



## Behavioral Economic Analysis of Crime: A Critical Review\*

NUNO GAROUPA  
*Universidade Nova de Lisboa, CEPR, London*

ngaroupa@fe.unl.pt

### **Abstract**

Behavioral economic analysis of law is about bringing recent research about behavior and choice together with classical law and economics. In this essay we assess its relevance for the theory of optimal law enforcement. It is our view that criminal law is an area where behavioral analysis has a role to play. Notwithstanding the results so far provided by the behavioral approach are somehow disappointing.

**Keywords:** law enforcement, behavioral theory

**JEL Classification:** K4

### **1. Introduction**

Behavioral economic analysis of law is about bringing recent research about behavior and choice together with classical law and economics. Methodological discussions about law and economics have been present since the movement started taking form in the early 1960s, the rational optimizing behavior being part of the controversy. In that respect, the behavioral school presents an extremely important challenge to classical law and economics. The development of experimental economics and choice theory has made possible for law and economics scholars to start looking at their own discipline with new insights.<sup>1</sup>

Within the law and economics controversy, the economic approach to crime has been one of the most challenged subjects. The skepticism towards economic research on crime and criminal law has been widely expressed by criminologists and sociologists.<sup>2</sup> On the modeling of criminal behavior, the theory faces the usual criticism of the expected utility framework and the usefulness of the assumption of economic rationality. It assumes that the deterrence hypothesis (in fact no more than an application of the theory of demand) is a reasonable explanation for some crimes: people respond significantly to the deterring incentives created by the criminal justice system.

Classical law and economics is about behavior and efficiency. With respect to behavior, the classical approach is of a particular sort: rational optimizing individuals. Criminals

\*This is a revised version of the keynote lecture delivered at the 2002 Erfurt Workshop of Law and Economics.

<sup>†</sup>Present address: Faculdade de Economia, Universidade Nova de Lisboa, Campus de Campolide, P-1099-032 Lisbon, Portugal.

maximize their criminal opportunities under a given law enforcement context. In terms of economic efficiency, most scholars have argued that legal rules, including criminal law, should be chosen having in mind Kaldor-Hicks efficiency. In particular, offenses yielding a criminal gain higher than the social damage should not be deterred.

Applying economic efficiency to criminal law is useful in two different roles. First, coupled with the rationality assumption, it has a positive role by proposing an explanation of actual behavior of individuals and the structure of legal norms. The second role refers to a normative analysis by suggesting how rules and institutions could be improved.

Behavioral economic analysis of crime aims at tackling the alleged gap between the rational theory and actual behavior of criminals. It blends the economic tools with psychology and sociology, proposing new insights with respect to law enforcement and the deterrence effect. As Jolls (1998) emphasizes, behavioral analysis is not an alternative approach, but rather is about providing classical law and economics with insights from actual human behavior, improving the quality of predictions or prescriptions about law. One of the objections to rational choice is that it yields inaccurate predictions. But it does not follow that people's behavior is random, unpredictable or rule-free. On the contrary, the behavioral approach aims at qualifying such choices by understanding behavior and decision.

A second aim of behavioral law and economics is to assess and discuss the wide use of economic efficiency in policy prescriptions. Eventually the prescriptive objective of classical law and economics can be improved with behavioral insights. It is not a challenge to the use of economic efficiency, but rather improving the considerations under which economic efficiency is useful. For example, in the classical law and economics, the expected sanction should equal the social damage in order to internalize it. However, if criminals care about a perceived rather than the actual probability, there is no guarantee that this 'multiplier principle' assures efficiency.

I share the view that criminal law is an area where behavioral law and economics could have a role to play. It is important to articulate the false beliefs of offenders and their preferences. The behavior of offenders is a fundamental piece of the economic approach to criminal law. Thus, improving its understanding and articulating deviations from rational optimizing behavior is not unimportant. Moreover, the classical approach has been having trouble in influencing policy and being accepted by policy-makers partly because the way criminal behavior is modeled. Behavioral law and economics can not only improve the model, but also make it more appealing for policy-making. Both observations are important to justify a special article on this.

