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# Introduction

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## 1. THE ROLE OF BEHAVIORAL ECONOMICS IN LAW

The subfield of behavioral economics, while still quite young, has made important contributions to our understanding of human behavior. Through a cycle of theory development and empirical investigation, work in behavioral economics taps into lessons from psychology with the goal of improving economics' predictive power. While the focus diverges from that of neoclassical economics, the best work in both subfields has much in common. The most useful insights are produced by faithfully applying the scientific method—the development of explanations of behavior through repeated cycles of data collection and hypothesis testing. Gains in knowledge are incremental, and skepticism is encouraged until assumptions built into theory are able to hold up against data collected in multiple environments. In addition, both subfields strive to integrate relevant concepts—e.g., psychological concepts in the case of behavioral economics—into models that produce well-defined, testable, and falsifiable predictions.

While some have characterized the mission of behavioral economics as an attempt to abandon rational choice theory and replace it with more realistic assumptions that reflect human fallibility, many behavioral economics models that find strong support in existing data assume a set of rational but non-standard preferences (Zeiler, forthcoming). In fact, a great many works in behavioral economics contain multiple theories able to explain large swaths of existing data, some of which assume individuals make systematic, predictable mistakes, while others assume the error-free expression of non-standard, rational preferences. The empiricist's role is to discover ways to separate the theories by developing or observing environments in which the theories lead to divergent predictions. In some literatures models that assume mistake-making are in the lead, and in others models assuming non-standard preferences seem to best explain existing data.

This variation in behavioral economics models and the nature of the scientific method have important implications for legal scholars who import economic theory into legal contexts. First, importers will want to avoid drawing strong descriptive and normative claims from any one empirical study or economic theory. Sophisticated importation recognizes that very few (if any) literatures have converged on a single model to explain observed choices and that they are in constant flux. Second, and for these reasons, keeping up to date on the state of relevant literatures is vital for effective importation of economics into law. Readers of legal scholarship are best armed when they have a complete picture of the state of the science being applied. Third, importers should have a clear sense of the nature of the models they apply. More specifically, they should avoid mistaking models that assume non-standard preferences as theories of error, and vice versa. The chapters included in this volume are intended, in part, to help legal scholars effectively draw on the important findings from the field of behavioral economics.

## 2. HANDBOOK CONTRIBUTIONS

The purpose of this volume is to assist both researchers and those who apply the research to legal issues in keeping up with the latest developments in the literature. The volume is by no means comprehensive. No such volume could be given the huge numbers of contributions made to the vast literatures each year. The collection of chapters, written by leaders in the field, is designed to provide insights about the foundations of the field, to catch us up on recent developments in the fields of antitrust, consumer finance, crime and punishment, torts, happiness and trust research, experiments, and neuroeconomics, and to demonstrate methods for effective original research. The volume also includes words of caution related to abstraction relevant for both researchers and applicers, and offers some ideas about steps that researchers and the research consumer communities can take to push the field of behavioral law and economics forward.

### 2.1 Foundations

The two opening chapters of the volume set the stage by examining the foundations of behavioral law and economics.

In “Conceptual Foundations: A Bird’s-eye View,” Jonathan Baron and Tess Wilkinson-Ryan outline the field’s conceptual foundations. They concentrate on the behavioral concepts imported into the field from psychology and experimental economics, and survey the normative models, descriptive theories, and prescriptive approaches featured in behavioral law and economics research. They endeavor to point out common themes in the research in an effort to tie together various bunches of findings and counter the criticism that the field lacks the cohesion of standard law and economics.

In “Behavioral Probability,” Alex Stein challenges the acceptance by behavioral law and economics of mathematical (Bayesian) probability as the benchmark for rationality in the study of decision-making under uncertainty. Instead, Stein defends as rational the use of common-sense reasoning that generally aligns with causative (Baconian) probability. After making the case against mathematical probability and in favor of causative probability, he revisits and critiques the foundational experiments, carried out by Daniel Kahneman, Amos Tversky, and others, that behavioral law and economics scholars embrace as evidence of people’s probabilistic irrationality and on which they rely to make the case for legal and regulatory interventions designed to correct people’s probabilistic mistakes.

### 2.2 Antitrust and Consumer Finance

The next three chapters touch on the areas of antitrust and consumer finance.

In “Exclusionary Vertical Restraints and Antitrust: Experimental Law and Economics Contributions,” Claudia Landeo reviews theoretical and experimental literatures related to the long-debated question of whether vertical restraints—arrangements between firms up and down the supply chain designed to restrict the conditions under which the firms are allowed to transact with each other and with third parties—add value or mitigate the benefits we get from robust competition in markets. If regulators see these vertical arrangements as threats to consumer surplus when they actually make consumers better

off, regulation might reduce social welfare in an effort to increase it. As Landeo explains, understanding the impacts of these arrangements is vitally important to our efforts to best regulate them, if they are in fact in need of regulation at all.

