL R. FISCHEL, THE ECONOMIC STRUCTURE OF CORPORATE LAW 15 (1991).

52. *See, e.g.*, Richard L. Revesz & Robert N. Stavins, *Environmental Law*, *in* 1 HANDBOOK OF LAW AND ECONOMICS 502 (A. Mitchell Polinsky & Steven Shavell eds., 2007).

53. *See, e.g.*, LOUIS KAPLOW, THE THEORY OF TAXATION AND PUBLIC ECONOMICS 224 (2008).

54. *See* THALER, *supra* note 15, at 257; Thomas S. Ulen, *The Importance of Behavioral Law*, *in* THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS & LAW 93 (Eyal Zamir & Doron Teichman eds., 2014); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science*: *Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1057 (2000); Jennifer Arlen, *Comment*: *The Future of Behavioral Economic Analysis of Law*, 51 VAND. L. REV. 1765, 1765 (1998).

55. Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211, 225–36 (1995).

56. *Id.* at 236–40; *see also* Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. CHI. L. REV. 1203, 1291–93 (2003).

57. Tess Wilkinson-Ryan, *Breaching the Mortgage Contract*: *The Behavioral Economics of Strategic Default*, 64 VAND. L. REV. 1545, 1574 (2011).

58. *Id.* at 1566–67, 1572–74, 1578.

59. Oren Bar-Gill, *Seduction by Plastic*, 98 NW. U. L. REV. 1373, 1373 (2004).

their financial status and their ability to control their spending, and creditors fashion contract terms like late fees and interest rates to exploit these biases.[60]

Bankruptcy[61]—Susan Block-Lieb and Edward Janger cite a number of behavioral factors to support their thesis that the consumer bankruptcy reform legislation of 2005[62] was misguided to the extent that it restricted consumers' ability to discharge debts. They claim that the bankruptcy code, rather than seeking to prevent opportunistic bankruptcy filings by consumers, "should focus on the protection of consumer borrowers and the regulation of lenders' marketing practices."[63] According to the authors, using the bankruptcy code to discourage consumers from risking bankruptcy "will have little effect" on account of consumers' bounded rationality,[64] susceptibility to framing (advertising, marketing),[65] use of anchoring heuristics[66] overconfidence,[67] tendencies to pursue immediate gratification,[68] inertia,[69] and attachment to sunk costs,[70] as well as lenders' proclivity and capacity to exploit these tendencies.[71]

Torts—A survey of 700 law students by Cardi, Penfield, and Yoon finds no support for the assumption that the authors describe as the linchpin of the traditional economic analysis of tort law—that "the threat of common-law tort liability in fact deters tortious conduct."[72] The authors did conclude that the prospect of criminal liability would serve as a deterrent.[73] Although the survey was not designed to isolate behavioral phenomena that might account for the results, the authors maintain that the behavioral economics "literature helps explain the results of this study."[74]

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60. *Id.* at 1375–76.

61. *See generally* Susan Block-Lieb & Edward J. Janger, *The Myth of the Rational Borrower*: *Rationality, Behavioralism and the Misguided "Reform" of Bankruptcy Law*, 84 TEX. L. REV. 1481 (2006).

62. Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, 11 U.S.C. § 101.

63. Block-Lieb & Janger, *supra* note 61, at 1556.

64. *Id.* at 1528.

65. *Id.* at 1532.

66. *Id.* at 1533, 1539.

67. *Id.* at 1540–43.

68. *Id.* at 1544.

69. *Id.* at 1549 ("Consumers, being human, are slow to move off the dime.").

70. *Id.* at 1552, 1558.

71. *Id.* at 1558–59.

72. W. Jonathan Cardi, Randall D. Penfield & Albert H. Yoon, *Does Tort Law Deter Individuals? A Behavioral Science Study*, 9 J. EMPIRICAL LEGAL STUD. 567, 568 (2012).

73. *Id.* at 588.

74. *Id.* at 592.

Antitrust[75]—Proponents of behavioral antitrust emphasize that consumer biases must be recognized to properly evaluate a firm's market power when the firm provides replacement parts and supplies (in an aftermarket) for products it sells in competitive markets: "[I]n contrast to the prediction of rationality-based analyses . . . a potentially significant loss to efficiency remains even when the primary market is fully competitive so long as the machines sold in the primary market are subsidized by the aftermarket."[76] Amanda Reeves and Maurice Stucke suggest that because "executives may engage in resale price maintenance . . . when doing so is irrational," the practice should be treated as "inherently suspect,"[77] placing the burden on firms to provide evidence that the constraint is not anti-competitive.[78] James Cooper and William Kovacic consider whether structural changes to administrative agencies, such as increased adversarial review and accountability, can ameliorate potential biases of regulators, such as myopia, inertia ("status quo bias") and confirmation bias ("becoming irrationally wedded to . . . early impressions").[79]

III. POSITIVE & NORMATIVE BEHAVIORAL ECONOMICS

A. Introduction: A Fuzzy Boundary

The existence of a common model for positive and normative economics encourages the misapprehension that a fruitful descriptive economic theory entails particular normative consequences. Economists distinguish between positive economics and normative economics. Positive economics "investigate[s] facts and discover[s] truths about them"[80]—"the making of good guesses about the consequences of economic events and economic policies."[81]

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75. *See generally* Avishalom Tor, *Understanding Behavioral Antitrust*, 92 TEX. L. REV. 573 (2014); Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. PA. L. REV. 261 (2010).

76. Tor, *supra* note 75, at 599.

77. "[W]hen the conduct at issue is inherently suspect owing to its likely tendency to suppress competition . . . our scrutiny of the restraint itself . . . without consideration of market power is sufficient to condemn the restraint, unless the defendant can articulate a legitimate justification for that restraint." *In re North Carolina Bd. of Dental Examiners*, 152 F.T.C. 640, 667 (2011) (internal quotation marks and punctuation omitted), *aff'd* 717 F3d 359 (4th Cir. 2013), *aff'd* 574 U.S. 494 (2015).

78. Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 IND. L.J. 1527, 1582 n.341 (2011).

79. James C. Cooper & William E. Kovacic, *Behavioral Economics and Its Meaning for Antitrust Agency Decision Making*, 8 J. L. ECON. & POL'Y 779, 788 (2012).

80. JOHN NEVILLE KEYNES, THE SCOPE AND METHOD OF POLITICAL ECONOMY 12 (3d ed. 1904).

81. J.R. HICKS, A REVISION OF DEMAND THEORY 4 (1956); *see also* Raj Chetty, *Behavioral Economics and Public Policy*: *A Pragmatic Perspective*, 105 AM. ECON. REV., no. 5, 2015, at 1, 19.

Normative economics assesses the merits of economic policies[82] and examines criteria for making judgments about economic conditions.[83] An analysis of the effect of a tariff on the level of imports and domestic employment belongs to positive economics. The doctrine of "protection to native industry,"[84] which would sanction tariffs to protect domestic manufacturing, is a species of normative economics.

Despite the occasional suggestion that modern mainstream economics is, or should be, confined to positive science,[85] mainstream economics, particularly microeconomics, consists of refined normative as well as positive theories. Representative recent work in the positive vein (i) examines the effect of a minimum wage on firm profitability,[86] (ii) studies the effect of the earned income tax credit[87] on female labor supply,[88] and (iii) estimates the share of agricultural subsidies that is captured by farmland owners and renters.[89] Samples of recent normative scholarship include (i) a study of the optimal terms for disability insurance (such as Social Security Disability Insurance[90]) when an individual's disability cannot be confirmed,[91] (ii) a proposal to evaluate tax policy by adding up "the value that society puts on providing an additional

82. GEORGE STIGLER, THE THEORY OF PRICE 66–74 (4th ed. 1987); ANDREU MAS-COLELL, MICHAEL D. WHINSTON & JERRY R. GREEN, MICROECONOMIC THEORY 80–81 (1995).

83. *See generally* ANTHONY B. ATKINSON & JOSEPH E. STIGLITZ, LECTURES ON PUBLIC ECONOMICS 333–65 (1980).

84. JOHN STUART MILL, PRINCIPLES OF POLITICAL ECONOMY 917 (7th ed. 1871).

85. Faruk Gul & Wolfgang Pesendorfer, *Welfare without Happiness*, 97 AM. ECON. REV. 471, 471 (2007); PAUL KRUGMAN & ROBIN WELLS, ECONOMICS 38, 40 (2d ed. 2009).

86. *See generally* Mirko Draca, Stephen Machin & John Van Reenen, *Minimum Wages and Firm Profitability*, 3 AM. ECON. J.: APPLIED ECON. 129 (2011).

87. 26 U.S.C. § 32. *See generally* Hilary Hoynes, *The Earned Income Tax Credit*, ANNALS AM.ACAD. POL. & SOC. SCI. 180 (2019).

88. Nada Eissa & Jeffrey B. Liebman, *Labor Supply Response to the Earned Income Tax Credit*, 111 Q.J. ECON. 605, 606–07 (1996).

89. *See generally* Barrett E. Kirwin, *The Incidence of U.S. Agricultural Subsidies on Farmland Rental Rates*, 117 J. POL. ECON. 138 (2009).

90. 42 U.S.C. § 403. *See generally* WILLIAM R. MORTON, CONG. RSCH. SERV., R44948, SOCIAL SECURITY DISABILITY INSURANCE (SSDI) AND SUPPLEMENTAL SECURITY INCOME (SSI): ELIGIBILITY, BENEFITS, AND FINANCING (2018).

91. Mikhail Golosov & Aleh Tsyvinski, *Designing Optimal Disability Insurance: A Case for Asset Testing*, 114 J. POL. ECON. 257 (2006).

dollar" to each of its members[92] and (iii) estimates of the loss in welfare from monopoly.[93]

Positive and normative mainstream economics generally operate from a common foundation, exploring the implications of an economy of rational consumers and profit-maximizing producers. On the positive front, this framework supports explorations of the working of supply and demand—the effects of land scarcity, import restrictions, price controls, tax regimes, monopolies and cartels, risk, patents, changes in factor prices, and so on. The rational actor methodology has also penetrated into the analysis of subjects traditionally allocated to other disciplines, such as criminal justice, sociology, and political science.[94] On the normative side, the same foundation is the basis for appraising alternative cost of living indexes[95] and measures of national output,[96] competition policy,[97] tax policy,[98] financial regulation,[99] and environmental policy.[100]

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92. Emmanuel Saez & Stefanie Stantcheva, *Generalized Social Marginal Welfare Weights for Optimal Tax Theory*, 106 AM. ECON. REV. 24, 24 (2016). *See generally* ROBIN BOADWAY, FROM OPTIMAL TAX THEORY TO TAX POLICY (2012).

93. FREDERIC M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 461 (2d ed. 1980).

94. *See, e.g.*, Edward P. Lazear, *Economic Imperialism*, 115 Q.J. ECON. 99, 105–06, 115, 124–26, 130–31, 134–35 (2000) (rational choice applied to discrimination, religion, accounting, law); Ross L. Matsueda, Derek A. Kreager & David Huizinga, *Deterring Delinquents: A Rational Choice Model of Theft and Violence*, 71 AM. SOCIO. REV. 95, 116–18 (2006) (rational choice and the sociology of crime); Phillip Y. Lipscy, *Explaining Institutional Change*: *Policy Areas, Outside Options, and the Bretton Woods Institutions*, 59 AM. J. POL. SCI. 341, 352–53 (2015) (rationalist analysis of international institution change); William G. Howell & Saul. P. Jackman, *Interbranch Negotiations over Policies with Multiple Outcom*es, 57 AM. J. POL. SCI. 956, 958–60 (2013) (bargaining model of public policy negotiations).

95. STIGLER, *supra* note 82, at 67–70.

96. Partha Dasgupta, *The Welfare Economic Theory of Green National Accounts*, 42 ENV'T RES. ECON. 3 (2009).

97. JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 7 (1988).

98. *E.g.*, EYTAN SHESHINKSKI, *Optimum Taxation of Annuities*, *in* THE ECONOMIC THEORY OF ANNUITIES 125–28 (2008); BERNARD SALANIE, THE ECONOMICS OF TAXATION 17 (2d ed. 2011) ("We will seek to quantify the deadweight losses due to taxes."); David A. Weisbach, *Should a Short Sale Against the Box be a Realization Event?*, 50 NAT'L TAX J. 495 (1997).

99. Eduardo L. Giménez, *Complete and Incomplete Markets with Short-Sale Constraints*, 21 ECON. THEORY 195, 197 (2003); Marcus K. Brunnermeier, Alp Simsek & Wei Xiong, *A Welfare Criterion for Models with Distorted Beliefs*, 129 Q. J. ECON. 1753, 1781 (2014); *see also* Ronel Elul & Pietro Gottardi, *Bankruptcy*: *Is it Enough to Forgive or Must We Also Forget?*, 7 AM. ECON. J.: MICROECONOMICS 294, 323 (2015).

100. *See generally* Stephen P. Holland, Erin T. Mansur, Nicholas Z. Muller & Andrew J. Yates, *Are There Environmental Benefits from Driving Electric Vehicles? The Importance of Local Factors*, 106 AM. ECON. REV. 3700 (2016).

Because positive and normative economics share a common theoretical structure, it can be difficult to recognize a boundary between them. In an examination of "the economics of overdraft usage by consumers and banks," Todd Zwicki maintains, "[E]conomics establishes that[,] because those who use overdraft protection do so voluntarily[,] their behavior establishes that in fact they do receive value in excess of [the overdraft fees] they pay."[101] Alan Schwartz has argued that "a better understanding of the economics" favors "enforce[ment] [of] all liquidated damage and specific performance [contract] clauses" and limitations on awards of punitive damages.[102] David Teece and Edward Sherry contend: "[E]conomics suggests that [standard setting organizations[103]] have a strong tendency to act in a socially *inefficient* fashion when determining whether to adopt a standard on which a firm has a patent."[104] According to John Conley and Christopher Yoo, "[A] more fundamental understanding of public goods economics reveals" that copyright law's limits on "authors' ability to price-discriminate will reduce economic welfare."[105]

Each of these appeals suggests that descriptive mainstream economics, properly understood, is capable of establishing certain normative conclusions. With the increasing prominence of behavioral economics, similar claims have followed on its behalf. For example, the White House, in an Executive Order

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101. Todd J. Zwicki, *The Economics and Regulation of Bank Overdraft Protection*, 69 WASH. & LEE L. REV. 1141, 1145, 1181 (2012).

102. Alan Schwartz, *The Myth that Promisees Prefer Supracompensatory Remedies: An Analysis of Contracting for Damage Measures*, 100 YALE L.J. 369, 405–06 (1990).