In Section 2, the criticism to the classical economic analysis of crime is discussed. I argue that the assumption of rational optimizing behavior is still useful in certain conditions. Furthermore, I also discuss how some of these criticisms have been tackled by the classical theory.

In Section 3, I review the criticism faced by the behavioral approach. It is argued that it is neither possible nor desirable to give up the assumption of rationality altogether. The issue then becomes how much the behavioral approach can enrich the model and design more efficient enforcement policies.

Final remarks are addressed in Section 4. In particular, special attention is given to empirical evidence.

## 2. The classical economic analysis of crime

The central proposition of the economic analysis is that crime rates respond to risks and benefits, a proposition called the deterrence hypothesis. It is not more than an application of the theory of demand to one of the most important issues in criminal justice. The hypothesis asserts that people respond significantly to the incentives created by the criminal justice system. If so, increasing the resources that society devotes to the arrest, conviction, and punishment of criminals will reduce the amount, and social costs, of crime.

The economic theory of criminal law enforcement is recent. Becker's seminal paper on law enforcement dates from 1968, and most of the papers surveyed by Garoupa (1997) and Polinsky and Shavell (2000a) have been published in the last fifteen years. Becker has posited that criminals are rational utility maximizing decision-makers choosing in conditions of risk. Having specified individuals' choice of whether or not to commit an offense, the literature proceeds to discuss optimal enforcement. Maximization of social welfare comes out as the natural objective of public policy.

An essential tool of the economic analysis of crime is the rational theory of human behavior. This tool has been widely criticized, and many results proposed by the law and economics approach have been received with skepticism because of the rationality assumption. Three observations have been at the heart of the criticism.

### 2.1. *Individuals have preferences about each possible state of the world*

Such preferences are preconditions to the realization of the individual's aims. Some scholars argue that this is highly unlikely: individuals become criminals because of contacts with criminal patterns and isolation from anti-criminal patterns. Therefore, such preferences are constrained by each individual's information set. The information set is shaped by the contact with the criminal world. Some individuals have regard for the law or conventional norms, and others simply do not have it.

In the same venue, Jolls, Sunstein, and Thaler (1998) propose bounded willpower has one limitation of rational theory. This term refers to the fact that criminals often take actions that they know to be in conflict with their long-term welfare. In particular, criminals usually have immediate benefits, but costs are borne later. Criminals have a preference bias for the present, and seem to exhibit hyperbolic discounting. With ordinary discounting criminal decisions are not regretted later because there is no dynamic inconsistency of preferences. Hyperbolic discounting could explain why long imprisonment terms may have a small deterrent effect. Furthermore, it seems that criminals only care about imprisonment when the sanction is applied, but at that point they cannot change their decisions. Eventually they regret having committed the offense, but they cannot alter the fact they committed it.

In alternative, we could argue that by regretting a past offense, the likelihood of engaging in new offenses in the future decreases. Hyperbolic discounting reduces deterrence in the present, but could actually increase deterrence in the future once criminals realize the cost of regretting. A consequence of this observation is that policies aiming at increasing these regretting costs should be part of optimal deterrence. Moreover, imprisonment could be

more effective than a monetary fine because its social stigma is higher, plausibly increasing regretting costs.

## 2.2. *Individuals maximize their expected utility*

A rational individual takes actions in order to realize his objectives to the greatest extent. However, it has been argued that most criminals are not rational individuals. They do not compare marginal benefits with marginal costs but rather answer to sociological norms that have been internalized during their lifetime.

**2.2.1. *Empirical contradiction between expected utility and actual behavior.*** The assumption that criminals are expected utility maximizing decision-makers has been particularly criticized. The first argument proposed by such criticism is that empirical contradictions between expected utility predictions and actual decisions have been found.<sup>3</sup> These recent findings tend to stress that expected utility theory is not a good predictor in experimental situations. However, that does not imply that the alternative theories perform better.<sup>4</sup> This is a crucial point since some authors seem to assume that because expected utility theory is a bad predictor alternative theories necessarily fit better.