The chapter begins with theory. Economists have developed various theories to aid in our understanding of the impacts of vertical arrangements. The theoretical literature teaches us that we should expect different outcomes depending on the assumptions employed in the models. Some theories suggest that under certain conditions vertical integration can increase consumer surplus by allowing firms along the supply chain to “exploit technological complementarities, reduce transaction costs . . . , gain control over production processes and preclude opportunistic behavior, overcome informational imperfections, and internalize externalities.” On the other hand, leverage theory predicts that firms will use exclusionary arrangements to increase their market power in other markets or to take advantage of their monopoly positions. These theories are key to understanding potential motivations behind exclusionary arrangements because motivations drive our regulatory intuitions.

Despite a robust theoretical literature, Landeo points out that regulators tend not to make use of the insights from this literature. She attributes this to the lack of empirical verification of the theoretical models. Empirical verification using field data is difficult given the incentives for parities to vertical arrangements to keep them private. Landeo claims that new experimental tests of the theories help to fill this void. After helpfully describing the main features of sound experimental studies, Landeo describes a number of experimental studies designed to test theoretical predictions of behavior and outcomes in the presence of contractual vertical restraints. Landeo argues that this evidence helps us to sort out which theories are best at informing us about the motivations behind such restraints and should compel regulators to lean toward the set of theories best supported by the experimental literature. Experiments can also be useful in guiding regulators towards the environments that are most likely to be negatively impacted by vertical restraints (e.g., production processes with relatively large fixed costs, relatively small technological advantages of potential entrants, and relatively large economies of scale).

So what does behavioral economics have to do with it? One of the main contributions of the experimental literature in this arena is the discovery, through experiments, of previously non-modeled factors that seem to influence behavior in settings that incorporate as many assumptions of the standard theoretical models as possible. These factors include decision errors possibly resulting from cognitive limitations, preferences over fairness and reciprocity that might vary by levels of social proximity, and beliefs over the intentions of other actors to cause monetary harm. Although the tested theories do not include assumptions related to these factors, some experimental results suggest that adding them will increase the models’ predictive value. Once hints of these factors appear, models can be revised and then retested using experiment design techniques to determine the roles these factors play in decision-making. Experiments testing models of competition are but one example of ways that empirical investigations can uncover anomalies that compel theorists to integrate concepts from psychology into our standard economic models.

In “Balancing Act: New Evidence and a Discussion of the Theory on the Rationality and Behavioral Anomalies of Choice in Credit Markets,” Marieke Bos, Susan Payne Carter, and Paige Marta Skiba reflect on and contribute to the existing literature on the choice among traditional forms of credit and non-traditional forms such as payday loans.

Millions of people in the United States use payday loans, despite the fact that interest and default rates on payday loans are high relative to those on bank loans, credit card loans, and other traditional forms of credit. For these and other reasons, federal and state regulators have taken or are poised to take steps to limit or ban payday loans. The sixty-four million dollar question is whether such regulatory action is warranted.

According to the standard rational actor model, borrowers choose the cheapest form of credit available to them (rational take-up) and have no difficulty implementing their optimal borrowing and repayment choices over time (time consistency). Bos, Carter, and Skiba argue that the evidence suggests that borrowers generally are not time consistent—they tend to underpredict their intensity of borrowing and overpredict their ability to repay—which may justify regulatory action. However, say the authors, the weight of the existing evidence also suggests that borrowers generally are rational in their take up of credit, including with respect to their choices among forms of credit, and they argue that regulators should take this evidence into account before they ban or severely limit access to any one type of credit.

Bos, Carter, and Skiba add to this literature by introducing new data on observed choices of customers switching to pawnshop loans when payday loans are not available. They exploit a discontinuity in the lending decisions of the payday lender to draw inferences about a causal relationship between the availability of a payday loan and the subsequent decision to take out a pawnshop loan. The discontinuity is based on the payday lender's credit score threshold: below the threshold applicants are denied a payday loan, and above the threshold applicants are granted a loan. On the assumption that borrowers immediately above and below the threshold are otherwise similar, they analyze the effect of being denied a payday loan on the subsequent decision to take out a pawnshop loan. They find that people turn to pawnshop loans when they lack access to payday loans. Citing related work that suggests that people also turn to auto title loans when payday loans are unavailable, the authors conclude that regulators need to consider the potential substitution effects of restricting access to payday credit.

In "The Effect of Advertising on Home Equity Credit Choices," Sumit Agarwal and Brent Ambrose examine the effect of direct mail advertising (also known as junk mail) on the choice between two types of home equity loans: variable-rate revolving loans and fixed-rate term loans. Economists have long studied the impact of advertising on consumers' behavior. They have also extensively studied borrowers' choices over home loan contracts. Agarwal and Ambrose, however, are the first to combine these lines of inquiry and examine the impact of lender advertising on home equity credit choices.