103. *E.g.*, INST. ELEC. & ELEC. ENG'R (IEEE), http://www.ieee.org/standards/index.html [https://perma.cc/C34H-FCUJ]; U.S. GREEN BLDG. COUNCIL, http://www.usgbc.org/leed [https://perma.cc/L255-A2V3]; AM. NAT'L STANDARDS INST., https://www.ansi.org/standards_activities/overview/overview?menuid=3 [https://perma.cc/P9CN-5GUL]; SEC. INDUS. ASS'N, https://www.securityindustry.org/Pages/Standards/Standards_Splash.aspx [https://perma.cc/NJM2-3HCB].

104. David J. Teece & Edward F. Sherry, *Standards Setting and Antitrust*, 87 MINN. L. REV. 1913, 1931 (2003).

105. John P. Conley & Christopher S. Yoo, *Nonrivalry and Price Discrimination in Copyright Economics*, 157 U. PA. L. REV. 1801, 1803 (2009). *Compare* JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 637 (4th ed. 2013) ("Overall, the experience with the EITC in the United States seems fairly successful. It is a powerful redistributive device that now delivers more cash to low-income families than any other welfare program in the United States. And it has done so without reducing overall labor supply, the problem with standard cash welfare; rather, this redistribution has been associated with increased labor supply among single mothers . . . no effect on fathers and a modest reduction in labor supply among married mothers."), *with id.* at 639 ("Under the U.S. income tax system, labor delivered through the market is taxed, while labor delivered through nonmarket activities, such as home child care, is not taxed. This approach is inequitable because families that choose to provide child care themselves, rather than earn income and then buy child care services, pay lower taxes. It is also inefficient because it subsidizes home over child market care.").

of September 15, 2015, asserted: "Where Federal policies have been designed to reflect behavioral science insights, they have substantially improved outcomes for the individuals, families, communities, and businesses those policies serve," citing as an example "automatic enrollment and automatic escalation in retirement savings plans."[106]

With respect to corporate law, Kent Greenfield observes that "[o]ne possible legal implication of these [behavioral] phenomena is that courts should be less eager to depend on the business judgment rule . . . in adjudicating claims arising from alleged firm mismanagement."[107] Greenfield also concludes that behavioral research "suggest[s] the benefits of a possible move toward a more robust regime of genuine, enforceable duties on the part of fiduciaries toward the firm and its investors."[108] Regarding bankruptcy law, Robert Rasmussen finds that behavioral economics may support allowing creditors to opt out of bankruptcy: "The literature on behavioral economics suggests a different, more interesting, hypothesis: shifting to a contract regime may increase the efficiency of the lending market."[109]

According to Ryan Bubb and Richard Pildes, behavioral economics sanctions banning credit card and mortgage teaser rates because "[t]he only plausible explanation for the use of teaser rates in consumer credit contracts is that they exploit consumers' bounded rationality and bounded self-control."[110] Bubb, Patrick Corrigan, and Patrick Warren,[111] while remarking that their "primary goal . . . is descriptive," indicate that their "descriptive analysis suggests two different types of policy responses" with respect to federal tax preferences for employer-sponsored retirement plans:[112] favoring fixed employer contributions to employee pensions over matching contributions[113] and (more ambitiously) replacing the current regime of tax-favored employer

106. Exec. Order No. 13,707, Using Behavioral Science Insights to Better Serve the American People, 80 Fed. Reg. 56,365 (Sept. 15, 2015), https://www.gpo.gov/fdsys/pkg/FR-2015-09-18/pdf/2015-23630.pdf [https://perma.cc/5ZDK-MZTT].

107. Kent Greenfield, *The End of Contractarianism*: *Behavioral Economics and the Law of Corporations, in* THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 526 (Eyal Zamir & Doron Teichman eds., 2014).

108. *Id.* at 527–28.

109. Robert K. Rasmussen, *Behavioral Economics, the Economic Analysis of Bankruptcy Law and the Pricing of Credit*, 51 VAND. L. REV. 1679, 1700 (1998).

110. Bubb & Pildes, *supra* note 2, at 1661.

111. Ryan Bubb, Patrick Corrigan & Patrick L. Warren, *A Behavioral Contract Theory Perspective on Retirement Saving*, 47 CONN. L. REV. 1317, 1359 (2015).

112. *Id.* at 1359.

113. *Id.*

retirement plans with "a federally-sponsored defined contribution plan that would be supplemental to Social Security."[114]

These sorts of inferences may be asserted without explicitly introducing additional normative assumptions to supplement descriptive theories or results. The nature of economic theory seems to inspire fluid transitions between positive analyses and normative ones in law and economics—and behavioral law and economics—scholarship. While it may be convenient to leverage essentially the same model for positive and welfare investigations, there is a difficulty with routine progression from analysis to advocacy. The viability of a model depends on its intended function. Positive investigation and normative evaluation have distinct objectives. There seems to be no reason to expect that a sound positive model is necessarily an attractive normative one—or the reverse.

A. A Model is Necessarily an Approximation Adapted for Function

While it may be convenient to leverage essentially the same model for positive and welfare investigations, there is a difficulty with routine progression from analysis to advocacy. The viability of a model depends on its intended function. Mainstream economics[115] and behavioral economics,[116] as well as psychology,[117] are now regarded as primarily scientific enterprises. Evaluations of the merits of scientific theories appeal to criteria such as simplicity,[118]

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114. *Id.* at 1364.

115. *See, e.g.*, LIONEL ROBBINS, AN ESSAY ON THE NATURE AND SIGNIFICANCE OF ECONOMIC SCIENCE (2d ed. 1935); COLLECTED SCIENTIFIC PAPERS OF PAUL SAMUELSON (Janice Murray, ed., 2011); J.R. HICKS, VALUE AND CAPITAL: AN INQUIRY INTO SOME FUNDAMENTAL PRINCIPLES OF ECONOMIC THEORY (2d ed. 1946); Joseph E. Stiglitz, *Another Century of Economic Science*, 101 ECON. J. 134 (1991); James J. Heckman, *Micro Data, Heterogeneity, and the Evaluation of Public Policy*: *Nobel Lecture*, 109 J. POL. ECON. 673 (2001); *cf*. R.M. Solow, *Mr Hicks and the Classics*, 36 OXFORD ECON. PAPERS 13, 15 (1984) ("Suppose, in other words, that economics is 'a discipline, not a science.' ").

116. Daniel Kahneman, Peter P. Wakker & Rakesh Sarin, *Back to Bentham? Explorations if Experienced Utility*, 112 Q. J. ECON. 395, 397 (1997); Rabin, *supra* note 13, at 617; Colin Camerer, Samuel Issacharoff, George Loewenstein, Ted O'Donoghue & Matthew Rabin, *Regulation for Conservatives*: *Behavioral Economics and the Case for "Asymmetric Paternalism*,*"* 151 U. PA. L. REV. 1211, 1215 (2003).

117. *See, e.g.*, *Psychology: Science in Action*, AM. PSYCH. ASS'N (Mar. 2014), www.apa.org/action/science/science-of-psychology.aspx [https://perma.cc/QT5C-XZXU]; Mark I Appelbaum & Howard M. Sandler, *Editorial*, 1 PSYCH. METHODS 3 (1996).

118. Albert Einstein, *On the Method of Theoretical Physics*, 1 PHIL. SCI. 163, 165 (1934); Burton Richter, *Theory in Particle Physics: Theological Speculation versus Practical Knowledge*, PHYSICS TODAY, Oct. 2006, at 8, 8 ("Progress in physics almost always is made by simplification."); Thomas S. Kuhn, *Objectivity, Value Judgment, and Theory Choice*, *in* THOMAS S. KUHN, THE ESSENTIAL

generality,[119] coherence,[120] fruitfulness,[121] and empirical adequacy.[122] Many of these criteria have also been advanced as standards for assessing descriptive theories lacking scientific ambition.[123] Jules Coleman defends his explanation of accident law in terms of criteria such as "descriptive . . . accuracy . . . simplicity, coherence, elegance and consilience."[124] Some historians have endorsed similar principles for evaluating competing historical accounts.[125]

Context is central to identifying scientific virtues and applying them to appraise theories. For instance, Thomas Kuhn has noted that the utility of a theory has been a much more important consideration for chemists than for mathematicians or for physicists.[126] Since the scientific virtues are not exact[127]

TENSION 321–22, 358 (1977); Paul R. Thagard, *The Best Explanation: Criteria for Theory Choice*, 75 J. PHIL. 76, 86–89 (1978); W. Bradley Wendell, *Explanation in Legal Scholarship*, 96 CORNELL L. REV. 1035, 1051–53 (2011).

119. George J Stigler, *The Development of Utility Theory. II*, 58 J. POL. ECON. 373, 392 (1950). *See generally* Peter Lipton, *Is Explanation a Guide to Inference? A Reply to Wesley C. Salmon*, *in* EXPLANATION: THEORETICAL APPROACHES AND APPLICATIONS 93 (Giora Hon & Sam S. Rakover eds., 2001); Richter, *supra* note 118, at 8; Thagard, *supra* note 118, at 82.

120. PETER LIPTON, INFERENCE TO THE BEST EXPLANATION 122 (2d ed. 2004); *cf*. JAMES LADYMAN, UNDERSTANDING PHILOSOPHY OF SCIENCE 158 (2002).

121. Lipton, *supra* note 120, at 122; RICHARD FEYNMAN, THE CHARACTER OF PHYSICAL LAW 23, 53, 164 (1965).

122. BAS C. VAN FRAASSEN, LAWS AND SYMMETRY 192–93 (1989); RICHARD P. FEYNMAN, ROBERT B. LEIGHTON & MATTHEW SANDS, THE FEYNMAN LECTURES ON PHYSICS 1-1 (1963). *See generally* PIERRE MAURICE MARIE DUHEM, THE AIM AND STRUCTURE OF PHYSICAL THEORY (1954); MICHAEL STREVENS, DEPTH: AN ACCOUNT OF SCIENTIFIC EXPLANATION 19, 97, 103, 145–48, (2008) (discussing criteria of generality, accuracy and cohesion).

123. *Cf.* Larry Laudan, *The Demise of the Demarcation Problem* 111, *in* PHYSICS, PHILOSOPHY AND PSYCHOANALYSIS, ESSAYS IN HONOR OF ADOLF GRÜNBAUM (R.S. Cohen & L. Laudan eds., 1983).

124. JULES L. COLEMAN, THE PRACTICE OF PRINCIPLE: IN DEFENSE OF A PRAGMATIST APPROACH TO LEGAL THEORY 3 (2001); Jules Coleman, *The Architecture of Jurisprudence*, 121 YALE L.J. 2, 35, 39 (2011).

125. *E.g.*, ALLAN MEGILL, STEVEN SHEPARD & PHILLIP HONENBERGER, HISTORICAL KNOWLEDGE, HISTORICAL ERROR: A CONTEMPORARY GUIDE TO PRACTICE 132 (2007); MURRAY G. MURPHEY, TRUTH AND HISTORY 177–78 (2008); Mark Bevir, *Mind and Method in the History of Ideas*, 36 HIST. & THEORY 167, 188 (1997). *See generally* W.J. van der Dussen, *The Historian and his Evidence*, *in* OBJECTIVITY, METHOD AND POINT OF VIEW: ESSAYS IN THE PHILOSOPHY OF HISTORY (W.J. van der Dussen & Lionel Rubinoff eds., 1991).

126. Kuhn, *supra* note 118, at 335.

127. *See, e.g.*, W.V. QUINE & J.S. ULLIAN, THE WEB OF BELIEF 71 (1978) ("In the notion of simplicity there is a nagging subjectivity.").

and, moreover, "repeatedly prove to conflict with one another,"[128] competition between theories cannot be resolved in terms of such virtues without considering objectives. As Peter Achinstein has observed,

> A theoretical model is treated as an approximation useful for certain purposes . . . . The fact that a theoretical model is proposed as a way of representing the structure of a[] . . . system for certain purposes explains why there are often alternative models in use: different representations may be employed for different purposes.[129]

While social scientists must reconcile themselves to models that are obvious simplifications, models throughout the sciences incorporate elements known to be false. These simplifications go beyond scientists' recognition that even fundamental principles of physics are incomplete—as physicist Richard Feynman notes, "Each piece, or part, of the whole of nature is always merely an *approximation* to the complete truth . . . . [B]ecause *we know that we do not know all the laws* as yet. Therefore, things must be learned only to be unlearned."[130] Scientific models routinely include simplified elements not only expected to be superseded by future discoveries but acknowledged to be inaccurate in light of current evidence. Nancy Cartwright's detailed examination of the practices of modern physics demonstrates, "A model [in physics] is a work of fiction. Some properties ascribed to objects in the model will be genuine properties of the objects modelled."[131] Other properties, she finds, "are pure fictions."[132]

Scientific modeling, including in physics and astronomy, has long relied on mathematical idealizations, such as the fictions that wires are one-dimensional lines with mass, surfaces are two-dimensional without width, objects consist of an infinite number of continuously distributed dimensionless points instead of

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128. Kuhn, *supra* note 118, at 322; W.H. NEWTON-SMITH, THE RATIONALITY OF SCIENCE 226 (1981) ("The guiding principles in science can point in different directions . . . ."); Thagard, *supra* note 118, at 79; Jay Odenbaugh, *Complex Systems, Trade-Offs, and Theoretical Population Biology: Richard Levin's "Strategy of Model Building in Population Biology" Revisited*, 70 PHIL. SCI. 1496, 1504–05 (2003); *cf.* Stephen R. Perry, *Method and Principle in Legal Theory*, 11 YALE L.J. 1757, 1768 (2002). ("But in asserting that corrective justice decisively defeats economic analysis on the dimension of fit, Coleman for the most part ignores the issue of substance. Once we begin to take substance into consideration, it is not so obvious how the debate about fit should come out.").

129. Peter Achinstein, *Theoretical Models*, 16 BRIT. J. FOR PHIL. SCI. 102, 104–05 (1965).

130. FEYNMAN, LEIGHTON & SANDS, *supra* note 122, at 1-1; *cf.* Larry Laudan, *A Confutation of Convergent Realism*, 48 PHIL. SCI. 19, 24, 33–35 (1981).