The current economic theory of crime and punishment only very recently has started to respond to this criticism: Lattimore and Witte (1986) have considered criminals' behavior within prospect theory; Neilson (1998) has considered state-dependent expected utility maximizing decision-makers; Garoupa (2001) considers generalized expected utility maximizing decision-makers. In these essays, the authors conclude that the qualitative results of the classical theory are quite robust. As long as preferences satisfy first-order stochastic dominance (that is, individuals prefer more to less income), the qualitative results hold.

**2.2.2. *Task complexity.*** A second argument is that there is a task complexity. Potential criminals may find optimization impossible or unduly costly. They may solve a simpler, approximate optimization problem. For example, Carroll (1978) observes that, while economists assume that criminals are rational, most psychologists and criminologists prefer to accept that criminals are, at most, 'limited' rational. 'Limited' rationality is a weaker version of rationality by which criminals are sensitive to risk and payoffs but do not combine this information optimally. It could be that criminals use highly flexible, contingent heuristics, and the decision to commit a crime depends upon a number of tasks and problem characteristics such as the manner in which information is presented. Nevertheless one should notice that 'limited' rationality is still rationality. In fact, one popular approach to this problem among game theorists is to consider 'limited' rationality as rational deviation from full rationality.

An important consequence of 'limited' rationality is the inability of mapping normative judgments into dollars, the so called incommensurability problem. Criminal offenses usually violate social and moral norms. Every time individuals violate a social norm, they bear an opportunity cost, a psychological punishment. An important question is how this psychological cost is mapped into monetary units to be taken into account on designing optimal enforcement. A sanction that internalizes social damage may cause over-deterrence

because it ignores the psychological costs. Consequently, sanctioning should be somehow conditional on psychological costs. Someone who enjoys committing offenses should face a more severe sanction because its opportunity cost is lower, someone who bears a high psychological cost should face a less severe sanction because its opportunity cost is higher. The difficulty is in measuring the trade-off between psychological costs and sanctions due to the fact that many individuals cannot measure the cost of violating a social norm or a normative judgment in dollars. As Posner (2000, Ch. 11) argues, it could be that incommensurability is not really much of a problem in the sense that most individuals can measure costs, the difficulty being that most people do not like to admit that they can perform such calculations because they believe money diminishes important values.<sup>5</sup>

**2.2.3. Manipulation of beliefs.** A third argument is that people manipulate beliefs: Individuals have not only preferences over states of the world, but also over their beliefs of those states. Cognitive assessment of gains and losses relatively to a reference point may imply that the objective function is no longer the expected utility functional. In particular, it is well known that individuals present a self-serving bias which usually precludes overconfidence.

Overconfidence is relevant in the criminal context since as mentioned before many criminals seem to ignore or think about the likelihood of punishment. Over-optimism reduces the deterrent effect of punishment, but on the other hand it also reduces care or avoidance activities. A reduction of avoidance activities by criminals reduces enforcement costs for the government.

Another problem is cognitive dissonance; for example, individuals know crimes are wrong and so they consider their offense not to be a crime or to be a morally justified offense. Similarly, framing is important in this context because individuals may not like to feel responsible for death or violence, but they may accept a necessary death to achieve their means or justified violence to reach their target.

Manipulation of beliefs, framing and cognitive dissonance should be targeted by enforcement policies. The “ends cannot justify the means” or “there is no necessary death or violence” are social norms that make sense as part of efficient enforcement policies.