Agarwal and Ambrose consider three theories of how advertising affects choices: the persuasive, informative, and complementary theories. Under the persuasive theory, advertising alters consumers' preferences. Under the informative and complementary theories, advertising does not alter preferences; instead it either provides consumers with information and lowers their search costs (informative theory) or encourages consumers to satisfy their preferences (complementary theory).

Agarwal and Ambrose exploit a natural experiment arising from a home equity lender's marketing campaign that allows them to distinguish between walk-in (WI) applicants, who were not targeted by the lender's marketing campaign, and direct mail (DM) applicants, who were targeted with a direct mail solicitation advertising either a revolving loan or a term loan. By examining the choices of the DM applicants relative to the choices made

by the WI applicants, and by using the bank's pricing algorithm to precisely calculate the loan offer rate for the product not selected, the authors are able to test the persuasive view versus the informative or complementary view of advertising. If the lender's direct mail campaign is persuasive, then the authors should observe differences in how the DM and WI applicants' loan choices respond to economic factors such as the prevailing interest rates and the intended use of proceeds. However, if the advertising is informative or complementary, then they should observe DM and WI applicants responding similarly to such economic factors.

Controlling for observable differences between the WI and DM applicants using a matched sample design, Agarwal and Ambrose are able to isolate the effect of the direct mail solicitation on the applicant's loan choice. They find that DM applicants are more likely to ignore the economic factors that influenced the choices of the WI applicants.

Specifically, they find that 78 percent of the DM applicants were influenced by the lender's solicitation, while 22 percent responded to the economic factors. Further analysis of only the applicants who were clearly influenced by the lender's solicitation reveals that 74 percent were persuaded to originate a product that was opposite to the one selected by their counterparts who did not receive a direct mail solicitation. However, they also find that the direct mail solicitation could be classified as informative for 26 percent of the DM applicants. Thus, while their study reveals that lender advertising has a persuasive effect for a majority of the applicants who received a solicitation, they also find evidence consistent with the informative view of advertising for a smaller subset of applicants. Such heterogeneity in results is quite common in behavioral economics research, and legal scholars will want to take it into account when importing findings from the field.

### 2.3 Crime and Punishment

The next two chapters in the volume explore topics in crime and punishment.

A central question in law is how to design punishment schemes to maintain social order. In "Punishment, Social Norms, and Cooperation," Erte Xiao reviews recent research in behavioral economics on how punishment promotes prosocial behavior. The standard economic theory of crime and punishment focuses on how punishment can change the expected payoff of antisocial behavior (Becker 1968). It assumes that people take actions to maximize their expected utility, and posits that punishment can promote social order by increasing the expected cost of antisocial behavior. In particular, according to the standard theory, society can deter violations of the social order by increasing either the probability or the magnitude of punishment so that the expected cost of violating the social order is greater than the prospective benefit.

Controlled laboratory experiments provide evidence that punishment schemes can enforce prosocial behavior. At the same time, however, studies also show that punishment can backfire. The mixed results of punishment studies raise the questions of why punishment sometimes promotes social order but other times leads to even higher levels of violation, and how to design punishment schemes to avoid detrimental effects. In her review of the literature, Xiao considers studies of both formal punishment imposed exogenously by institutions and informal peer punishment, and she discusses factors that can lead to the detrimental effects of punishment.

Xiao first discusses research exploring the idea that people may infer negative

intentions from punishment and retaliate against their punishers. She then proceeds to review research on restricted punishment mechanisms which prohibit illegitimate punishment and thereby reduce retaliatory behavior. As Xiao observes, however, implementing restricted punishment mechanisms may be difficult in the real world, where heterogeneity, uncertainty, and other factors can make it hard to decide what behavior should be punished. For example, mechanisms that require consensus from the community may be unavailable to a society in which people have substantially heterogeneous beliefs about right and wrong. And good luck can mask violations that ought to be punished.

Next, Xiao discusses research on how punishment can crowd out both the intrinsic motivation and the image motivation to conform to prosocial norms. She argues that to avoid such crowd-out effects, it is important to frame punishment as a signal of a norm violation and not as a price, and therefore a justification or excuse, for a norm violation, and to take into account the visibility of the target behavior when designing punishments.

Xiao ends the chapter by discussing research on how punishment can promote prosocial behavior by communicating social norms (the norm expression function of punishment) and by influencing people's beliefs (empirical expectations) about whether others obey prosocial norms. She also highlights research on mechanisms other than punishment, such as requiring people to justify their actions, which can promote prosocial behavior.