131. NANCY CARTWRIGHT, HOW THE LAWS OF PHYSICS LIE 153 (1983).

132. *Id.*; *see also* Williams C. Wimsatt, *False Models as Means to Truer Theories, in* NEUTRAL MODELS IN BIOLOGY 24 (Matthew H. Nitecki & Antoni Hoffman eds., 1987).

a large number of finite particles, and so on.[133] Cartwright finds that scientific models typically also contain other types of intentional inaccuracies that are either inevitable or pragmatically desirable. According to Cartwright, "the most realistic model" may not "serve all purposes best":[134]

> [M]odels serve a variety of purposes, and individual models are to be judged according to how well they serve the purpose at hand. . . . [F]or different problems there are different emphases. We may wish to calculate a particular quantity with great accuracy . . . . We may wish instead to replicate a broader range of behaviour, but with less accuracy . . . . [W]e sometimes want to . . . lay out the causal processes which bring the phenomena about, and for this purpose it is best to use a model that treats the causally relevant factors as realistically as possible . . . . But this may well preclude treating other factors realistically.[135]

It is perhaps unnecessary to contemplate true versus false models or realistic versus fictional elements of models if it can be granted that the adequacy of a model is relative to its intended function.[136] Ronald Giere considers it misleading to label aspects of models as fictional, despite "the simple fact that models cannot exhibit a perfect fit to any real system."[137] Giere contends that "models themselves are not even candidates for truth or falsity"[138] (and the same presumably hold for their components). Instead, Giere explains, it is the adequacy of models for an objective that can be accepted or found wanting.[139]

Giere observes that a model's relationship to a subject resembles a map's relationship to a location.[140] A map is neither true nor false;[141] besides

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133. *E.g.*, OLIVER DIMON KELLOGG, FOUNDATIONS OF POTENTIAL THEORY 1–22 (1929); *see* James Ladyman, *Idealization*, *in* THE ROUTLEDGE COMPANION TO THE PHILOSOPHY OF SCIENCE 359 (Stathis Psillos & Martin Curd eds., 2008); Christopher Pincock, *Mathematical Idealization*, 74 PHIL. SCI. 957, 958 (2007).

134. CARTWRIGHT, *supra* note 131, at 152.

135. *Id.* at 152.

136. *See* Wimsatt, *supra* note 132, at 28.

137. Ronald N. Giere, *An Agent-Based Conception of Models and Scientific Representation*, 172 SYNTHESE 269, 279 (2010).

138. *Id.* at 273.

139. *Id.* at 273–75; *see also* Paul Teller, *Twilight of the Perfect Model Model,* 55 ERKENNTNIS 393, 404–06 (2001).

140. RONALD N. GIERE, SCIENCE WITHOUT LAWS 81–82 (1999); *see also* BAS C. VAN FRAASEN, SCIENTIFIC REPRESENTATION: PARADOXES OF PERSPECTIVE 15, 80, 83, 253 (2008) (describing a "precise and perfect analogy between theory, model, and map").

141. Ronald N. Giere, *Viewing Science*, PHIL. SCI. ASS'N: PROC. BIENNIAL MEETING PHIL. SCI. ASS'N, No. 2, 1994, at 3, 11.

conventional maps of actual locations, a map may accompany a work of fiction or illustrate the planned location of streets, structures and utilities of a proposed residential subdivision. Giere notes that even maps of an actual site "are always *partial*. There is no such thing as a complete map."[142] The content of a specific map "represent[] [a] spatial region[] from [a] particular perspective[] determined by various human interests."[143] For the same location, the features of a zoning map, transit map, topographic map, and a map of political boundaries vary considerably.

In a review of Giere's work, James Woodward points out, "A 1:1 scale map the size of London, although in one sense highly accurate, will not be useful in getting around the city"; in contrast, versions of Harry Beck's influential London underground map[144] have proven their value for tube users over the years despite limited information and numerous spatial distortions.[145] If the map analogy is sound, Woodward concludes, "[W]e may similarly need to acknowledge the possibility that different theories will be more or less useful for different purposes or problems, that usefulness for certain purposes may require inaccuracies and omissions in other respects."[146]

We have seen that a model cannot capture all aspects of a phenomenon, and the success of its inevitable compromises is relative to the purposes of the model. Such tradeoffs are not confined to economics or even the social sciences. So, the fact that a model is well suited to certain positive functions does not establish its soundness in normative application. For one thing, different positive models may be consistent with the same evidence.[147] These empirically equivalent positive models may have significant differences in their normative implications. One version may be considered superior on pragmatic grounds—it may be simpler, more comprehensive in its ambitions or suggest more promising paths for future research. But these advantages may warrant less weight for normative applications.

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142. GIERE, *supra* note 140, at 81.

143. *Id.*

144. Jonathan Glancey, *The London Underground Map: The Design that Shaped the City*, BBC (July 20, 2015), http://www.bbc.com/culture/story/20150720-the-london-underground-map-the-design-that-shaped-a-city [https://perma.cc/9MZM-6DQ6]; CLAIRE DOBBIN, LONDON UNDERGROUND MAPS: ART, DESIGN AND CARTOGRAPHY 61 (2012).

145. Jim Woodward, *Science Without Laws by Ronald Giere*, 69 PHIL. SCI. 379, 381 (2002) (book review).

146. *Id.*

147. *Cf.* B. Douglas Bernheim, Andrey Fradkin & Igor Popov, *The Welfare Economics of Default Options in 401(k) Plans*, 105 AM. ECON. REV. 2798, 2810 (2015) ("Models are simply lenses through which we interpret and rationalize choice patterns, and a variety of models can usually account for the same patterns.").

Even if two models are not indistinguishable in their predictions and in fitting existing evidence, each may be viable for distinct positive applications, bearing in mind that assessment of fit is relative to the model's function. Again, these models' normative evaluations may diverge. In principle, a model might dominate contenders across the board in terms of the scientific virtues and still be deficient, or inferior, for normative purposes.

Further, there is no basis for contending that, if behavioral economics actually does introduce greater psychological realism into economics, this will inevitably enhance the efficacy of economic theory. Sometimes more detail helps, sometimes it muddies the waters—and this is not new learning about the scientific method.

C. Summary

Even as contemporary economics has adopted scientific ideals, the literature continues to be a mixture of normative and positive analyses. The same is true in political science,[148] and the academic literature in psychology includes both normative and descriptive elements.[149] Economics, however, is distinguished by the integration of its positive and normative models, encouraging attribution of normative implications to purely descriptive claims.

Positive economics generally does not produce inevitable normative implications. As the criteria for judging the soundness of positive and

148. *See, e.g.*, Archon Fung, *Democratic Theory and Political Science: A Pragmatic Method of Constructive Engagement*, 101 AM. POL. SCI. REV. 443, 443 (2007). *Compare* Mark E. Warren, *A Problem-Based Approach to Democratic Theory*, 111 AM. POL. SCI. REV. 39, 42 (2017), *with* Brian Kogelmann & Stephen G. W. Stich, *When Public Reason Fails Us: Convergence Discourse as Blood Oath*, 110 AM. POL. SCI. REV. 717, 717 (2016), *and* Benjamin L. McKean, *What Makes a Utopia Inconvenient? On the Advantages and Disadvantages of a Realist Orientation to Politics*, 110 AM. POL. SCI. REV. 876, 878 (2017), *with* Céline Braconnier, Jean-Yves Dormagen & Vincent Pons, *Voter Registration Costs and Disenfranchisement*: *Experimental Evidence from France*, 111 AM. POL. SCI REV. 584, 590 (2017), *and* Chris Tausanovitch & Christopher Warshaw, *Representation in Municipal Government*, 108 AM. POL. SCI. REV. 605, 605 (2014).

149. Richard H. Thaler, *From Homo Economicus to Homo Sapiens*, 14 J. ECON. PERSPECTIVES 133, 138 (2000). *Compare* Lisa Rosenthal, *Incorporating Intersectionality into Psychology: An Opportunity to Promote Social Justice and Equity*, 71 AM. PSYCH. 474 (2016), *and* Joan C. Williams, Jennifer L. Berdahl & Joseph A. Vandello, *Beyond Work Life "Integration,"* 67 ANN. REV. PSYCH. 515 (2016), *and* Sandra L. Calvert, Mark Appelbaum, Kenneth A. Dodge, Sandra Graham, Gordon C. Nagayama Hall, Sherry Hamby, Lauren G. Fasig-Caldwell, Martyna Citkowicz, Daniel P. Galloway & Larry V. Hedges, *The American Psychological Association Task Force Assessment of Violent Video Games: Science in the Service of Public Interest*, 72 AM. PSYCH. 126 (2017), *with* Dave F. Kleinschmidt & T. Florian Jaeger, *Robust Speech Perception: Recognize the Familiar, Generalize to the Similar and Adapt to the Novel*, 122 PSYCH. REV. 148 (2015), *and* Takeo Watanabe & Yuka Sasaki, *Perceptual Learning: Toward a Comprehensive Theory*, 66 ANN. REV. PSYCH. 197 (2015). *Cf.* Michael Burawoy, *For Public Sociology*, 70 AM. SOCIO. REV. 1 (2005).

normative inferences are not necessarily the same, the adequacy of a model for a descriptive purpose does not validate the model in setting public policy. In evaluating a normative economic theory, greater importance may attach to sensitivity to distributional consequences, congruence with particular ethical principles, or capacity for evaluating political feasibility, institutional competence and risk of regulatory capture. Part IV of the Article illustrates these principles in terms of influential models in behavioral economics. This model has been applied in making normative claims, although essentially equivalent positive models exist with different normative implications.

Moreover, the emphasis in much of the behavioral law and economics literature on its purported greater psychological realism may prove a satisfying marketing gambit, but it is not based on any consensus that greater realism yields better science. Effecting realism in some dimensions may warrant sacrificing precision in others—just as a serviceable map will not attempt to satisfy all conceivable functions. The success of behavioral economics will turn on whether it represents an improved balance of accuracy, simplicity, and generality.

IV. THE INDETERMINATE NORMATIVE IMPORT OF BEHAVIORAL SCIENCE: AN ILLUSTRATION

The appeal or success of a positive economic model does not establish the model's suitability for normative analysis. Generally, multiple positive models can account for economic behavior but may differ in their normative implications. Since the criteria for favoring a specific positive economic theory are not necessarily identical with the factors relevant to choosing a normative model, theoretical and empirical results do not compel a policy agenda.

This Part illustrates that conclusions of positive models in behavioral economics and behavioral law and economics do not, in general, have inevitable or natural policy implications.[150] The choice of a descriptive model does not determine the appropriate normative model.

A. Introduction

Practitioners of contemporary behavioral economics initially emphasized the promise of the methodology in contributing to descriptive economics.[151]

150. For an illustration that, for a core part of mainstream microeconomic theory, economic behavior can be explained by a positive model without the efficiency implications emphasized in much of conventional law and economics, see O'Reilly, *supra* note 9.

151. Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, 59 J. BUS. S251, S272 (1986); Thomas Russell & Richard Thaler, *The Relevance of Quasi-Rationality in Competitive Markets*, 75 AM. ECON. REV. 1071, 1081 (1985).

There is now, however, substantial literature proposing potential advances in public policy grounded in behavioral economics.[152] A common theme is that behavioral economic analysis justifies a greater scope for regulation than mainstream economics would support.[153] To date, promoters of behavioral regulation have concentrated on recommending policies that are predicted by behavioral analysis to yield preferred policy outcomes "without forbidding any options or significantly changing [people's] economic incentives"[154]—soft paternalism.[155] For example, requiring greater disclosure by businesses to consumers[156] or specifying whether individuals must opt in or opt out of alternatives.[157]

Recently, calls for "more aggressive applications"[158] of behavioral economics are becoming more prominent. For example, Saurabh Bhargava and George Loewenstein conclude that, in light of the urgency of modern policy concerns, it is time to move beyond soft paternalism in applying behavioral tools.[159] As an example of more assertive policies justified by behavioral economic analysis, they suggest internet privacy rules "that explicitly restrict firm use of information to purposes judged to be in the consumer's interest" in light of consumers' "limited attention, motivated reasoning and biased

152. *See, e.g.*, Shlomo Benartzi, John Beshears, Katherine L. Milkman, Cass R. Sunstein, Richard H. Thaler, Maya Shankar, Will Tucker-Ray, William J. Congdon & Steven Galing, *Should Governments Invest More in Nudging?*, 28 PSYCH. SCI. 1041, 1041 (2017); *cf. When Nudge Comes to Shove: Making Government Work*, 423 ECONOMIST 59, 59–60 (2017).

153. Thomas S. Ulen, *Behavioral Law and Economics*: *Law, Policy, and Science*, 21 SUP. CT. ECON. REV. 5, 9–10 (2014).

154. THALER & SUNSTEIN, *supra* note 45, at 6.

155. Cass R. Sunstein, *The Storrs Lectures: Behavioral Economics and Paternalism*, 122 YALE L.J. 1826, 1835–36, 1860 (2013); *cf.* Gerald Dworkin, *Paternalism*, 56 MONIST 64, 65 (1972) ("By paternalism I shall understand roughly the interference with a person's liberty of action justified by reasons referring exclusively to the welfare, good, happiness, needs, interests, or values of the person being coerced."). Cass Sunstein and Richard Thaler define "libertarian paternalism" as paternalism that does not involve coercion. Richard H. Thaler & Cass R. Sunstein, *Libertarian Paternalism*, 93 AM. ECON. REV. 175, 175 (2003).

156. *E.g.*, ELISABETH COSTA, KATY KING, RAVI DUTTA & FELICITY ALGATE, APPLYING BEHAVIORAL INSIGHTS TO REGULATED MARKETS 48 (2016), http://www.bi.team/wp-content/uploads/2016/05/Applying-behavioural-insights-to-regulated-markets-final.pdf [https://perma.cc/8RF8-DNQ3].

157. *See, e.g.*, MICHAEL HALLSWORTH, VEERLE SNIJDERS, HANNAH BURD, JESSICA PRESTT, GABY JUDAH, SARAH HUF, DAVID HALPERN, APPLYING BEHAVIORAL INSIGHTS: SIMPLE WAYS TO IMPROVE HEALTH OUTCOMES 13 (2016), https://www.bi.team/wp-content/uploads/2016/11/WISH-2016_Behavioral_Insights_Report.pdf [https://perma.cc/2LT3-9W26] ("Make the default option a desired health behavior.").