**2.2.4. Processing uncertain events.** A particularly sensitive issue seems to be that individuals have difficulty in assessing and processing uncertain events. In particular, people tend to have difficulty in assessing probabilities and evaluating uncertain outcomes. Individuals usually either underestimate or overestimate the probability of an uncertain event because actual probabilities are difficult to calculate. Of particular importance is the observation that most the time, underestimation or overestimation is not random, it rather fits a pattern of optimism and pessimism. Part of this pattern is related to the fact that people seem to exaggerate a small or zero probability, and have difficulty in processing probabilistic losses.<sup>6</sup>

As exposed by Harel and Segal (1999), a particularly important characteristic of criminal law is that sanctions are usually predictable whereas the determination of the probability of sanctioning is uncertain. In the classical law and economics approach, risk plays an important role but not ambiguity. In other words, in the classical law and economics, individuals bear a risk premium because there is a probability of sanctioning between zero and one. In the behavioral approach, individuals also bear an ambiguity premium due to the

fact that the probability of being sanctioned is itself uncertain. Risk aversion has been used to justify substitution of sanction by probability since the first increases the risk premium, and the second may reduce it. Similarly, ambiguity aversion could justify substitution of uncertainty concerning the probability by uncertainty concerning the sanction since the first increases the ambiguity premium, and the second might reduce it.

**2.2.5. Limited opportunism.** Jolls, Sunstein, and Thaler (1998) refer to bounded self-interest as an important limitation of rational theory: Individuals care about others in some circumstances. Their notion is distinct from the neoclassical altruism (as in the usual bequest decisions), because individuals are altruist if treated fairly (positive reciprocity), but could be spiteful if treated unfairly (negative reciprocity).

Formal models tend to treat this limited opportunism as a rational deviation of the opportunistic model. In that sense, the classical model could be extended to tackle this issue.<sup>7</sup> A more important contribution is the understanding of why these limitations take place and how criminal activities interact with the notion of fairness. For example, to a certain extent hate crimes are an example of negative reciprocity. Eventually the government should aim at reducing negative reciprocity, and so a hate crime should more severely penalized than otherwise.<sup>8</sup>

The interaction between fairness and crime is even more important if we take the view that people do not want optimal deterrence as in Sunstein, Schkade and Kahnemann (2000). The policies yielded by the classical approach seem to be seen unfair by the general public. It is of interest to analyze not only how fairness constraints enforcement policies, but also how enforcement policies and criminal attitudes shape reciprocity in society. It would be of particular interest to confirm a positive correlation between crime rates and negative reciprocity.

### 2.3. *Individuals respond to changes in policy instruments*

The critics argue that individuals respond at most to perceived changes and, in general, there is a clear discrepancy between actual and perceived values. Therefore the impact of changes in policy instruments is rather small. Part of the inability of the classical approach to identify how individuals respond to changes in policy instruments is attributed to several ignored important considerations about criminal policy.

**2.3.1. Moral costs are ignored.** It has been argued that moral costs that constrain potential offenders are ignored in the classical approach. For example, Gibbons (1982) and Field (1991) argue that economic considerations on criminal law are not as interesting as they could be because most of the literature ignores moral or ethical education.

The work by Kahan (1997, 1998) and Posner (2000, Ch. 6) aims at filling this gap. Their work adds to the current theory of optimal law enforcement precisely on the role of deviant norms. It considers the interaction between deterrence and social norms, in particular, when the community chooses punishment as a signal of rejection of a certain type of behavior rather than just as a mechanism to achieve optimal deterrence.

**2.3.2. *Simplistic view of enforcement decisions.*** It has been suggested that the models have a simplistic view of the actual process of law enforcement. As a consequence of the complexity of the actual process, law enforcement cannot be a set of policy rules but is a rather discretionary set of responses to negotiation and compromise between individuals. In particular, Friedman (1999) recognizes that the classical approach treats enforcement decision-making as a black box.

Part of individual limitations in responding to policies is explained by the deficient understanding of enforcement policies. In a complex setting with imperfect information, individuals find it difficult to know what is actually going on in terms of criminal policies. Moreover, given the public opinion sensitivity to criminal affairs, the information disclosed by authorities is confusing and subject to manipulation.