In "Prospect Theory, Crime and Punishment," Sanjit Dhami and Ali al-Nowaihi reexamine the standard economic theory of crime and punishment in light of cumulative prospect theory, or CPT (Tversky and Kahneman 1992). CPT is perhaps the leading alternative to expected utility theory, on which the standard economic theory of crime and punishment is based. CPT assumes, *inter alia*, that utility is defined over changes in wealth relative to a reference point which partitions the domain of outcomes into gains and losses; that the disutility of a loss is larger than the utility of an equal-sized gain (loss aversion); and that expected utility is calculated with respect to a non-linear transformation of the decumulative probability distribution over outcomes (rank-dependent probability weighting). After providing a brief introduction to CPT and setting out a simple economic model of crime, Dhami and al-Nowaihi proceed to discuss two issues in the economics of crime: the tax evasion problem and the Becker proposition.

The tax evasion problem refers to the following puzzle. Given realistic penalties and probabilities of detection and conviction, the return per tax dollar evaded is strictly positive. Hence, the standard model, which again is based on expected utility theory, predicts that every taxpayer whose tax is not withheld at the payment source should evade paying at least some of his taxes. Empirical evidence, however, suggests that many such taxpayers fully pay their taxes. Dhami and al-Nowaihi show how CPT can resolve the tax evasion puzzle (as well as a related problem, known as the Yitzhaki puzzle, concerning how tax evasion changes with tax rates). The basic idea is that loss aversion and overweighting of audit probabilities can generate the observed levels of compliance given realistic penalties for evasion. More specifically, the authors show that, for realistic levels of tax evasion and audit probabilities, the penalty rate predicted by CPT, with the loss aversion and probability weighting parameters calibrated to match estimates from the literature, is consistent with the observed penalty rate.

The Becker proposition refers to the idea that, if criminals behave according to expected utility theory, then given any nonzero probability of enforcement, no matter how small, crime can be deterred by a sufficiently large penalty. The Becker proposition suggests that

society can deter crime at an arbitrarily low cost, for example *de minimis* enforcement coupled with capital punishment. It also suggests that we should not observe law-breaking in the face of a Becker-type punishment scheme (a small probability of a large penalty). However, this is not the case in the real world. Dhimi and al-Nowaihi call this the Becker paradox. After considering and rejecting a number of alternative explanations, the authors show how a variant of CPT can resolve the Becker paradox. Again, their result is driven by the reference dependence and probability weighting features of CPT.

Dhimi and al-Nowaihi conclude the chapter by noting several limitations of their analysis, including, for example, the lack of a distinction between actual and perceived probabilities of enforcement (and the composite treatment of the probabilities of detection and conviction); the assumption that criminals know the law and act rationally (whether according to expected utility theory or CPT); the lack of a distinction between deterrence and incapacitation and the failure to consider other theories of punishment (e.g., retribution); the abstraction from dynamic issues and group behavior; and the omission from the model of the judicial stage.

## 2.4 Torts

The two subsequent chapters focus on tort law and litigation.

In “Behavioral Models in Tort Law,” Barbara Luppi and Francesco Parisi examine how behavioral phenomena can impact the economic analysis of tort law. After laying out the standard accident model developed by Shavell (1987) and others, Luppi and Parisi provide a taxonomy of behavioral biases, social biases, and memory errors drawn from the behavioral economics and psychology literatures. For example, their catalog of behavioral biases includes optimism bias, the availability heuristic, base rate fallacy, hyperbolic discounting, and loss aversion, while their lists of social biases and memory errors include the Lake Wobegon effect and hindsight bias, respectively. Importantly, their taxonomy indicates how each type of bias or error impacts the standard model. For instance, it indicates that optimism bias can affect agents’ beliefs about the probability of an accident and the severity of loss in the event of an accident; that hyperbolic discounting can affect agents’ beliefs about the magnitude of loss, the cost of care, and detection and enforcement, as well as their litigation and settlement decisions; and that the Lake Wobegon effect can impact agents’ beliefs about the efficacy and cost of care.

After providing their taxonomy of behavior phenomena, Luppi and Parisi illustrate how each “impact class” of biases and errors—specifically, biases and errors that impact (i) beliefs about the probability of an accident, (ii) beliefs about the effectiveness of care, (iii) beliefs about the cost of care, (iv) beliefs about the severity of loss, (v) beliefs about detection and enforcement, and (vi) decisions about litigation and settlement—can be incorporated into the standard accident model. The aim of this exercise, they say, is to provide a common modeling language that law and economic scholars can use to analyze the effects of behavioral phenomena in tort law and perhaps other areas of law as well.

In “Law and Economics and Tort Litigation Institutions: Theory and Experiments,” Claudia Landeo summarizes a recent and important theoretical literature related to litigation and settlement negotiations that incorporates a central concept from the field of psychology: self-serving bias. In the 1960s and 1970s, psychologists produced empirical

findings suggesting that individuals tend to systematically process information in a way that is beneficial to their interests (Miller and Ross 1975). Landeo describes how theorists have modified neoclassical models of decision-making applicable to settlement negotiations to incorporate the assumption that litigants might be subject to self-serving bias. This addition to the theoretical models provides yet another explanation for settlement breakdown that leads to costly trials.