158. Bhargava & Loewenstein, *supra* note 6, at 400.

159. *Id.*

assessment of probabilit[ies].”[160] They also propose regulating health insurance coverage, allowing only simplified, standardized policies, and perhaps only permitting policies to offer “reasonable options.”[161]

Ryan Bubb and Richard Pildes maintain that “fully working through the findings of behavioral social science suggests a greater role for . . . mandates”[162] and product regulation[163]—potentially transcending soft paternalism. For instance, they would not be opposed to policies that mandated increased retirement savings by workers.[164] In the consumer credit market, they are confident “[b]anning teaser rates in credit cards and mortgages—a sort of ‘reverse-usury’ law, if you will—would produce social benefits at little social cost.”[165] In light of behavioral research, they are receptive to considering reforms such as “ban[ning] investor-owned firms from lending to consumers, limiting the consumer credit market to mutuals [e.g., credit unions] and nonprofits.”[166]

For present purposes, what is notable in the analysis of Bubb and Pildes is their claim that their preferred policy agenda is more consistent with the scientific evidence marshaled by behavioral economics than soft paternalism. According to Bubb and Pildes, there is a tension between the commitment to soft paternalism by many behavioral economists and “the full force of [recent] behavioral social science insights” that may be more compatible with hard paternalist policies.[167] Somewhat more conservatively, the economist Raj Chetty, without taking a firm stand on soft versus hard paternalism, remarks that “[f]rom a normative perspective, behavioral economics can offer more accurate and robust prescriptions for optimal policy.”[168]

Russell Korobkin asserts that positive principles of behavioral economics yield some unavoidable normative conclusions. Korobkin insists

> [t]he large body of evidence that human decisionmaking and choice deviates systematically from the usual law-and-economics assumptions of utility maximization, self-interest, and (often) wealth maximization, requires consequentialists to

160. *Id.* at 399.

161. *Id.*; *see also* George Loewenstein & Nick Chatter, *Putting Nudges in Perspective*, 1 BEHAV. PUB. POL’Y 26, 42 (2017).

162. Bubb & Pildes, *supra* note 2, at 1608; *see generally* Ryan Bubb & Alex Kaufman, *Consumer Biases and Mutual Ownership*, 105 J. PUB. ECON. 39, 40 (2013).

163. Bubb & Pildes, *supra* note 2, at 1638.

164. *Id.* at 1636.

165. *Id.* at 1661–62.

166. *Id.* at 1664.

167. *Id.* at 1621, 1678.

168. Chetty, *supra* note 81, at 29.

> replace their default preference for unregulated private markets with a greater initial agnosticism concerning the relative institutional competence of markets and government intervention.[169]

There is, however, no scientific or ethical principle that favors acceptance of this syllogism. Here, to be sure, Korobkin does not contend that behavioral economics always justifies expansive regulation, conceding, "The fact that individuals acting alone in an unregulated market are unlikely to maximize the satisfaction of their preferences does not suggest, of course, that government will make matters any better."[170] Nevertheless, Korobkin infers from behavioral economics principles, "In the case of standard form contracts, buyer bounded rationality suggests that the enforcement of all form terms will not create socially optimal contracts or contracts that are optimal for buyers."[171] Accordingly, Korobkin deduces, "The design of non-salient terms is better assigned to government institutions because the market will not create pressure toward efficiency and state actors, as imperfect as they will be, at least can aim at the proper target."[172]

Suppose that in appropriate settings, behavioral economics does provide a satisfactory positive account of economic behavior. That does not in itself support the adoption of normative behavioral economic policies—even granting the institutional competence of government to effectively execute the agenda.[173] The multiplicity of potential behavioral explanations for consumer behavior leaves normative behavioral economics susceptible to conflicting policy prescriptions.[174]

The fact that a particular positive account may seem to favor one remedy is undermined by the possibility that an alternative behavioral account points to

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169. Korobkin, *supra* note 56, at 1293.

170. *Id.*

171. *Id.* at 1293–94.

172. *Id.* at 1294.

173. The question of the capacity of agencies and their officials to properly administer behavioral economic policies is explored elsewhere, for example, Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law and Economics*: *Its Origins, Fatal Flaws and Implications for Liberty*, 106 NW. U. L. REV. 1033, 1053, 1063–64 (2012); Mario J. Rizzo & Douglas Glen Whitman, *The Knowledge Problem of New Paternalism*, 2009 BYU L. REV. 905, 910 (2009); *see also* Dworkin, *supra* note 155, at 64; David Laibson & John A. List, *Principles of* (*Behavioral*) *Economics*, AM. ECON. REV. 385, 388 (2015).

174. *Cf.* B. Douglas Bernheim, *The Good, the Bad and the Ugly: A Unified Approach to Behavioral Welfare Economics*, 7 J. BENEFIT COST ANALYSIS 12, 38 (2016) ("The first challenge is that behavioral models often have multiple normative interpretations. Consequently, even if we can satisfy ourselves that we have arrived at the right positive model, welfare analysis may remain problematic.").

another solution. For an example of this phenomenon, consider the case of retirement savings policies, an object of special attention by behavioral scholars. There are alternative behavioral explanations of household savings and their policy implications are not aligned.

B. Retirement Savings

i. Introduction

Retirement savings could serve as the poster child for the behavioral economics policy agenda. George Loewenstein and Nick Chatter report, "[R]etirement savings has been the big success story for behavioural economics and public policy."[175] In the United Kingdom, for instance, the Pensions Act of 2008 generally requires employers to provide specified employees the option of an employee pension plan and enroll these employees in a plan. An employee does have the right to withdraw from that plan, although an employee who withdraws generally will be reenrolled every three years—with the right to withdraw again each time.[176] This UK policy reverses the previous UK regime in which an employee had to elect to participate in an employee pension plan. According to Owain Service, director of the United Kingdom's Behavioural Insights Team, the UK pensions mandate is "a textbook example of applying behavioural insights to government policy."[177] Service explains, "The behavioural research in this field has consistently shown that resetting the default from an opt-in to an opt-out scheme was likely to dramatically increase [pension] enrolment rates."[178]

The UK government established its Behavioural Insights Team "to transform how government thinks about the behavioural aspects of public

175. Loewenstein & Chatter, *supra* note 161, at 40; *see also* Richard H. Thaler, *Behavioral Economics: Past, Present, and Future*, 106 AM. ECON. REV. 1577, 1595 (2016); POPE & SYDNOR, *supra* note 13, at 803; Robert Powell, *Behavioral Economist Richard Thaler on the Key to Retirement Savings*, WALL ST. J. (Nov. 29, 2015), https://www.wsj.com/articles/behavioral-economist-richard-thaler-on-the-key-to-retirement-savings-1448852602 [https://perma.cc/2ZG3-93HL]; William J. Congdon, *Psychology and Economic Policy*, *in* THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY 465, 472 (Eldar Shafir ed., 2013); Bhargava & Loewenstein, *supra* note 6, at 397; Bubb & Pildes, *supra* note 2, at 1613–15.

176. *See Workplace Pensions*, GOV.UK, https://www.gov.uk/workplace-pensions/print [https://perma.cc/D58V-HFXH].

177. Owain Service, *Automatic Enrolment and Pensions: A Behavioural Success Story*, BI VENTURES (Nov. 10, 2015), https://www.bi.team/blogs/automatic-enrolment-and-pensions-a-behavioural-success-story/ [https://perma.cc/57ZG-RBWF].

178. *Id.*

policy, making it easier for citizens to make better choices for themselves."[179] The Team has found, "If you want to encourage a behaviour, make it Easy, Attractive, Social and Timely."[180] A key element of this formula is their observation, "We have a strong tendency to stick with the 'default' option, which is the outcome that occurs if we do not choose otherwise."[181] As an example of this behavioral principle, they cite an increase in pension participation rates by employees in large UK businesses from sixty-one percent to eighty-three percent following the UK automatic enrollment requirement.[182]

In the United States, the federal Social and Behavioral Sciences Team[183] cites, as an important achievement of behavioral economics, 2006 amendments to ERISA[184] that facilitate (but do not require) automatic enrollment of workers in private employee pension plans:

> [T]he Pension Protection Act of 2006, which codified the practice of automatically enrolling workers into retirement savings plans, is based on behavioral economics research showing that switching from an opt-in to an opt-out enrollment system dramatically increases participation rates. Since the

179. BEHAV. INSIGHTS TEAM, ANNUAL UPDATE 2010–11, at 4 (2011), https://casaa.org/wp-content/uploads/Behaviour-Change-Insight-Team-Annual-Update_acc.pdf [https://perma.cc/82FN-VYLX]. It is now "a social purpose company . . . jointly owned by the UK Government; Nesta (the innovation charity); and [the Team's] employees." *The Behavioral Insights Team and BI Ventures*, TEST & BUILD, https://www.testandbuild.com/articles/the-behavioural-insights-team-and-bi-ventures#:~:text=The%20Behavioural%20Insights%20Team%20(BIT,charity)%3B%20and%20our%20employees [https://perma.cc/VGB8-9CVF].

180. OWAIN SERVICE, MICHAEL HALLSWORTH, DAVID HALPERN, FELICITY ALGATE, RORY GALLAGHER, SAM NGUYEN, SIMON RUDA, MICHAEL SANDERS, MARCOS PELENUR, HUGO HARPER, JOANNE REINHARD & ELSPETH KIRKMAN, EAST: FOUR SIMPLE WAYS TO APPLY BEHAVIOURAL INSIGHTS 4 (2014), https://www.bi.team/wp-content/uploads/2015/07/BIT-Publication-EAST_FA_WEB.pdf [https://perma.cc/D62S-ZDNJ].

181. *Id.* at 9.

182. *Id.* at 4; *see also* DEP'T FOR WORK & PENSIONS, AUTOMATIC ENROLMENT REVIEW 2017: MAINTAINING THE MOMENTUM 7 (2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668972/print-ready-automatic-enrolment-review-2017-maintaining-the-momentum.pdf [https://perma.cc/NUV4-62YG] ("This Review has confirmed that automatic enrolment is making savings into a workplace pension the new norm for millions of individuals in the UK and that the overall framework that has been established remains the right one for individuals, employers and delivery partners.").

183. According to the Social and Behavioral Sciences Team 2015 annual report, "[I]n 2014, the White House Office of Science and Technology Policy assembled the Social and Behavioral Sciences Team (SBST)—a cross-agency group of experts in applied behavioral science that translates findings and methods from the social and behavioral sciences into improvements in Federal policies and programs." NAT'L SCI. & TECH. COUNCIL, EXEC. OFF. OF THE PRESIDENT, SOCIAL AND BEHAVIORAL SCIENCE TEAM ANNUAL REPORT III (2015).

184. The Employee Retirement Income and Security Act of 1974 is a federal law regulating private pensions in the United States. *See* 29 U.S.C. § 1143.

> implementation of this policy, automatic enrollment and automatic escalation have led to billions of dollars in additional savings by Americans.[185]

There is not yet a canonical behavioral rationale for interventions to manipulate savings behavior.[186] Leading explanations include inertia,[187] anchoring,[188] and people's present bias.[189] In this context, the phenomenon of inertia per se does not seem to be grounded in a highly developed body of psychological research. Psychologists study procrastination and related phenomena, but prominent behavioral economics examinations of the role of inertia in retirement savings do not exploit their findings. An influential examination of automatic enrollment characterizes inertia as the failure of most employee pension plan participants to deviate from a plan's default pension contribution rate.[190] Richard Thaler and Cass Sunstein describe inertia as simply people's "general tendency to stick with their current situation."[191] Thaler explains: "Surveys reveal that most people in retirement savings plans think that they should be saving more, and plan to take action, uh, soon. But then they procrastinate, and never get around to changing their saving rate."[192]

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185. NAT'L SCI. & TECH. COUNCIL, *supra* note 183, at XI. *See generally* John Beshars, James J. Choi, David Laibson, Brigitte C. Madrian & Brian Weller, *Public Policy and Saving for Retirement: The "Autosave" Features of the Pension Protection Act of 2006*, *in* BETTER LIVING THROUGH ECONOMICS: HOW ECONOMICS RESEARCH IMPROVES OUR LIVES 274 (John J. Siegfried ed., 2010), https://dash.harvard.edu/bitstream/handle/1/11130524/Laibson_PublicPolicy.pdf;jsessionid=3E4E24796D8FD2BDAA6F4157D971FB54?sequence=1 [https://perma.cc/EG62-XRH5].

186. *See, e.g.*, Sendhil Mullainathan, Joshua Schwartzstein & William J. Congdon, *A Reduced-Form Approach to Behavioral Public Finance*, 4 ANN. REV. ECON. 511, 512 (2012).

187. Thaler & Sunstein, *supra* note 155, at 177.

188. *Id.*; Bernheim, Fradkin & Popov, *supra* note 147, at 2806; Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion*: *Inertia in 401(k) Participation and Savings Behavior*, 116 Q.J. ECON. 1149, 1181–82 (2001).

189. Bernheim, Fradkin & Popov, *supra* note 147, at 2799; Gabriel D. Carroll, James J. Choi, David Laibson, Brigitte C. Madrian & Andrew Metrick, *Optimal Defaults and Active Decisions*, 124 Q.J. ECON 1639, 1642, 1659 (2009); Bubb & Pildes, *supra* note 2, at 1613; Loewenstein & Chatter, *supra* note 161, at 39; Brigitte C. Madrian, *Applying Insights from Behavioral Economics to Policy Design*, 6 ANN. REV. ECON. 663, 684 (2014); Mullainathan, Schwartzstein & Congdon, *supra* note 186; Madrian & Shea, *supra* note 188, at 1179–80; Andrew Hayashi & Daniel P. Murphy, *Savings Policy and the Paradox of Thrift*, 34 YALE J. ON REG. 743, 754 (2017).

190. Madrian & Shea, *supra* note 188, at 1171; *see also* THALER, *supra* note 15, at 313 (distinguishing between inertia and loss aversion).

191. THALER & SUNSTEIN, *supra* note 45, at 34. Some authors use the term status quo bias to refer to inertia. *E.g.*, Shlomo Benartzi, Ehud Peleg & Richard H. Thaler, *Choice Architecture and Retirement Savings Plans*, *in* THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY 245, 249 (Eldar Shafir ed., 2014).

192. THALER, *supra* note 15, at 313.

Anchoring, in the sense of the influence of a point of reference (the anchor) on a subject's ranking or evaluation of items, has a pedigree in psychology, anticipating its application in economics.[193] For example, an observer's assessments of the duration of various sounds can be affected by the length of a particular sound to which the observer is exposed.[194] Anchors have been found to shift an observer's evaluation of an item in the direction of the anchor or away from it—assimilation versus contrast.[195]

As the concept is used in behavioral economics, "[The] *anchoring effect* . . . occurs when people consider a particular value for an unknown quantity before estimating that quantity."[196] According to Daniel Kahneman, "What happens is one of the most reliable and robust results of experimental psychology: the estimates stay close to the number that people considered—hence the image of an anchor."[197] Anchoring, along with representativeness[198] and availability,[199] is one of the three sources of behavioral biases identified by Tversky and Kahneman[200] in a seminal[201] 1974 article in behavioral decision theory. Thaler and Sunstein propose, "With respect to savings, the designated default [employee retirement] plan apparently carries a certain legitimacy for many employees."[202]

In 1999, economists Ted O'Donoghue and Matthew Rabin introduced the term "present-biased preferences" to describe a particular species of

193. *E.g.*, John Volkmann, *The Anchoring of Absolute Scales*, 33 PSYCH. BULL. 677, 742 (1936); HULDA REES MCGARVEY, ANCHORING EFFECTS IN THE ABSOLUTE JUDGMENT OF VERBAL MATERIALS 16 (1943).