**2.3.3. *The criminal market is a different kind of market.*** Another problem of the classical approach identified by Jolls, Sunstein, and Thaler (1998) is that it does not recognize the criminal market as a very particular kind of market. Suppose a criminal mistakenly thinks that the expected benefit offsets the expected punishment, when in fact the opposite holds, and commits an offense. Nobody benefits from this mistake because there is no arbitrage in this market. In turn, this affects the notion of equilibrium in the criminal market, since small perturbations cannot be corrected by the usual arbitrage. Mistakes have a social cost much higher in this context than in the usual markets where arbitrage operates.

They also argue that classical approach also forgets an important characteristic of the criminal market that affects individual decisions. Criminal life has high exit barriers. Therefore, solving an optimal stopping problem in this context is more difficult because individuals might not be able to exit the market. Moreover, part of these exit barriers are created by enforcement policies. The law of prescription finds some rationale here; it lowers exit barriers which in turn increases deterrence since there will be fewer criminals.<sup>9</sup>

The criminal market is a paradigm for the need of government intervention. The criminal market is in itself a counter-intuitive idea given that crime is a bad and not a good and there is no invisible hand that guarantees the existence of a stable equilibrium, thus the need for regulation. Thus, one should be cautious on identifying the properties of the so-called criminal market. Cooter (1984) presents a careful distinction between prices and sanctions. A market price is a payment which is required in order to do what is allowed. A sanction is a detriment for doing what is forbidden. Market prices and sanctions may look alike, they are even perfect substitutes under perfect information, but they are different under imperfect information. In fact, Cooter (1984) argues that behavior is more elastic with respect to prices than sanctions. As a consequence, one should be more careful when using the market convenient metaphor. When getting information about the externality (the social damage caused by a criminal offense) is less costly than getting information about behavior, pricing is more efficient. When getting information about behavior is less costly than getting information about the externality, sanctioning is more efficient.

### **3. The behavioral economic analysis of crime**

Our comments with respect to the contributions of behavioral analysis to the understanding of crime are at two levels. One level is the enrichment of modeling behavior, in particular,

the sophisticated interaction between preferences and enforcement policies. A second level is the efficiency of enforcement policies.

### *3.1. Enrichment of modeling behavior*

The notion of rational criminals has been at heart of the criticism of the classical theory. The behavioral approach has enriched the model by blending rational theory with psychological twists. The first cost of enriching the model is losing tractability. Tractability is useful because permits clear results that can be tested. The loss of tractability usually complicates the testing of the model.

Part of the tractability issue is reflected on what is assumed to be exogenous and what is endogenous and explained by the model. The behavioral approach identifies limitations to rationality, but in general does not explain why these limitations do take place.

One important note about these limitations is to make sure they cannot be treated within the classical model given the tractability gains. For example, overconfidence could just be bad risk estimation. If so, classical theory is still the best model to address these problems.

A second important feature about these limitations concerns their regularity. These regularities should be identified and modeled. They could be seen as rational deviations from the theory. Once modeled, their implications for enforcement policies will become clear. However, if these limitations are random, the implications for policy intervention are less clear.

A fundamental deficiency of both the classical and the behavioral approach to crime is the inability to explain criminal preferences. The classical approach takes preferences as given, and proposes a rational theory of criminal decision-making. The behavioral approach modifies the theory of criminal decision-making by including insights from psychology and decision sciences. Still both do not explain where preferences are coming from, or how enforcement policies could change them. Expressive law and economics, as in Cooter (1998, 2001) and McAdams (2000a, 2000b), aims at filling this gap. So far, however, an expressive approach to criminal behavior has not been developed at a satisfactory level.

### *3.2. Designing efficient enforcement policies*

With respect to the normative role of behavioral law and economics, in particular concerning enforcement policies, it shares with the classical approach the oversimplification of policy design.

The problem with the behavioral approach is that once criminals are not fully rational, so are not victims, enforcers, and politicians. Consequently, enforcement policies cannot be designed as in the classical approach. How overconfidence or reciprocity affects enforcement policies is no longer straightforward since it not only changes criminals' attitude but also those of enforcers.