One major contribution of the chapter is its description of the interplay between theorists and empiricists—mostly experimentalists—as grounded in the scientific method. Landeo explains how experimentalists have carefully designed experimental environments not to mimic actual settlement negotiations, a clearly impossible task, but rather to incorporate all theoretical assumptions in a simple environment that rules out as many alternative explanations as possible. In this way, empiricists are able to provide theorists and policymakers with information about how much confidence they can place in particular theories and which features of the theories require revision.

Leadeo also describes recent theoretical work that predicts how risk creators might alter decisions related to precaution-taking in reaction to the anticipated impacts of self-serving bias in the event an injury occurs and an injured party brings a claim for damages. The results suggest that self-serving bias can reduce social welfare and might also mitigate the intended positive effect of statutory damages caps on settlement negotiations. Presumably, the next step in the investigation of the impacts of self-serving bias on precaution-taking is to develop empirical tests to put the theory's feet to the fire.

## 2.5 Happiness and Trust

The next two chapters in the volume discuss research in happiness and trust.

In “Happiness 101 for Legal Scholars: Applying Happiness Research to Legal Policy, Ethics, Mindfulness, Negotiations, Legal Education, and Legal Practice,” Peter Huang catalogs a body of literature that considers a behavioral approach to evaluations of social welfare. This branch of behavioral economics shifts our focus away from the standard economic objective of maximizing wealth and towards maximizing happiness, or at least towards some combination of the two. Huang begins by cataloging happiness studies that focus on a number of areas important for legal policymaking, including antitrust, business law, and tax. Huang then points us to works that discuss the pros and cons of government's role, if any, in optimizing happiness, different ways some countries have begun to measure happiness (and unhappiness), subjective measures governments have used to evaluate their effectiveness, and whether happiness is the be-all and end-all of life.

Huang offers an account of how modern happiness research emerged from the field of behavioral economics. He also summarizes the research that studies the difference between experienced happiness and remembered happiness, how policymaking should account for this difference and how policymakers can take advantage of the difference to increase wellbeing. Huang then draws our attention to arguments related to the potential positive impacts of increases in mindfulness, including a boost in the amount of ethical behavior people engage in. He argues that governments can best increase mindfulness by educating the polity on the positive association between mindfulness and happiness. He then turns to theories and findings related to how a focus on happiness might change how

we define optimal conflict resolution and the literature's important lessons about best practices for agents who represent clients in negotiations.

Finally, Huang summarizes the state of the literature on happiness, legal education, and legal practice. Happiness research, Huang argues, has opened our eyes to the realities of the negative association between law schools and happiness and how we go about training future lawyers to reverse this correlation. The benefits of focusing on happiness can extend beyond legal training and towards efforts to improve the emotional satisfaction of practicing law. Law firms have tapped into happiness research to reform organizational culture and work environments with the goal of increasing happiness and retaining talented lawyers. In these ways, Huang shows us how the impacts of happiness research have gone well beyond conversations between economists and psychologists.

In "Trust and the Law," Benjamin Ho and David Huffman draw lessons from literatures related to economic growth, behavioral economics, and organizational economics to develop an original economic model of trust and law. Guided by empirical findings, the authors develop a principal-agent model that assumes that the agent's utility depends not only on his net monetary gain but also on the impact of his trustworthiness on the cost of effort. Specifically, the model assumes that the agent's decision over costly effort depends not only on the cost of expending effort but also on his preferences over being a trustworthy agent who resists taking advantage of the principle when given an opportunity to do so at no monetary cost to himself. To the model they add the impact of law, which can either increase or decrease the value of trustworthiness. Although some argue that strong legal enforcement of promises crowds out trust, some have found evidence from the field suggesting that trust and strong contract enforcement are positively correlated. One possible explanation is that strong contract enforcement encourages trust between contracting parties. Another is that high trust levels compel the creation of strong contract enforcement regimes. A third is that trust and strong enforcement create synergies when both are present. This empirical finding has received little attention in the theoretical literature, and Ho and Huffman strive to fill the gap.

Given that identifying the causal relationship between trust and strong enforcement is difficult using observations from the field, experimentalists have explored the question in laboratory environments. Experimentalists have stripped out contract enforcement of any type to determine whether efficiency is reduced due to a lack of trust. While simple economic models predict that agents will make choices based solely on monetary gains, experimentalists have found that factors other than monetary gains play a role in the choices of at least some. Results vary both across studies and within studies. Some evidence supports the claim that external enforcement crowds out trust. External enforcement appears to be a substitute for trust. Other studies suggest that the process of establishing external enforcement mechanisms can increase trust levels such that enforcement and trust appear to be complements.