194. Leo Postman & G.A. Miller, *Anchoring of Temporal Judgments*, 58 AM. J. PSYCH. 43, 49 (1945).

195. William A. Hunt, *Anchoring Effects in Judgment*, 54 AM. J. PSYCH. 395, 401 (1941); Fritz Strack, Štěpán Bahník & Thomas Mussweiler, *Anchoring*: *Accessibility as a Cause of Judgmental Assimilation*, 12 CURRENT OP. PSYCH. 67, 67 (2016).

196. DANIEL KAHNEMAN, THINKING, FAST AND SLOW 119 (2011).

197. *Id.*; *see also* THALER & SUNSTEIN, *supra* note 45, at 23.

198. According to Tversky and Kahneman the representativeness heuristic is the assessment of the likelihood of one event following another event based on "the degree to which [the former] resembles" the latter. Tversky & Kahneman, *supra* note 47, at 1124–27. They find that this heuristic occasion several types of deviations ("biases") from principles of normative decision theory.

199. Tversky and Kahneman describe the availability heuristic as appraising the likelihood of an event "by the ease with which instances . . . can be brought to mind." *Id.* at 1127. This heuristic may be unreliable in certain situations described by the authors, such as when the odds of a recurrence of a recently observed event is overestimated.

200. *Id.* at 1124.

201. Thaler, *supra* note 175, at 1594.

202. Thaler & Sunstein, *supra* note 155, at 177.

impatience.[203] Impatience in economic consumption is the tendency of a consumer to be equally satisfied with consuming a certain amount of goods now or a somewhat larger amount of those goods later.[204] For example, a person might be indifferent between consuming 90 units of good one and 45 units of good two immediately, or 100 units of good one and 50 units of good two in a year.

In conventional economic analysis, it is routinely assumed that the degree of impatience from year to year is constant. At a five percent discount rate, the value of consumption deferred a year is about five percent less each year and a year from now a consumer will discount consumption deferred a year by five percent. Figure 3, below, shows the value to a consumer of $100 depending on the number of years the payment is delayed: payment in a year is worth $95.24 and in two years worth only $90.70. The relative value of a one-year delay is always the same: a delay from year five to year six is discounted by the same amount (95.24% = $74.62/$78.35) as a delay from year two to year three (95.24% = $86.38/$90.70).

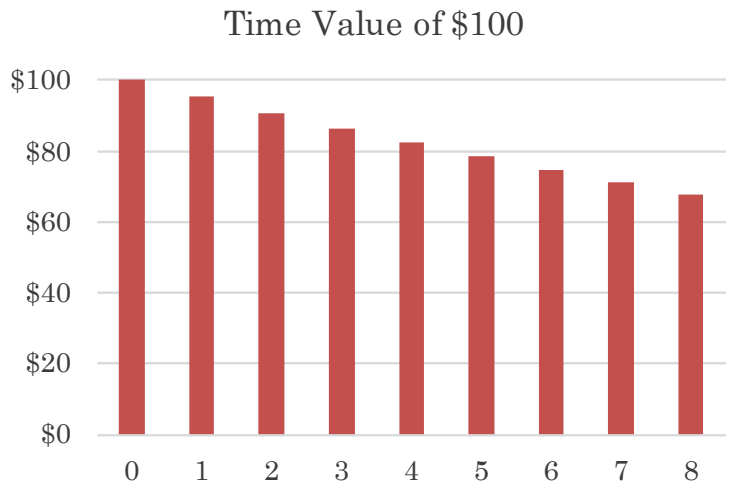

Figure 3: Conventional impatience

In behavioral economics, present bias refers to impatience that varies with the remoteness of consumption, so that a delay of a year (or any fixed interval) matters more in the present than in the future. For instance, on January 1, 2020,

203. Ted O'Donoghue & Matthew Rabin, *Doing it Now or Later*, 89 AM. ECON. REV. 103, 103 (1999).

204. *See, e.g.*, CHRISTIAN GOLLIER, THE ECONOMICS OF RISK AND TIME 217–19 (2001); IRVING FISHER, THE THEORY OF INTEREST AS DETERMINED BY IMPATIENCE TO SPEND INCOME AND OPPORTUNITY TO INVEST IT 62 (1930).

a consumer might discount by ten percent consumption occurring a year from then, but might only discount by six percent a delay of consumption from January 1, 2021, to January 1, 2022, or from January 1, 2030, to January 1, 2031. David Laibson and John List explain, "[I]n the model of *present bias*, people *plan* to . . . save for retirement . . . and then renege at the last second."[205]

Figure 4 compares conventional impatience (left) with impatience incorporating present bias (right). The value of $100 immediately is the same in each case, but with present bias a delay of a year is discounted both for conventional impatience—five percent every year—and present bias, which is a fixed twenty-five percent for any delay. One hundred dollars delayed a year is worth $71.43. A delay of two years is worth only 95.24% less than a delay of one year: from $71.42 to $68.03, and a delay of another year is also only a 95.24% discount—the initial drop is proportionately larger than the reductions between each subsequent period.

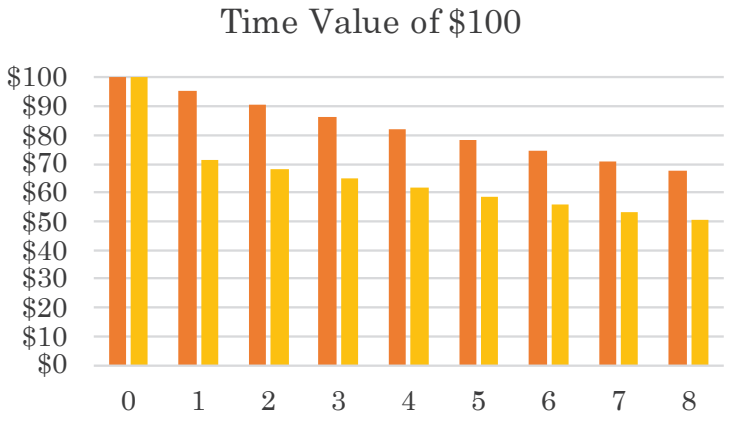

Figure 4: Impatience versus present bias

We now look at three competing positive behavioral accounts of household savings—inertia, anchoring, and present bias—and consider the potential policy interventions that the different positive explanations might support. It turns out that just as mainstream and behavioral accounts of savings point to different policies, different behavioral explanations can have incongruous normative implications.

ii. Inertia

If consumer demand is vulnerable to inertia, that raises the possibility that observed consumption does not fully reflect consumer preferences.

205. Laibson & List, *supra* note 173, at 387.

Presumably, inertia alone is not implicated when a consumer deliberately selects an alternative from a range of options. (Inertia might be implicated, however, if a choice is mandated before the consumer becomes informed about the options.) If inertia is the sole concern, then requiring an explicit choice of a contribution rate for an employee pension plan should normally dissolve inefficiency attributable to inertia. Inertia standing alone represents, at most, a modest contribution of psychology to conventional economics.

iii. Anchoring

If anchoring is the behavioral vector behind the potency of the default contribution rate of an employee pension plan, it might be argued that an employee's contribution does not really reflect the employee's preferences. The authors of a prominent study of anchoring suggest that the existence of anchoring entails a distinction between consumers' choices and their true preferences: "These results challenge the central premise of welfare economics that choices reveal true preferences—that the choice of *A* over *B* indicates that the individual will, in fact, be better off with *A* rather than with *B*."[206] Unfortunately, there seems to be little exploration of the proper evaluation of consumer welfare when anchoring influences consumers' decisions.

The gist of anchoring research in economics is that consumer choices can be influenced by random factors. Assume a setting in which a positive anchoring phenomenon exists—a consumer who chooses, say, seven units when the anchor is five would've chosen nine units were the anchor ten; suppose that the anchors are arbitrary: random numbers. These observations do not necessarily identify true preference. They do admit an interpretation that (1) the true preference is seven in the first case and nine in the second—on the grounds that preferences do not exist or are inchoate prior to the need for a consumption decision.[207] Another interpretation would be that (2) there is no material difference in preference between seven and nine, or seven through nine. It is also conceivable that (3) a true preference exists but the anchor distorts the consumer's choice. For example, the consumer prefers eight units and would choose eight if that were the default, but if the default is something other than eight then the consumer's choice is pulled in the direction of the default.

Each of these normative interpretations of preferences is compatible with the empirical observation that employee behavior differs depending on the

206. Dan Ariely, George Loewenstein & Drazen Prelec, "*Coherent Arbitrariness*": *Stable Demand Curves without Stable Preferences*, 118 Q.J. ECON. 73, 102 (2003) (emphasis added).

207. *See, e.g.*, SARAH LICHTENSTEIN & PAUL SLOVIC, THE CONSTRUCTION OF PREFERENCE 2 (2006).

default contribution rate of an employee retirement plan. The welfare implication of (1) seems to be that the default contribution rate is not material to the employee's welfare. The default channels the employee's preference, but the outcome nevertheless fixes and becomes what the employee wants. Bernheim, Fradkin, and Popov suggest that in this case, the optimal default rate is zero, since employer costs and government revenue losses are lowest.[208]

The second normative interpretation (2) could be rationalized on the basis that a consumer is essentially indifferent between amounts that vary under the sway of an arbitrary anchor. As in the first case, an anchor would not bias the outcome. From the employee's perspective, various defaults all lead to an efficient result, and perhaps, accounting for the tax-favored status of pension plans, a lower default rate is more efficient.

In case (3), if there must be a default, then the choice of a default affects a consumer's welfare, and it would be better if the default is close to the consumer's true preference. But not everyone's preference is necessarily the same—it may vary by age, marital status, dependents, health, and taste. The positive theory provides no guidance on how to reconcile such policy conflicts.

iv. Naïve Present Bias

Prominent behavioral economists have concluded that people with present-biased preferences are prone to saving too little for retirement, and that these individuals could benefit from behavioral intervention to increase their savings.[209] Their analysis emphasizes the effort typically involved in choosing a savings program. Although people place more weight on the present than the future, they value consumption down the road and do wish to set aside some of their resources for later. On a given day, however, a slight delay of the chore of selecting a savings option would not result in a dramatic reduction in future consumption.

In these circumstances, present-biased individuals would prefer to postpone the task until tomorrow, or next week, valuing the reprieve over the small loss in accrued savings caused by a brief deferral. The next time the opportunity to choose a savings plan arises—tomorrow, next week—the same calculation

208. Bernheim, Fradkin & Popov, *supra* note 147, at 2832–33.

209. *E.g.*, Stefano DellaVigna, *Psychology and Economics*: *Evidence from the Field*, 47 J. ECON. LITERATURE 315, 324 (2009); Ted O'Donoghue & Matthew Rabin, *Procrastination in Preparing for Retirement*, *in* BEHAVIORAL DIMENSIONS OF RETIREMENT ECONOMICS 1, 6 (Henry Aaron ed., 1999); David I. Laibson, Andrea Repetto & Jeremy Tobacman, *Self-Control and Saving for Retirement*, *in* BROOKINGS PAPERS ON ECON. ACTIVITY 91, 95 (1998); David Laibson, *Golden Eggs & Hyperbolic Discounting*, 112 Q.J. ECON. 443, 465 (1997); O'Donoghue & Rabin, *supra* note 203, at 112–13, 118, 120; Carroll, Choi, Laibson, Madrian & Metrick, *supra* note 189, at 1672.

presents itself, and once again, procrastination wins out. With present biased preferences, people may delay saving indefinitely in this way.[210]

In the moment, according to this scenario, people maximize welfare as they perceive it; if people's welfare is evaluated by excising the element of their present bias, however, then this sort of welfare might be improved by maneuvering a person to a higher level of savings. This policy is commonly justified along the following lines: "Since present-biased preferences are often meant to capture self-control problems, where people pursue immediate gratification on a day-to-day basis, we feel the natural perspective in most situations is the 'long-run perspective.' "[211]

The most prominent proposed remedy for undersaving due to present bias is to automatically enroll employees in an employee pension plan at a savings rate that will provide a substantial level of retirement savings—as opposed to requiring employees to act if any funds are to be withheld from earnings and set aside for retirement. In this way, procrastination is finessed. An employee remains free to override the default. According to a survey of this literature, the relevant principle is: Present-biased "individuals are likely to be happier with defaults set to higher [than zero] savings rates."[212]

A company's employees may differ in age, family size, and level of ownership of other financial assets, or simply have different preferences for how to allocate resources over time. A study focusing on the implications of present bias when employees have a range of different savings agendas concludes that an employee's welfare might better be promoted by requiring that the employee decide on a pension plan contribution rate shortly after hiring, rather than setting a contribution rate that each employee is permitted to, but often will never, revise.[213]

The standard descriptive and normative accounts of saving influenced by present bias seem compatible in certain respects. No natural normative policy analysis follows from the positive explanation, however. There are neither scientific grounds nor established ethical principles that endorse a hypothetical long-run perspective to evaluate a person's welfare. Applying the long-run

210. *See* Ted O'Donoghue & Matthew Rabin, *Choice and Procrastination*, 116 Q.J. ECON. 121, 136 (2001).

211. O'Donoghue & Rabin, *supra* note 203, at 112–13; *see also* Carroll, Choi, Laibson, Madrian & Metrick, *supra* note 189, at 1660; M. Daniele Paserman, *Job Search and Hyperbolic Discounting: Structural Estimation and Policy Evaluation*, 118 ECON. J. 1418, 1439 (2008); THALER, *supra* note 15, at 100–04.

212. DellaVigna, *supra* note 209, at 324.

213. Carroll, Choi, Laibson, Madrian & Metrick, *supra* note 189, at 1671.

perspective is a defensible choice, perhaps, but it is neither authoritative nor uncontroversial.[214]

Douglas Bernheim, who has written extensively on normative behavioral economics, observes, "[O]ne could take the position that true happiness is achieved by living in the moment, and that we . . . overintellectualize when making decisions about the future."[215] Short-term decisions may reflect more reliable, immediate information about the short-run costs and benefits of decisions.[216] While it seems unlikely that empirical results in psychology will definitively establish the normative superiority of the long-run perspective, they might eventually render that perspective—or some other one—much more compelling. The current normative analysis of present bias favoring the long-run perspective is not based on such foundations.

In any event, present-biased preferences are not irrational. They are simply preferences that result in a certain sort of inconsistency—time inconsistency.[217] At the time a decision is made, present-biased preferences are not inconsistent; they do not violate any principle of mainstream economic theory. Present-biased preferences are a challenge to planning, however. In the current period, period one, a person might discount period three by two percent relative to period three. When period two arrives, however, the person would discount period three by, say, four percent. (Then in period two each period after period three would be discounted by two percent relative to the immediately preceding one.) Plans made in period one for periods two and three might be revised in period two.