## **4. Final remarks**

My view is that the classical theory, even though suffering from some weak aspects which we have identified, is still the best approach to law enforcement. From the positive side,

the development of a more sophisticated theory of criminal decision making (including behavioral regular deviations from fully rational behavior) and the economic theory of behavior under asymmetric information should permit addressing some of the questions raised, including the problem of heterogeneous perceptions of the same policy instruments. Nonetheless, future research on preferences and the expressive role of criminal law is important. On the normative side, the sophistication of the institutional law enforcement model within boundaries of tractability will allow to address the criticism of modeling simplification.

The successfulness of a theory depends crucially on the empirical adherence. The empirical analysis of criminal deterrence has been involved in serious controversy. The essential reason for such controversy is that the existing empirical literature seems to have findings in both (positive and negative adherence) directions. Nevertheless, most studies corroborate the hypothesis that the probability of punishment, and to a lesser degree also the severity of punishment, has a deterrent effect on crime.

It is true that Jolls, Sunstein, and Thaler (1998) present several testable predictions with respect to the behavioral approach of law enforcement. However, how much this theory adds to the predictive power of the classical approach is still an open question.

### Acknowledgment

I am grateful to Jürgen Backhaus and Frank Stephen for the invitation and to Alon Harel for very helpful comments on a previous draft. Financial support from Bolsas Nova Forum is gratefully acknowledged. The usual disclaimer applies.

### Notes

1. For an extensive introduction to behavioral law and economics see Sunstein (1997, 1999), Jolls (1998) and Jolls, Sunstein, and Thaler (1998). For a critical view, see Arlen (1998) and Mitchell (2002a, 2002b).
2. See for example Gottfredson and Hirschi (1990).
3. See for example Sunstein (1997).
4. See for example Harless and Camerer (1994) and Hey and Orme (1994).
5. For a different view, see Sunstein (1994).
6. See Perry, Erev, and Haruvy (2002) on law enforcement with frequent probabilistic punishment.
7. See Polinsky and Shavell (2000b) and Lando (2002).
8. See Dharmapala and Garoupa (2001) on this matter.
9. See Rasmusen (1996) on how the government could use exit barriers as a deterrent.

### References

- Arlen, J. (1998). "Comment: The Future of Behavioral Economic Analysis of Law." *Vanderbilt Law Review*. 51, 1765–1788.
- Becker, G. S. (1968). "Crime and Punishment: An Economic Approach." *Journal of Political Economy*. 76, 169–217.
- Carroll, J. S. (1978). "A Psychological Approach to Deterrence: The Evaluation of Criminal Opportunities." *Journal of Personality and Social Psychology*. 36, 1512–1520.