To explain these seemingly contradictory results, the authors go back to the basics related to the mechanisms on which trust is based. From a psychological perspective, Ho and Huffman explain that trust might be driven by altruism (unconditional kindness) or by reciprocity (conditional kindness). Ho and Huffman build reciprocity into their theoretical model. It assumes that agents get utility from the beliefs of principals over the agent's level of trustworthiness. This preference to maintain one's image might drive agents to expend costly effort even when the law requires none. The level of trust exhibited

by principals will depend on their level of betrayal aversion. Depending on whether trust is driven by altruism or reciprocity, the law might act as a substitute for or a complement to trust. The same sort of conditional result seems to appear in the game theory literature. Ho and Huffman present two case studies to further flesh out the complex relationship between trust and external enforcement: employment contracts and apology laws.

## 2.6 Experiments and Neuroeconomics

The penultimate set of chapters deals with experiments and neuroeconomics.

In “Law and Economics in the Laboratory,” Gary Charness and Gregory DeAngelo take us on a tour of some of the many laboratory experiments that have produced results relevant for law. After arguing the benefits of laboratory studies as a valid method for testing economic theory, the authors summarize a handful of studies from three distinct literatures—experimental studies on (1) the decision-making of judges, juries and attorneys, (2) the effects of law enforcement mechanisms on behavior, and (3) the role of communication in principal-agent relationships. Many of the studies take us beyond the standard economic theories and import concepts from psychology in an effort to increase the theories’ predictive value.

Charness and DeAngelo begin with the large and growing experimental literature related to the choices of actors functioning in legal environments. Many studies have examined whether judges’ decisions are subject to biases and heuristics that have found support in the experimental literature. Experiments employing actual judges as subjects have found convincing evidence that judges suffer from the same errors in decision-making as non-judge subjects, including anchoring, egocentricity, and hindsight bias. In contrast, other results suggest that judges are able to overcome at least some biases. Similarly, experimentalists have found that psychological biases might influence jury decisions. For example, mock decisions over damages awards depended on how much the plaintiff’s attorney requested (holding all else constant) and whether the defendant was local or not. Subjects also exhibited signs of “dissent neglect”—the tendency to down-weight opinions that differ from their own. Finally, the authors describe a set of studies that reveal potential biases in attorney decisions. Evidence suggests that biases can creep in when attorneys advise clients about plea deals and when they estimate expected awards.

The authors then summarize a handful of experiments that test theories related to legal enforcement mechanisms. Again, experiments point to the possibility of a powerful role of biases for predicting outcomes when enforcement mechanisms are applied. For example, experimental evidence suggests that litigants’ expectations over trial outcomes are influenced by self-serving biases. Individuals tend to assume that uncertain issues will be resolved in their favor. This might help us explain why some cases fail to settle when standard theory predicts they will. Other studies have found counterintuitive results related to the enforcement of collusion prohibitions. The authors explain why the lab acts as a useful environment for untangling causal links between institutions designed to enforce the law and individual and group decision-making.

Finally, Charness and DeAngelo summarize a number of experimental findings related to the role of communication in achieving efficient outcomes in principal-agent relationships, where, for example, the agent promises effort and the principal cannot observe the actual effort level. Generally we look to law to act as a verification mechanism, which

compels the agent to keep his promise. Recent evidence from the lab, however, suggests that judicial enforcement of contracts might not be required to reach efficient outcomes. Standard theory assumes that reputation effects are sufficient to keep agents in line, but clever experiment designs eliminate reputation effects as a driver of behavior and focus instead on guilt aversion. The findings suggest that individuals tend to follow through on promises when non-binding promises are communicated in settings where choices are made anonymously. Others have conducted experiments to study a similar problem related to the inability of principals to observe an agent's talent level. If information were perfect, principals would pay high-talent agents more than low-talent agents, and only if the agent expended the promised amount of effort. When information and actions are hidden, standard theory predicts that low-talent agents will sell themselves as high-talent agents, and all agents will promise effort but not keep their promise. Principals, therefore, will not contract with any type of agent. Behavioral economic theories, on the other hand, assume that forces other than incentives to increase monetary payouts drive choices. For example, if low-talent agents benefit when principals pay them a low-talent wage (relative to no wage), they might truthfully reveal their talent level to gain the trust of the principal and then expend effort to reward the principal's trust. The authors describe the designs of and results from experiments developed to test the standard theory against such behavioral theories. The evidence suggests that the behavior of at least some portion of the population comports with the predictions of behavioral theories. The supported theories lead to interesting implications about the legal enforcement of contracts in settings of hidden actions and hidden information.