In the theory of present-biased preferences, present bias does not necessarily lead to undersaving for retirement or call for a behavioral intervention.[218] The problem arises for a person who fails to anticipate the planning inconsistency—this type is designated naïve in the literature. Theoretically, a person who expects the potential inconsistency—a sophisticate—will not procrastinate, at least if the stakes are significant. In particular, a person with sophisticated present bias will not put off enrolling in a retirement plan, realizing that it could lead to an indefinite and undesirable

214. *See, e.g.*, Edward L. Glaeser, *Paternalism and Psychology*, 73 U. CHI. L. REV. 133, 136 n.8 (2006) ("[P]aternalistic interventions always involve trading off the welfare of people at one point in time with people at some other point in time . . . .").

215. *See* Bernheim, *supra* note 174, at 39.

216. Martin Binder, *Should Evolutionary Economists Embrace Libertarian Paternalism?*, 24 J. EVOLUTIONARY ECON. 515, 529 (2014); Jan Schnellenbach, *Nudges and Norms*: *On the Political Economy of Soft Paternalism*, 28 EURO. J. POL. ECON. 266, 270–71 (2012).

217. Yoram Halevy, *Time Consistency: Stationarity and Time Invariance*, 83 J. ECONOMETRIC SOC'Y 335, 336 (2015).

218. DellaVigna, *supra* note 209, at 324.

delay. A person with naïve present bias, on the other hand, will always expect to complete the task in another day or two, and then opt for another brief postponement at the next opportunity to act.[219]

Arguably, naïveté is something less than rational. The terminology in this area—present bias, self-control, naïve—in principle merely descriptive, is clearly loaded[220] toward identifying pathology.[221] In this context, a deficit of self-control describes the same behavior as present bias, which is not irrational.

Naïve present bias, if not irrational, at least may produce inadequately informed decisions. As Ariel Rubenstein points out, however, "Naïveté is not realistic since agents never learn."[222] Researchers have accordingly devised the concept of partial naïveté/partial sophistication.[223] Although partial naïveté can also yield the type of "severe procrastination" attributable to naïve present bias, the critical level of partial naïveté varies by context.[224]

So, it turns out that an operational account of present-biased preferences requires at least two more degrees of freedom than the conventional economic account of discounting: the amount of present bias and the level of awareness of present bias. To date, empirical evidence on all the moving parts—discount rate, present bias, extent of naïveté—is very limited.[225] A recent elaborate experiment by Ned Augenblick and Matthew Rabin generates all the relevant parameters. They find significant present bias: "Participants preferred 10–12% fewer tasks in the present compared to any future date."[226] With respect to naïveté, their "estimates imply[] that participants understand no more than 24% of their present bias."[227] While the authors did not find a high average level of present-bias sophistication in their sample, there was substantial diversity among participants in both their levels of present bias and their perceptions of

219. *Id.*

220. *See* Bernheim, *supra* note 174, at 38.

221. *See* Till Grüne-Yanoff, *Models of Temporal Discounting 1937–2000*: *An Interdisciplinary Exchange Between Economics and Psychology*, 28 SCI. CONTEXT 675, 707 (2015).

222. Ariel Rubenstein, *Discussion of "Behavioral Economics," in* 2 ADVANCES IN ECONOMICS AND ECONOMETRICS, THEORY AND APPLICATION, NINTH WORLD CONGRESS 246, 247 (Richard Blundell, Whitney K. Newey & Torsten Persson eds., 2006).

223. *See* O'Donoghue & Rabin, *supra* note 210, at 126–27.

224. *Id.* at 136–37.

225. Stefano DellaVigna, *Structural Behavioral Economics* 73 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24,797, 2018).

226. Ned Augenblick & Matthew Rabin, *An Experiment on Time Preference and Misprediction in Unpleasant Tasks*, 86 REV. ECON. STUD. 941, 941 (2019).

227. *Id.*

their own present bias.[228] It appears that as much as one third of the sample either (a) did not significantly underestimate their present bias or (b) underestimated the extent of their bias in favor of delay (rather than favoring the present).[229]

Only the naïve form of present bias seems to offer a robust potential behavioral explanation for undersaving and might justify paternalistic intervention. Widespread, completely naïve present bias is implausible and there is so far limited empirical evidence on the extent and nature of present bias in economic affairs. If undersaving is indeed a significant problem and naïve present bias the explanation, the implications for public policy are not necessarily dramatic. Suggestions to consider imposing a specified savings rate are not justified by the existence of present bias.

a. Present Bias Does Not Support Mandatory Savings.

Most behavioral strategies designed to increase savings defer to the code of soft paternalism.[230] Recently there have been calls for more aggressive interventions. Bubb and Pildes insist: "[S]hould we not be endorsing the hard paternalistic policy of an explicitly *mandatory* savings program rather than straining mightily to preserve the illusion of choice by allowing opt-out of automatic enrollment programs?"[231] According to George Loewenstein and Nick Chatter, "[M]ore heavy-handed policies that remove individual choice seem to produce superior outcomes to nudge approaches that stop short of 'forbidding any options' and that are 'easy and cheap to avoid' (features of nudges described by [Cass Sunstein and Richard Thaler][232])."[233]

The soft paternalist approach is grounded in overcoming some people's inclination to defer enrollment for a brief interval due to the effort enrollment requires. If enrollment were effortless this rationale would fall away. We will

228. *Cf.* Gregory Mitchell, *Taking Behavioralism Too Seriously? The Unwarranted Pessimism of the New Behavioral Analysis of Law*, 43 WM. & MARY L. REV. 1907, 1946 (2002) ("Whether individuals within experimental groups predictably differed in their reasoning and choices and, if so, why, has been of little traditional concern to most behavioral decision researchers."); *see also* Gregory Mitchell, *Why Law and Economics' Perfect Rationality Should Not Be Traded for Behavioral Law and Economics' Equal Incompetence*, 91 GEO. L.J. 67, 86 (2002) ("[A] growing body of empirical research demonstrate[es] that individuals vary widely, and predictably, in their propensities to act rationally.").

229. *See* Augenblick & Rabin, *supra* note 227, at 959 fig.4.

230. *E.g.*, Sunstein, *supra* note 155, at 1845.

231. Bubb & Pildes, *supra* note 2, at 1625, 1636.

232. Here, Loewenstein and Chatter are referring to THALER & SUNSTEIN, *supra* note 45.

233. Loewenstein & Chatter, *supra* note 161, at 40; *see also* Bhargava & Loewenstein, *supra* note 6, at 399.

see that naïve present bias does not justify the essence of a mandate: preventing a person from changing to a different savings rate.

Evidence and experience suggest that the typical person discounts the future, either due to impatience or uncertainty. So, *A* values consumption in three years less than consumption today. If *A* has a fixed stock of 300 durable consumption goods to allocate over *A*'s expected lifetime of three years, and discounts the future at a rate of three percent annually, then in general, *A* will allocate more consumption to this year than year three—say 106 to year one, 100 to year two, and 94 to year three. This impatience, conventional discounting reviewed in Section IV.B.i, above, does not reflect present bias or any other behavioral bias, and is not grounds for a behavioral intervention. There is no evident irrationality or potential for inconsistent behavior over time.

If *B* also has a stock of 300 durable goods to allocate over the three years but *B* is afflicted with present bias, *B*'s allocation over the period is indeterminate under the current understanding of present bias. It now appears that present bias applies only, or primarily, to the immediate future—a day, a week. Not a month or a year.[234] Evidence on present bias suggests that if a person is to allocate consumption over each day of the person's life, today's consumption would be favored disproportionately over tomorrow's. But studies do not support a significant bias for consumption in ten days over consumption in ten years—other than the usual impatience recognized by mainstream economics. Moreover, behavioral economists have accepted that present bias plays no more than a minor role, if any, in allocations of funds, since money allocations rarely correspond to changes in immediate consumption in an interval relevant to present bias.[235]

A careful review of the behavioral literature reveals that the potential relevance of naïve present bias to savings is entirely due to the immediate cost of the effort entailed by enrolling. Suppose that an employee is compelled to enroll in a retirement plan and choose a savings rate shortly after starting a job. That may be paternalistic, because the employee may wish to delay a decision for sound reasons. There may be more pressing personal or professional matters to attend to and the new employee may wish to reflect on retirement planning when things settle down. The rationale for compulsion is that some employees would delay for reasons the planner does not respect, such as naïve present bias.

Once an employee has made a commitment to a savings program, the behavioral rationale for further intervention evaporates. Since present bias operates over a very short temporal range, it does not indicate that an employee

234. *See* DellaVigna, *supra* note 225, at 71–73; Ted O'Donoghue & Matthew Rabin, *Present Bias: Lessons Learned and To Be Learned*, 105 AM. ECON. REV. 273, 275 (2015).

235. O'Donoghue & Rabin, *supra* note 234, at 273–74.

will favor consumption over the first year over subsequent years. It is not plausible that a significant number of employees will be so consumed by present bias that they will allocate the bulk of their first year's salary to spending over the next few days or the next couple of weeks. Further, as noted above, present bias does not appear to play a significant role in allocation of money. The leading behavioral explanation of the potential connection between present bias and undersaving provides no grounds for second-guessing an employee's decision to choose a particular level of savings—only for pressing an employee to make a binding choice. There are so many potential behavioral explanations of savings behavior that it is probably impossible to rule out one that might justify mandatory savings. The key point is that there are accepted behavioral theories that do not justify aggressive interventions, so it is hardly evident that descriptive behavioral theories point strongly to any particular normative conclusions.

b. Mixed Evidence of Undersaving

Finally, there is only modest clarity and consensus among economists on the question whether people save sensibly for retirement. There is general agreement that given available data it is an inherently difficult matter to evaluate.[236] There are important studies, which do not purport to be definitive, suggesting that many people are not saving too little.[237] It does seem likely that "a significant group of households is not saving enough for retirement."[238] Many low-income individuals and households that save little for retirement, however, may not be in a position to save more.

C. Summary

This Part illustrates the thesis of the paper that the conclusions of positive models in behavioral economics and behavioral law and economics do not, in general, have clear or natural policy implications. The abundance of behavioral

236. "Field evidence on whether people save optimally is mixed. Some recent studies suggest saving is optimal; other recent research argues that consumers make fundamental mistakes regarding saving and typically undersave relative to optimal levels. One reason for mixed results is that econometric tests must make several auxiliary assumptions about the underlying model." Alexander L. Brown, Zhikang Eric Chua & Colin F. Camerer, *Learning and Visceral Temptation in Dynamic Saving Experiments*, 124 Q.J. ECON. 197, 197 (2009); James M. Poterba, *Saver Heterogeneity and the Challenge of Assessing Retirement Saving Adequacy*, 68 NAT'L TAX J. 377, 378 (2015).

237. John Karl Scholz, Ananth Seshadri & Surachai Khitatrakun, *Are American Saving "Optimally" for Retirement*?, 114 J. POL. ECON. 607, 607 (2006). *See generally* Michael D. Hurd & Susann Rohwedder, *Economic Preparation for Retirement*, *in* INVESTIGATIONS IN THE ECONOMICS OF AGING 1 (David Wise ed., 2012).

238. James M. Poterba, *Retirement Security in an Aging Population*, 104 AM. ECON. REV. 1, 14 (2014).

explanations for economic phenomena generates diverse, potentially incompatible remedies to policy targets. As an example, the level of retirements savings is the subject of considerable attention by behavioral theorists. They have proposed various interventions devised to enhance consumer welfare by increasing savings. Unfortunately, behavioral economics has not determined whether undersaving is the result of anchoring, inertia, present bias, some combination of these or other behavioral anomalies. Yet the proper solution would seem to turn on which account applies.

If inertia explains consumer savings behavior, efficiency could be promoted by requiring an explicit choice of a contribution rate for an employee pension plan. If anchoring influences consumer savings, that would not identify a single policy remedy because there is no consensus about the nature of anchoring. A possible implication is that the default rate for a retirement savings plan is zero. Another is that the default does not matter. A third possibility is that the best rate varies depending on the preferences, age, family size and financial status of the employee. Present bias does not necessarily distort consumer savings, and the form of present bias that might influence savings behavior, naïve present bias, does not justify mandating increased savings.

V. THE SHALLOW FOUNDATION OF BEHAVIORAL LAW & ECONOMICS

The status of behavioral law and economics cannot be divorced from the standing of behavioral economics, just as the stature of law and economics is correlated with the reputation of mainstream economics. While behavioral economics plays an influential role in the economics literature,[239] it is not clear that it has achieved quite the hegemony over economics[240] that behavioral law and economics claims over the law and economics space. Even many practitioners and proponents of behavioral economics, who view the movement as the most promising agenda for economics research, recognize that substantial, fundamental limitations remain to be overcome.

A. Lack of Unity

Significant criticisms of behavioral economics come from both supporters and opponents of its approach, and these supporters and opponents have

239. *See, e.g.*, *Press Release: The Prize in Economic Sciences 2017*, NOBEL PRIZE (Oct. 9, 2017), https://www.nobelprize.org/prizes/economic-sciences/2017/press-release/ [https://perma.cc/F586-CXPR] ("The Royal Swedish Academy of Sciences has decided to award the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2017 to Richard H. Thaler . . . 'for his contributions to behavioural economics.' ").

240. *See, e.g.*, Pope & Sydnor, *supra* note 13, at 800–01; Drew Fudenberg, *Advancing Beyond Advances in Behavioral Economics*, 44 J. ECON. LITERATURE 694, 696 (2006); Chetty, *supra* note 81, at 29.

varying degrees of respect for, or hostility toward, neoclassical economics: Critiques come from the left as well as the right. Opponents maintain that behavioral economics is less a coherent theory of economic behavior than a catalog of opposition to aspects of mainstream economics.[241] A generally supportive survey of the discipline concludes that "researchers should integrate the existing behavioral models and empirical results into a unified theory rather than a collection of interesting insights, allowing the enterprise to fulfill its enormous potential."[242]

Behavioral economics identifies various ways in which the assumptions of mainstream economics may be violated. The behavioral economics literature, however, is not based on a model incorporating all, or most, of these deviations. Instead, a common approach is to "modify one or two assumptions in standard [economic] theory in the direction of greater psychological realism."[243] This lack of a unified approach implicates more than aesthetics. The compatibility of the modified assumptions with the retained assumptions is rarely confirmed or even explored.[244] According to economist Drew Fudenberg, "[T]he usual change-one-assumption approach [of behavioral economics sometimes] overlooks the question of how the entire set of assumptions [conventional and behavioral] fits together."[245] Wolfgang Pesendorfer observes that while a behavioral model might plausibly assume "that agents make mistakes in information processing," contrary to the standard economic model, "[I]t seems even more plausible that the remainder of the standard model is also wrong

241. *See, e.g.*, David A. Skeel, Jr., *Behavioralism in Finance and Securities Law*, 21 SUP. CT. ECON. REV. 77, 82 (2014); Mark Kelman, *Behavioral Economics as Part of a Rhetorical Duet*: *A Response to Jolls, Sunstein and Thaler*, 50 STAN. L. REV. 1577, 1586 (1998) ("Again and again, the authors seem to confuse discordant observations for a countertheory . . . ."); Samuel Issachoroff, *The Difficult Path from Observation to Prescription*, 77 N.Y.U. L. REV. 36, 43–44, 45 (2002).