- Cooter, R. D. (1984). "Prices and Sanctions." *Columbia Law Review*. 84, 1523–1560.
- Cooter, R. D. (1998). "Expressive Law and Economics." *Journal of Legal Studies*. 27, 585–608.
- Cooter, R. D. (2001). "Three Effects of Social Norms on Law: Expression, Deterrence, and Internalization." *Oregon Law Review*. 79, 1–22.
- Dharmapala, D. & Garoupa, N. (2001). "Penalty Enhancement for Hate Crimes: An Economic Analysis." Georgetown Law and Economics Research Paper No. 268644.
- Field, A. J. (1991). "Do Legal Systems Matter?" *Explorations in Economic History*. 28, 1–35.
- Friedman, D. D. (1999). "Why not Hang Them All: The Virtues of Inefficient Punishment." *Journal of Political Economy*. 107, S259–S269.
- Garoupa, N. (1997). "The Theory of Optimal Law Enforcement." *Journal of Economic Surveys*. 11, 267–295.
- Garoupa, N. (2001). "Crime and Punishment: Further Results." *Economie Appliquee*. Special Issue in Law and Economics. 54, 107–120.
- Gibbons, T. (1982). "The Utility of Economic Analysis of Crime." *International Review of Law and Economics*. 2, 173–191.
- Gottfredson, M. R. & Hirschi, T. (1990). *A General Theory of Crime*. Stanford University Press: Stanford, CA.
- Harel, A. & Segal, U. (1999). "Criminal Law and Behavioral Law and Economics: Observations on the Neglected Role of Uncertainty in Deterring Crime." *American Law and Economics Review*. 1, 276–313.
- Harless, D. W. & Camerer, C. F. (1994). "The Predictive Utility of Generalized Expected Utility Theories." *Econometrica*. 62, 1251–1289.
- Hey, J. D. & Orme, C. (1994). "Investigating Generalizations of Expected Utility Theory Using Experimental Data." *Econometrica*. 62, 1291–1326.
- Jolls, C. (1998). "Behavioral Economics Analysis of Redistributive Legal Rules." *Vanderbilt Law Review*. 51, 1653–1677.
- Jolls, C., Sunstein, C. R., & Thaler, R. (1998). "A Behavioral Approach to Law and Economics." *Stanford Law Review*. 50, 1471–1550.
- Kahan, D. H. (1997). "Social Influence, Social Meaning, and Deterrence." *Virginia Law Review*. 83, 349–395.
- Kahan, D. H. (1998). "Social Meaning and the Economic Analysis of Crime." *Journal of Legal Studies*. 27, 609–622.
- Lando, H. (2002). "The Fairness of Sanctions: Some Implications for Optimal Enforcement Policy." Paper presented at the 2002 American Law and Economics Association meetings.
- Lattimore, P. & Witte, A. (1986). "Models of Decision-Making Under Uncertainty: The Criminal Choice." In D. B. Cornish & R. V. Clarke (eds.), *The Reasoning Criminal: Rational Choice Perspectives on Offending*, Springer-Verlag.
- McAdams, R. (2000a). "An Attitudinal Theory of Expressive Law." *Oregon Law Review*. 79, 339–390.
- McAdams, R. (2000b). "A Focal Point Theory of Expressive Law." *Virginia Law Review*. 86, 1649–1729.
- Mitchell, G. (2002a). "Why Law and Economics' Perfect Rationality should not be Traded for Behavioral Law and Economics's Equal Incompetence." *Georgetown Law Journal*. 91, forthcoming.
- Mitchell, G. (2002b). "Taking Behavioralism Too Seriously? The Unwarranted Pessimism of the New Behavioral Analysis of Law." *William and Mary Law Review*. 43, forthcoming.
- Neilson, W. S. (1998). "Optimal Punishment Schemes with State-Dependent Preferences." *Economic Inquiry*. 36, 266–271.
- Perry, O., Erev, I., & Haruvy, E. (2002). "Frequent Probabilistic Punishment in Law Enforcement." *Economics of Governance*. 3, 71–86.
- Polinsky, A. M. & Shavell, S. (2000a). "The Economic Theory of Public Enforcement Law." *Journal of Economic Literature*. 38, 45–76.
- Polinsky, A. M. & Shavell, S. (2000b). "The Fairness of Sanctions: Some Implications for Optimal Enforcement Policy." *American Law and Economics Review*. 2, 223–237.
- Posner, E. (2000). *Law and Social Norms*, Harvard University Press: Cambridge, MA.
- Rasmusen, E. (1996). "Stigma and Self-Fulfilling Expectations of Criminality." *Journal of Law and Economics*. 39, 519–543.

- Sunstein, C. R. (1994). "Incommensurability and Valuation in Law." *Michigan Law Review*. 92, 779–861.
- Sunstein, C. R. (1997). "Behavioral Analysis of Law." *University of Chicago Law School*. 64, 1175–1195.
- Sunstein, C. R. (1999). "Behavioral Law and Economics: A Progress Report." *American Law and Economics Review*. 1, 115–157.
- Sunstein, C. R., Schkade, D., & Kahneman, D. (2000). "Do People Want Optimal Deterrence?" *Journal of Legal Studies*. 29, 237–253.