In "What Explains Observed Reluctance to Trade? A Comprehensive Literature Review," Kathryn Zeiler summarizes the state of the experimental literatures in the fields of economics and psychology that test theories designed to explain valuation gaps and exchange asymmetries. Reluctance to trade (aka the endowment effect) is one of the most widely studied phenomena in the field of behavioral economics and one of the most widely applied behavioral economics concepts in legal scholarship. While neoclassical theory assumes indifference curves are reversible, implying that an individual's valuation of an item or a right is independent of whether the individual is endowed with the item or the right, beginning in the mid-1970s, empirical evidence seemed to support claims that valuations depend on endowment status. Despite attempts to eliminate observed reluctance to trade by, for example, reducing transactions costs, anonymizing choices, having subjects make non-hypothetical choices, and employing demand-revealing preference elicitation mechanisms, many (although not all) experimentalists continued to report observed reluctance to trade. Researchers proposed a number of theories including preference imprecision, lack of market discipline, lack of familiarity with the valuation elicitation mechanism, and endowment theory (an application of prospect theory's assumptions of reference-dependent preferences and loss aversion to contexts of riskless choice).

As Zeiler explains, the literature took a sharp turn in the late 1980s and early 1990s. Knetsch (1989) employed simple exchange experiments, ruled out a number of possible explanations, and observed reluctance to trade in the form of exchange asymmetries, with owners of goods like mugs resisting trading them for equally priced goods such as pens. Following this study, Kahneman, Knetsch, and Thaler (1990) ran a number of treatments to test a refined version of endowment theory, assuming that individuals are loss averse, but only if the owned good is not held for resale and perfect substitutes are unavailable.

Using a demand-revealing preference elicitation mechanism and allowing subjects practice with the mechanism, they observed a number of trades below the number expected in the absence of reluctance to trade, and they attributed this valuation gap to endowment theory.

Zeiler notes that legal scholars continue to cite these two studies today despite the fact that empirical results have called endowment theory into question and alternative theories have garnered strong empirical support. The chapter summarizes multiple lines of research that offer alternative theories and document support for them when tested against endowment theory. For example, reported evidence supports expectation theory, a generalized version of endowment theory that assumes that reference points are set not by endowments but by expectations over outcomes. Others report evidence against expectation theory. Researchers have reported evidence for and against a number of alternative theories including substitution theory, preference imprecision, mere ownership theory (aka attachment theory), enhancement theory, a theory of subject misconceptions, a number of theories that attempt to explain gaps in lottery valuations, transaction disutility, bad deal aversion, and regret avoidance. Today, a number of theories are alive and well in the literature. We cannot, at this stage, point with confidence to any one theory. The chapter provides a comprehensive guide to the social science literature, which has moved well beyond endowment theory and provides support for a number of theories crafted to explain observed reluctance to trade.

In “Incentives, Choices, and Strategic Behavior: A Neuroeconomic Perspective for the Law,” Terrence Chorvat and Kevin McCabe offer suggestions for how legal scholarship can benefit from the importation of findings from the burgeoning field of neuroeconomics. The authors begin by offering an account of how neuroeconomics fits into the science of economics. In short, they claim that neuroscience has a role to play both in “collecting interesting facts and naming items of interest” (i.e., observing which brain regions are involved in particular decision processes) and in using discoveries from neuroscience to inform economic models of decision processes. They also note important limitations of the first role—the same neural regions are often associated with different mental processes, and it is difficult to identify which might be driving choices. In addition, both roles are hindered by the difficulties of studying long-term decisions such as retirement planning, which cannot easily be observed in the lab at one point in time. Despite this, we can learn something from correlating brain activity with choices made in the lab about the neurological bases of long-term decisions. The big-picture bottom line is that the field is new and currently limited but has great potential to add to our knowledge base and to assist in the endeavor to generate models with strong predictive value.

The chapter goes on to catalog some of what neuroeconomics has taught us about the neural basis of financial decisions. Standard economic models assume that individuals invest to maximize their returns in uncertain environments, and that we form expectations about the future based in part on histories of asset returns and discount future earnings using an exponential function. Exponential discounting assumes that marginal rates of substitution depend only on how far apart in time the two points of consumption lie. Behavioral economists have reported a large set of empirical results, suggesting that this assumption does not comport with observed behavior. In the face of this evidence, theorists have gone back to the drawing board to develop alternative assumptions related to how individuals perceive the value of amounts gained in the future. For example, one

non-standard model builds in hyperbolic discounting, which assumes that the rates of substitution depend not only on the temporal distance between the two points in time but also on the temporal distance between the current period and the two points. While some have tested the predictions of exponential versus hyperbolic discounting using field data or choices made in laboratories from which inferences are drawn about motivations, neuroeconomics uses a different approach. Specifically, inferences are drawn from identification of which parts of the brain are active around the time subjects choose, or from genetic profiles or hormone levels of decision-makers. Findings suggest heterogeneity in preferences over waiting and differences in how experienced and inexperienced traders perceive information. Other findings suggest that the activation of certain neural systems make asset bubble formation more likely. The chapter summarizes a number of additional findings that help us understand behavior in financial markets. Finally, Chorvat and McCabe offer thoughts on how law scholars might apply these findings, including lessons for those interested in how tax law might impact choices in markets.