242. Steven D. Levitt & John A. List, *Homo Economicus Evolves*, 319 SCIENCE 909, 910 (2008); *cf.* Camerer & Loewenstein, *supra* note 13, at 14 ("But admittedly, a list of [mainstream utility] theory's failings is not an alternative theory. So far, a parsimonious alternative theory has not emerged to deal with all of these challenges to utility maximization.").

243. Camerer & Loewenstein, *supra* note 13, at 3; *see also* Nathan Berg & Gerd Gigerenzer, *As-If Behavioral Economics*: *Neoclassical Economics in Disguise?*, 18 HIST. ECON. IDEAS 133, 141 (2010) ("Many theoretical models in behavioral economics consist of slight generalizations of otherwise familiar neoclassical models, with new parameters in the objective function or constraint set that represent psychological phenomena or at least have psychological labels.").

244. Drew Fudenberg, *Advancing Beyond Advances in Behavioral Economics*, 44 J. ECON. LITERATURE 694, 702 (2006); Wolfgang Pesendorfer, *Behavioral Economics Comes of Age*: *A Review Essay on* Advances in Behavioral Economics, 44 J. ECON. LITERATURE 712, 714, 720 (2006); *see also id.* at 717 ("[R]arely do these theories ask whether—once the mistake is taken for granted—the original model makes sense.").

245. Fudenberg, *supra* note 244, at 703.

given that information is processed incorrectly."[246] In other words, adding a more realistic assumption that is incompatible with a theory's other assumptions is not a promising formula for a more realistic theory.

Behavioral economics also lacks a systematic theory that identifies the settings in which particular deviations should be incorporated into a model and in which they should be excluded.[247] It would be reasonable to expect an explanation not only for why a certain deviation is material in a given application, but also why numerous other deviations that have been observed are excluded from the model.

B. Statistical Implications of Abundant Fund of Explanatory Effects

Matthew Rabin, an influential practitioner of behavioral economics, suggests that it is time for the field to pivot from its focus on identifying behavior that is contrary to the assumptions of mainstream economics.[248] Instead, he maintains, it should concentrate on incorporating behavioral observations into models that, in a variety of settings, are superior to mainstream economic models.[249] According to Rabin, this requires developing models that can predict economic agents' behavior outside of a narrow context, without using elements that can be adjusted to explain almost any set of data.[250]

Rabin warns that in some cases behavioral models provide worse forecasts of economic agents' behavior than mainstream models "outside of very circumscribed settings"[251] and, in other cases, behavioral models "seem likely to destroy huge swathes of realistic economic predictions for the sake of explaining behavior in a particular domain or dataset."[252] While Rabin acknowledges the work of researchers who concentrate on citing weaknesses in the foundations of economic theory, he suggests that the success of the field rests on its capacity "to formulate credible and systematic alternative[]" economic models.[253]

It might seem unremarkable that an explanation of a phenomenon should incorporate all relevant influences—as many as necessary. Particularly in fields that rely heavily on statistical inference from nonexperimental evidence, however, the theory with the largest stable of potential influences is not

246. Pesendorfer, *supra* note 244, at 718.
247. Fudenberg, *supra* note 244, at 697.
248. Rabin, *supra* note 13, at 617–18.
249. *Id.*
250. *Id.* at 619, 619 n.7.
251. *Id.* at 622.
252. *Id.*
253. *Id.* at 617.

necessarily the most fruitful one. Statisticians recognize that in any given data set, "one can *always* find *apparent* structures."[254] These patterns, however, may represent random elements of the data: "Chance is one source of structures in data which have no matching underlying 'reality.' "[255]

The greater the number of potential explanations for a phenomenon, the greater the risk of perceiving spurious connections between proposed causes and effect. Suppose a researcher starts with a large number of potential explanatory variables *a, b, c, d, . . . z*, to explain the behavior of a measured phenomenon, *X*. There is a single data set available, and the researcher determines which explanatory variables have a statistically significant relationship to *X*, say *a*, *d*, *q,* and *w*. The researcher then drops consideration of the other, statistically insignificant factors, *b, c, e*, etc., and estimates the relationship between *a*, *d*, *q,* and *w* to *X*. This is a standard protocol in conducting empirical research in the social sciences.[256] Statistician David Freedman has shown that if the number of potential (original) explanatory variables is comparable to the number of observations in the data set, and the potential explanatory variables are not highly correlated, common estimation techniques may identify a small number of ostensibly statistically significant factors, and by conventional statistical measures, the theory will "appear to have a lot of explanatory power"[257] even where all the data are independent random variables ("In short, [the data] was pure noise.").[258]

The introduction to a collection of papers in behavioral economics illustrates the nature of the risk posed in this regard. The editors note, "Theories in behavioral economics also strive for *generality*—e.g., by adding only one or two parameters to standard models."[259] This approach does not signify merely a modest expansion in the model's degrees of freedom, however, if the program does not significantly limit the number of candidate parameters[260]—

254. David J Hand, Gordon Blunt, Mark G. Kelly & Niall M. Adams, *Data Mining for Fun and Profit*, 15 STAT. SCI. 111, 111 (2000).

255. *Id.* at 111–12; *cf.* Andrew W. Lo & A. Craig MacKinlay, *Data-Snooping Biases in Tests of Financial Asset Pricing Models*, 3 REV. FIN. STUD. 431, 432 (1990) ("[T]he more scrutiny a collection of data is subjected to, the more likely will interesting (spurious) patterns emerge.").

256. *See* Clifford M Hurvich & Chih-Ling Tsai, *The Impact of Model Selection on Inference in Linear Regression*, 44 AM. STAT. 214, 214 (1990); Edward E. Leamer, *Let's Take the Con Out of Econometrics*, 73 AM. ECON. REV. 31, 32 (1983).

257. David A. Freedman, *A Note on Screening Regression Equations*, 37 AM. STAT. 152, 152 (1983). *See generally* ALAN MILLER, SUBSET SELECTION IN REGRESSION (2d ed. 2002).

258. Freedman, *supra* note 257, at 153.

259. Camerer & Loewenstein, *supra* note 13, at 4.

260. Levitt and List, who believe that "[e]conomic models can benefit from incorporating insights from psychology," are skeptical of those approaches to behavior economics that are based on

statistically, there is a substantial difference between adding only a couple of variables from a fixed list of two and from a potential list of a dozen or more.

Disciples of Henry Simon are among the most forceful critics of mainstream behavioral economics in this respect. Gerd Gigerenzer suggests that the principal reason for a degree of perceived empirical success by behavioral economics is that it employs a much larger number of explanatory variables, guaranteeing more favorable statistical results for any fixed data set, but yielding disappointing projections when confronted with new data:

> Cumulative prospect theory, inequity-aversion theory, and hyperbolic discounting are all as-if theories. They retain the expected utility framework and merely add free parameters with psychological labels . . . . The resulting theories tend to be more unrealistic than the expected utility theories they are intended to improve on. Behavioral economics has largely become a repair program for expected utility maximization.[261]

Gigerenzer also observes that initially behavioral economists maintained that their agenda was merely descriptive. For example, in a 1986 paper, Amos Tversky and Daniel Kahneman announced, "Prospect theory differs from the other models mentioned above in being unabashedly descriptive and in making no normative claims,"[262] while in a 1991 book, Richard Thaler explained, behavioral decision research "is simply intended to show that for *descriptive* purposes, alternative models are sometimes necessary."[263] So Gigerenzer (writing with Nathan Berg) is exasperated to find that behavioral economics has moved on to maintain, on the basis of what the authors consider dubious statistical reasoning, that it has supplied "prima facie evidence of pathological decision making in need of correction through policy intervention."[264]

"[o]bserving an unexpected pattern of behavior" and then "look[ing] for a psychological theory consistent with that behavior." In their view, "Given the wide array of psychological explanations from which to choose . . . a researcher undertaking such a task has virtually unlimited freedom to explain any behavior ex post facto." Levitt & List, *supra* note 242, at 909; *see also* Bernheim, *supra* note 174, at 39 ("In principle, the proliferation of theories could be scientifically healthy, but only if there is also a winnowing. Unfortunately, precious little winnowing occurs. In behavioral economics, theories are hard to kill."); Mullainathan, Schwartzstein & Congdon, *supra* note 186.

261. Gigerenzer, *supra* note 49, at 38; *see also* Berg & Gigerenzer, *supra* note 243, at 139; Gregory Mitchell, *Alternative Behavioral Law and Economics*, *in* THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 167, 179 (Eyal Zamir & Doron Teichman eds., 2014).

262. Tversky & Kahneman, *supra* note 151, at S272.

263. RICHARD THALER, QUASI RATIONAL ECONOMICS 138 (1991) (emphasis added); *see also* DellaVigna, *supra* note 225, at 34 ("Behavioral economists in the first 25 years of history of the discipline stayed largely away from policy recommendation and controversial welfare statements. The emphasis was instead on deriving solid facts, and behavioral models to understand them.").

264. Berg & Gigerenzer, *supra* note 243, at 147.

Ken Binmore and Avner Shaked share Rabin's and Gigerenzer's concern about a misguided emphasis in behavioral economics on superficial empirical successes with fixed data sets. They remark that a sufficiently complicated geocentric description of celestial mechanics is able to fit the movement of the planets better than the heliocentric elliptical orbits described by Johannes Kepler. They contend, however, that "the scientific gold standard is prediction,"[265] and that behavioral economics has not proved its superiority on that front:

> The history of non-expected utility theory provides a good example. Kahneman and Tversky . . . showed that Von Neumann and Morgenstern's theory of expected utility is a bad predictor in the laboratory. So various alternative theories were proposed that fitted the data better than expected utility theory *when their additional parameters were suitably chosen*. This work generated much enthusiasm, and many applied papers were written incorporating one or another nonexpected utility theory. But we now have two authoritative papers . . . showing that, when like is compared with like, all extant theories predict badly—but orthodox expected utility theory arguably performs as well as any rival.[266]

Behavioral economics research encompasses numerous reports of results rejecting principles of neoclassical economics, but the field seems to be less clear about what sort of behavior would be inconsistent with behavioral economics.[267]

It is noteworthy that Rabin, Gigerenzer and Binmore and Shaked have been active in developing alternatives to mainstream economics grounded in psychology; they are committed to advancing economic understanding in this fashion, but they are candid in recognizing the limited successes of a behavioral agenda to date.

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265. Ken Binmore & Avner Shaked, *Experimental Economics*: *Where Next?*, 73 J. ECON. BEHAV. & ORG. 87, 89 (2010); *cf.* RONALD N. GIERE, EXPLAINING SCIENCE: A COGNITIVE APPROACH 194 (1988) ("A second reason [for not taking Dirac phenomenology very seriously] is simply that the phenomenological approach uses roughly a dozen adjustable parameters. The belief is widespread that with that many free parameters, one could get a good fit with just about any model."); Pesendorfer, *supra* note 244, at 716 ("Ultimately, [prospect] theory allows too many degrees of freedom.").

266. Binmore & Shaked, *supra* note 265, at 90 (emphasis added).

267. *Cf.* Gideon Keren, *A Tale of Two Systems*: *A Scientific Advance or a Theoretical Stone Soup? Commentary on Evans & Stanovich (2013)*, 8 PERSP. ON PSYCH. SCI. 257, 260 (2013) ("[A] good theory must also be able to disallow events from happening . . . .").

C. Realism & Research in Psychology

The mantra of behavioral economics and behavioral law and economics is *more realistic*: the assumptions are more realistic, grounded as they are in psychological science. According to Colin Camerer, "Behavioral economics can . . . provide a more realistic and thoughtful basis for making economic policy."[268] Ryan Bubb and Richard Pildes contend,

> Social scientists have systematically documented the many ways that human behavior differs from the rational behavior assumed by neoclassical economics. By incorporating *more realistic* models of human behavior based on these findings, the emerging field of [behavioral law and economics] has the potential to improve dramatically the predictions and prescriptions of social-scientifically oriented legal scholars and policy-oriented social scientists.[269]

According to Avishalom Tor, the behavioral approach offers "a scientific empirically-based understanding of" human behavior that must "provide better predictions, and consequently more effective prescriptions, for legal policy."[270]

Donald Langevoort describes behavioral economics as "a theoretical construct built upon a basis of significant scientific support."[271] In *Regulation for Conservatives*, five prominent behavioral scholars maintain, "Behavioral economics challenges all the[] assumptions [of neoclassical economics] and attempts to replace them with more realistic approaches based on scientific findings" from cognitive psychology and related fields.[272] The behavioral

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268. Colin Camerer, *Behavioral Economics*: *Reunifying Psychology and Economics*, 96 PROC. NAT'L ACAD. SCI. 10,575, 10,577 (1999).

269. Bubb & Pildes, *supra* note 2, at 1601–02 (emphasis added); *see also id.* at 1603; Christine Jolls, Cass R. Sunstein & Richard Thaler, *Theories and Tropes*: *A Reply to Posner and Kelman*, 50 STAN. L. REV. 1593, 1605–06 (1998); Lawrence A. Cunningham, *Behavioral Finance and Investor Governance*, 59 WASH. & LEE L. REV. 767, 768 (2002); Matthew Rabin, *Psychology & Economics*, 36 J. ECON. LITERATURE 11, 11 (1998); Korobkin & Ulen, *supra* note 54, at 1059; Thaler, *supra* note 175, at 1577, 1579; Stephanie Pladmondon Bair, *Malleable Rationality*, 79 OHIO STATE L.J. 17, 19 (2018).

270. Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline and Legal Policy*, 101 MICH. L. REV. 482, 566 (2002); Avishalom Tor, *A Behavioral Approach to Antitrust Law and Economics*, 14 CONSUMER POL'Y REV. 18, 18 (2004); *see also* Gary Blasi & John T. Jost, *System Justification Theory and Research: Implications for Law, Legal Advocacy and Social Justice*, 94 CALIF. L. REV. 1119, 1120–21 (2006); Tomer Broude, *Behavioral International Law*, 163 U. PA. L. REV. 1099, 1102, 1112–13, (2015); Oren Bar-Gill, *Algorithmic Price Discrimination When Demand Is a Function of Both Preferences and (Mis)perceptions*, 86 U. CHI. L. REV. 217, 245 (2019).