## 2.7 Cautions and Ways Forward

The final two chapters of the volume provide words of caution for behavioral law and economics scholars and thoughts on how the field could be improved.

In “The Price of Abstraction,” Gregory Mitchell argues that the attempted replacement of law and economics, and its assumptions of rationality, with the assumed irrationality of behavioral law and economics is less than ideal. Mitchell offers several suggestions for legal scholars to improve on the importation of behavioral economics into their scholarship. First, Mitchell recommends a higher level of appreciation for observed heterogeneity in preferences and choices and for the practical significance (as opposed to statistical significance) of observed irrational behavior reported by behavioral economics studies. This lack of appreciation, he argues, leads to distorted descriptive and normative conclusions. Legal scholars cite scientific findings to support claims of widespread irrationality leading to negative consequences, but often the findings do not support such grand claims. The chapter includes a revealing table of findings from a series of meta-analyses that consider entire literatures rather than single studies to determine the state of the science with respect to a number of phenomena widely touted as robust, widely prevalent, and substantial. In contrast to the conventional wisdom in the literature, the table reveals small to moderate effect sizes for a majority of the observed phenomena.

Second, Mitchell argues that applications of behavioral economics findings rarely properly account for the conditional nature of the findings and points out potential problems with generalizing from the results to varied populations. Legal scholars often over-claim when they fail to account for the conditions that seem to drive anomalies. They do the same when they assume that findings from narrow studies identify common characteristics or preferences across individuals. Both of these errors result in conclusions that lack a proper dose of nuance and potentially lead readers astray.

Third, Mitchell cautions importers of behavioral economics findings to be clear about the mechanisms that cause deviations from rational choice model predictions. Consumers of behavioral economics often mistake observed phenomena for mental processes that cause the observed behavior. In fact, the literature provides very few solid conclusions about the mechanisms that actually drive choices. Without a firm understanding of

this limitation of the current state of the science, importers are too quick to offer broad predictions that apply across a wide array of environments. To address this concern, along with the others, Mitchell suggests the addition of realism and theory to applications of behavioral economics in law. In this way, he takes an important step in diagnosing and offering ways to treat a number of dysfunctions in the behavioral law and economics literature.

In “Why Behavioral Economics Isn’t Better, and How It Could Be,” Owen Jones provides a perspective on problems with both developments and applications of developments in behavioral economics and then offers steps we can take to make them better. Jones begins by identifying four problems with the status quo: the use of “behavioral economics” as the field’s name; the lack of agreement about what the field is and what its tools are designed to do; the singular focus on the tools of psychology as a way to develop better economic models; and the focus on a small subset of all that psychology has to offer. Jones then offers a theory to explain why the field is plagued by these specific problems. The upshot is that universities have not done enough to foster truly multi-disciplinary work. He points to the need to rein in our impulse to fracture disciplines by creating more and more subspecialties and to instead provide incentives for the generation of environments that allow for cross-discipline communication and collaboration. He aptly notes that many disciplines “from Sociology to Evolutionary Biology to Economics to Neuroscience to Political Science to Artificial Intelligence” aim to develop accurate models of human behavior. Despite this, Jones notes that legal scholars seem to draw almost exclusively from the fields of economics and psychology when looking to the scientific literatures for help in explaining and predicting behavior relevant for law. After laying out what he sees as the main causes of this phenomenon, he illuminates how it holds back our efforts to develop sound policymaking and informed legal analysis.

Jones offers a set of intriguing recommendations for how we can remove the blinkers and get a broader view of the relevant scientific literatures. Proposing a “converging-questions approach,” Jones gives us a step-by-step guide for improving the study of human behavior. To make the proposal concrete, he walks us through how these steps might help us to better understand what causes observed valuation gaps, or so-called “endowment effects.” In particular, he highlights the ways in which the field of evolutionary biology has contributed to our identification of the drivers of valuation gaps. In particular, insights from what we know about primate behaviors thought to increase reproductive success can teach us a great deal about the drivers behind the otherwise puzzling behavior of modern-day humans. In turn, these insights can help us refine models that predict behavior given specific sets of environmental conditions. Jones lists a broad array of findings from neuroeconomics that help us understand how various stimuli impact brain activity, which can help us get a handle on why we react to those stimuli in the ways that we do. Jones’s main point is that no one field and no dyad of intersecting fields can bring us closer to understanding human behavior than truly multi-disciplinary efforts that span across a number of contributing fields. To us, this seems a promising avenue for expanding our knowledge base.

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