271. Donald C. Langevoort, *Selling Hope, Selling Risk*: *Some Lessons for Law from Behavioral Economics about Stockbrokers and Sophisticated Customers*, 84 CAL. L. REV. 627, 633 n.11 (1996).

272. Camerer, Issacharoff, Loewenstein, O'Donoghue & Rabin, *supra* note 116, at 1215.

economics literature contains numerous representations that behavioral economics is built on a more reliable scientific foundation:

> All economics rests on *some* sort of implicit psychology. The only question is whether the implicit psychology in economics is good psychology or bad psychology. We think it is simply unwise, and inefficient, to do economics without paying *some* attention to good psychology.[273]

As discussed in Section III.B, above, no principle of scientific investigation indicates that greater realism enhances the fitness of a theory. Indeed, leading practitioners of behavioral economics recognize that a high degree of behavioral realism is neither feasible nor desirable in economic modeling. In an article in the *Journal of Marketing Research*, Colin Camerer and his coauthors explain:

> A common complaint of psychologists about behavioral economics is that the models do not capture the "right" psychological processes underlying agents' choices. Even these critics should concede that these models are more psychologically realistic than the simpler rational theories they extend. Small steps in the right direction are better than none. There are three reasons we are a little pessimistic about the ability of newer theories to incorporate even more psychological nuance and still deliver predictions.[274]

The authors concede, "[T]he optimal level of psychology depends on its marginal value of predictive power and the associate marginal costs of model complexity,"[275] which is incompatible with their blanket principle that "small steps in the right direction are better than none." The optimal level of psychology might be modest. It is generally accepted that economics already, inevitably, includes some assumptions about human psychology. Behavioral economics might turn out to incorporate more appropriate elements of psychology than neoclassical economics. But that is not because it is more realistic—which is no more than a marketing catchphrase.

Moreover, the reliability of psychological insights imported into behavioral economics is open to question. While there is an extensive literature on the difficulty of obtaining satisfactory empirical results in economics,[276] now the

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273. Camerer & Loewenstein, *supra* note 13, at 42.

274. Teck H. Ho, Noah Lim & Colin F. Camerer, *How "Psychological" Should Economic and Marketing Models Be?*, 43 J. MKTG. RSCH. 341, 343 (2006).

275. *Id.* at 344.

276. *See, e.g.*, John Rust, *The Limits of Inference with Theory: A Review of Wolpin*, 52 J. ECON. LITERATURE 820, 820 (2013); Michael P. Keane, *Structural vs. Atheoretic Approaches to Econometrics*, 156 J. ECONOMETRICS 3, 3 (2010).

dependability of published results in psychology has been called into question by influential members of that field.

A recent examination of research practices in psychology maintains, "[M]any psychological scientists manipulate their data [in] ways that artificially increase the likelihood that they will find evidence to support an effect that the scientists want them to support."[277] The editor of the journal *Psychological Science* concludes: "It seems likely that psychology journals have too often reported spurious effects."[278] The editor of another psychology journal observes,

> Recent analyses establish in a very convincing manner that the proportion of positive results reported in the psychological literature far exceeds what would be expected given the low power of the typical study published in psychology. Indeed, Pashler and Harris estimated that 56% of published findings are false positives, whereas Ioannidis argued that the proportion of false positives could reach as high as 95%, assuming even modest levels of publication bias.[279]

Soul-searching among psychologists seems to have increased in the wake of a recent attempt to reproduce the results of a large number of published studies in the field. Out of 100 studies selected for reexamination, the replication project noted, "Ninety-seven percent of the original studies had significant results." After attempting to "recreate the conditions believed [to be] sufficient to obtaining [the] previously observed finding[s]," the project found that only "[t]hirty-six percent of replications had significant results."[280] There

277. Eli J. Finkel, Paul W. Eastwick & Harry T. Reis, *Best Research Practices in Psychology*: *Illustrating Epistemological and Pragmatic Considerations with the Case of Relationship Science*, 108 J. PERSONALITY & SOC. PSYCH. 275, 275 (2015).

278. D. Stephen Lindsay, *Replication in Psychological Science*, 26 PSYCH. SCI. 1827, 1827 (2015).

279. M. Lynne Cooper, *Editorial: Personality Processes and Individual Differences*, 110 J. PERSONALITY & SOC. PSYCH. 431, 431 (2016) (citations omitted); *cf.* Rubenstein, *supra* note 222, at 246–54.

280. Open Science Collaboration, *Estimating the Reproducibility of Psychological Science*, 349 SCIENCE 943, 943 (2015); Joseph P. Simmons, Leif D. Nelson & Uri Simonsohn, *False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant*, 22 PSYCH. SCI. 1359, 1359 (2011); Uri Simonsohn, Leif D. Nelson & Joseph P. Simmons, *P-Curve*: *A Key to the File-Drawer*, 143 J. EXPERIMENTAL PSYCH.: GEN. 534, 534 (2014); Annie Franco, Neil Malhotra & Gabor Simonovits, *Publication Bias in the Social Sciences*: *Unlocking the File Drawer*, 345 SCI. 1502, 1502 (2014); Uri Simonsohn, *Small Telescopes: Detectibility and the Evaluation of Replication Results*, 26 PSYCH. SCI. 559, 559 (2015); Harold Pashler & Christine R. Harris, *Is the Replicability Crisis Overblown? Three Arguments Examined*, 7 PERSPECTIVES ON PSYCH. SCI. 531, 531 (2012); *see also* Susan Dominus, *When the Revolution Came for Amy Cuddy*, N.Y. TIMES MAG., Oct. 22, 2017, at 29, 50.

is not yet a consensus in the profession about how to interpret these findings.[281] These results, and related concerns about such procedures and publication protocols, however, have promoted scrutiny of potential biases and weakness in the criteria for publication in psychology.

The fact that these concerns are taken seriously leaves open the possibility that improvements are underway. The problems identified in published result in psychology do not establish conclusively that effects that have been reported to exist do not exist. But there appears to be solid grounds to be skeptical about the quality of evidence supporting many reported effects in psychology—or at least how much certain effects can be expected to apply outside of a specific context. These concerns also indicate that legal scholarship applying results from the behavioral sciences requires technical sophistication and experience to properly evaluate the quality of the relevant literature.

A few years before these issues came to the forefront of psychology, Professor Mitchell conjectured, "So long as social and cognitive psychology maintains a 'negativistic paradigm' that focuses on finding bias and error . . . we can expect . . . publication [bias] against reports of rational behavior."[282] At that time, Professor Prentice maintained in response, "Fortunately, there is little firm evidence that the . . . problem is significant," and, in any event, many behavioral biases "have been demonstrated in literally hundreds of published studies."[283] Now, although the matter is not settled, there is manifest evidence of the potential significance of the problem. Moreover, in light of recent scrutiny, the statistical relevance of "literally hundreds of published studies" is dubious. It would not be reassuring to learn that literally hundreds of published studies supported the effectiveness of some sorts of

281. *See, e.g.*, Peter Reuell, *Researchers Overturn Landmark Study on the Replicability of Psychological Science*, HARV. UNIV. (Mar. 4, 2022), http://projects.iq.harvard.edu/files/psychology-replications/files/harvard_press_release.pdf?m=1456973687 [https://perma.cc/DLP8-CUYX]; C.J. Anderson, Štěpán Bahník, Michael Barnett-Cowan, Frank A Bosco, Jesse Chandler, Christopher R Chartier, Felix Cheung, Cody D Christopherson, Andreas Cordes, Edward J Cremata, Nicolas Della Penna, Vivien Estel, Anna Fedor, Stanka A Fitneva, Michael C Frank, James A Grange, Joshua K Hartshorne, Fred Hasselman, Felix Henninger, Marije van der Hulst, Kai J Jonas, Calvin K Lai, Carmel A Levitan, Jeremy K Miller, Katherine S Moore, Johannes M Meixner, Marcus R Munafò, Koen I Neijenhuijs, Gustav Nilsonne, Brian A Nosek, Franziska Plessow, Jason M Prenoveau, Ashley A Ricker, Kathleen Schmidt, Jeffrey R Spies, Stefan Stieger, Nina Strohminger, Gavin B Sullivan, Robbie C M van Aert, Marcel A L M van Assen, Wolf Vanpaemel, Michelangelo Vianello, Martin Voracek & Kellylynn Zuni, *Response to Comment on "Estimating the reproducibility of psychological science*," 351 SCI. 1037, 1037 (2016).

282. Mitchell, *supra* note 228, at 1967 (discussing file drawer problem).

283. Robert A. Prentice, *Chicago Man, K-T Man, and the Future of Behavioral Law and Economics*, 56 VAND. L. REV. 1663, 1694–95 (2003).

medical procedures and medications in the face of evidence that testing protocols were unsound.[284]

D. Summary

The normative agenda of behavioral law and economics is undermined by two critical limitations, both stemming from its reliance of behavioral economic models. The first problem, examined in Parts III and IV, is that behavioral science, despite its use of loaded terminology, does not supply clear policy implications. The same could be said, by the way, about oceanography, chemistry, and mainstream economics, all of which can still aspire to inform—but not dictate—public affairs. The second dilemma, explored in this Part, is the immature state of behavioral economics, which also diminishes the value of behavioral science and behavioral law and economics as policy guides. [285]

This Part identifies three key weaknesses in the current state of behavioral economics: (1) it remains largely a confederation of incompatible models united by deviations from mainstream economics in one or two dimensions, (2) it depends on an indefinite stash of potential explanatory variables allowing a model to fit almost any set of observations and (3) its pretension to a more scientific account of economic actors' motivations fails to confront the opportunities for publication bias in psychological research. To be sure, some behavioral scientists acknowledge the immaturity of the discipline and carefully pursue refinements. Not all practitioners of behavioral law and economics are as circumspect about the strength of their case.

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284. *Cf.* Aaron E. Carroll, *Congratulations. Your Study Went Nowhere*, N.Y. TIMES (Sept. 24, 2018), https://www.nytimes.com/2018/09/24/upshot/publication-bias-threat-to-science.html [https://perma.cc/VA9H-WJKR] ("Even thorough reviews of the literature would find that nearly all studies were positive, and those that were negative were ignored. This is one reason you wind up with 10 percent of Americans on antidepressants when good research shows the efficacy of many of the drugs is far less than believed.").

285. There is also a literature exploring the implications of behavioral economics paternalism for "liberty and individual autonomy," and emphasizing the implications of behavioral insights on the competence of policymakers. *See, e.g.*, Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law and Economics: Its Origins, Fatal Flaws, and Implications for Liberty*, 106 NW. U. L. REV. 1033, 1088 (2012) (concluding that behavioral policies "pose a significant risk of reducing both our welfare and our liberty"); *id.* at 1064 (discussing risk of biased regulators); MARIO J. RIZZO & GLEN WHITMAN, ESCAPING PATERNALISM 311 (2020) ("[W]e show how policymakers who are cognitively biased . . . may adopt even worse policies."); *id.* at 420 ("Sunstein and Thaler fail to consistently support freedom of choice.").

VI. CONCLUSION

The literature of law and economics and behavioral law and economics regularly suggests that various normative propositions readily follow from positive findings in their fields. These suggestions are, in general, untenable. Confounding positive and normative principles is encouraged by the common practice of employing parallel models for positive and normative economic analysis. While this practice may yield insights, an important element of the normative analysis is routinely overlooked: independently assessing the suitability of employing the positive model for normative applications.

The fitness of a theory depends on its purpose, and a model adequate for positive investigations may be unsatisfactory for establishing normative conclusions. Since the purposes of positive and normative models are often significantly different, the criteria for evaluating the models are unlikely to be identical. Civil engineers may place more weight on safety and less on elegance than scientists. A geriatrician, pediatrician, and veterinarian might each evaluate heart medication differently. Economists may consider the generality of a theory more significant for descriptive purposes but regard a more detailed accounting for the effects of a policy on the poor to be of greater importance in a normative model.

To assess recent claims that behavioral science, properly understood, often provides clear policy implications, such as replacing nudges with mandates, I examine proposed behavioral interventions to increase household retirement savings. The existence of alternative descriptive accounts of economic behavior with divergent normative corollaries undermines the presumption that a useful positive model is also a natural and suitable one for normative analysis.

So behavioral analysis does not endorse a distinct policy agenda (nor does descriptive law and economics). There are also reasons to reserve judgment whether "behavioral law and economics is the future of law and economics, and the future of legal policy analysis more generally."[286] The limitations of the

286. Russell Korobkin, *Daniel Kahneman's Influence on Legal Theory*, 44 LOY. U. CHI. L.J. 1349, 1356 (2013); *cf.* Kobi Kastiel & Yaron Nili, *In Search of the "Absent" Shareholders*: *A New Solution to Retail Investors' Apathy*, 41 DEL. J. CORP. L. 55, 104 (2016) ("Behavioral economics has become the new hope."); Broude, *supra* note 270, at 56 ("The incorporation of insights from cognitive psychology and behavioral economics into the study of international law is a difficult but necessary next step in the evolution of a legal discipline."); Jacob Goldin, *Which Way to Nudge*: *Uncovering Preference in the Behavioral Age*, 125 YALE L.J. 226, 229 (2015) ("[T]he old [law and economics] view is strikingly out of date."); Avishalom Tor, *The Next Generation of Behavioural Law and Economics*, *in* EUROPEAN PERSPECTIVES ON BEHAVIOURAL LAW AND ECONOMICS 17, 17 (Klaus Mathis ed., 2015) ("In terms of both impact and potential, together with the empirical legal studies movement, the behavioural approach to law and economics is perhaps the most significant development in legal scholarship in recent decades.").

current state of behavioral economics that are recognized by its practitioners are often overlooked in behavioral law and economics.

The refrain that behavioral law and economics is more realistic is extravagant. Realism is not a talisman in scientific investigation. The appropriate degree of realism is tailored to the application, balanced with simplicity, empirical adequacy, generality, and other scientific virtues. Further, there is evidence that a significant proportion of results reported in psychological research is spurious.

The ostensible empirical competence of behavioral research may be attributable to the indeterminate number of behavioral parameters[287] that are available to explain economic phenomena. Even if only a modest number of additional parameters are used in a specific behavioral model, when there is a large universe of potential explanatory variables, conventional estimation procedures may indicate a specious statistically significant relationship between the variables in the final model.

287. *See, e.g.*, Chetty, *supra* note 81, at 29.