
Introduction

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Economic analysis differs from other approaches to the study of law most notably in its use of formal models to describe human behavior, and in particular, how people will respond to different legal rules. The usefulness of models is that they allow the analyst to focus on answering a specific question with respect to the particular rule under scrutiny, and to derive a clear understanding of what its effects will be, much as a controlled laboratory experiment allows a researcher to isolate a specific physical or chemical effect. Of course, there is a necessary sacrifice of realism when undertaking a modeling exercise of this sort, but the hope is that those factors that are excluded from the model are peripheral to the question at hand, and so can be safely ignored, at least as a first approximation. The most important challenge in developing a ‘good’ economic model, of law or any social phenomenon, is therefore the decision of what factors to exclude. This is the role of the model’s assumptions, and as any economist knows, debates about the quality of a model, and the validity of its conclusions, generally center on the appropriateness of its assumptions. Once the assumptions are accepted, the results usually follow logically from the structure of the model.

One of the most important (and controversial) assumptions underlying virtually all economic models of law is that individuals behave in a rational manner, meaning that they pursue their self-interests, however those interests are defined in the model. Rationality does not mean that individuals are perfectly informed about the consequences of their actions – this would be an untenable assumption in most legal or economic settings – but rather that they do the best they can in the presence of whatever constraints they face, whether those constraints take the form of limited resources, information, or knowledge. Some critics of the economic approach to law doubt that people behave in this way outside of the market arena, and so they question the insights that an economic model based on rationality can yield about how people respond to law. But the economic approach views legal rules as acting *like market prices* to guide peoples’ behavior in certain, hopefully desirable, ways. As one illustration, consider that the widely accepted notion of using harsher criminal laws to deter anti-social behavior reflects a decidedly economic perspective.

The history of the economic analysis of law dates back at least to the

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criminal law theories of Bentham and Beccaria, which reflected the view that threatened legal sanctions can be used to discourage socially undesirable conduct. Surprisingly, this view of law as creating incentives for behavior seems not to have been resurrected again until the 1960s with the work of Coase (1960), Calabresi (1961), and Becker (1968), among others.¹ Much of this early work (excepting, of course, Becker) was, by today's standards, rather informal in that it did not employ mathematical models. Still, the insights it offered set that stage for the next generation of formal economic analysis.

Ironically, the first use of mathematics to model law was apparently by a judge, Learned Hand, in the well-known tort case of *U.S. v. Carroll Towing*.² In that case, Judge Hand put forth his famous 'Hand rule' for determining negligence, which says that an injurer should be found negligent if $B < PL$, where B is the burden (or cost) of care sufficient to eliminate the risk of an accident, P is the probability of an accident if no care is taken, and L is the loss from the accident. This simple formula, when properly interpreted in its marginal form (Posner, 1972), turns out to give exactly the right answer regarding when care is efficient.³ This was formally demonstrated by Brown (1973), whose 'model of precaution' has become the standard framework for examining the efficiency of various liability rules.⁴

One of the most important insights that emerged from Brown's formalization is that a negligence rule can simultaneously induce both injurers and victims to invest in efficient precaution. Establishing this result, which provides an economic justification for the predominance of negligence law throughout the twentieth century (and beyond), likely would not have been possible without formal modeling because it required the derivation of a Nash equilibrium in a two person, non-cooperative game setting. Cooter (1985) went on to show that the insights from the model of precaution can be extended beyond tort law to illuminate doctrines in contracts and property as well. Thus, the simple approach first employed by Judge Hand to decide a specific case in tort law has been used by economists to develop a coherent framework for understanding large areas of the common law, thereby illustrating the unifying power of economic models.

This unity extends to criminal law as well, as illustrated by Becker's (1968) formalization of the ideas of Bentham and Beccaria. After all, criminal law, like tort law, is primarily about preventing unwanted harm, and to that end Becker interpreted criminal sanctions, whether in the form of fines or prison, as functioning like liability to attach a 'price' to harmful behavior. In particular, if H is the harm caused by a criminal act, then optimal deterrence requires that the expected sanction, PS , be set equal to

H (or $PS=H$), where P is the probability that the offender is caught and convicted, and S is the sanction. One of the central insights arising from this perspective is that it does not matter whether the harm is intentionally or accidentally imposed; as long as the sanction (or liability) is appropriately set, the would-be criminal (injurer) will optimally refrain from the harmful act. (In this sense, there is no obvious theoretical reason to separate criminal and tort law, an insight that has spawned a large literature – see, for example, Friedman (2000, Chapter 18).) Nor does it matter if the sanction is imposed with certainty; as long as it is appropriately scaled to reflect uncertain enforcement – that is, as long as the *expected sanction* is properly set – it will have the desired effect on behavior. (In particular, the optimal sanction is given by $S=H/P$.) Of course, the modern economic theory of crime has extended this analysis in many ways (see, for example, Polinsky and Shavell, 2007), but the basic insights follow from this simple formulation.

Most recent exercises in economic modeling of law have been to apply more rigorous methods such as game theory to better understand the role of strategic behavior and the impact of imperfect and asymmetric information (see Baird, Gertner, and Picker (1994)). Many of the chapters in this volume reflect that effort. Another emerging area of research is the application of insights from behavioral economics to law (Sunstein, 2000). This is still a developing area, the fruits of which have yet to be fully harvested, but the two chapters in this volume that take this perspective (Segerson and Tsvetanov; Landeo, Nitkin, and Izmalkov) suggest that many new insights may be learned from it.

The chapters in this volume, which were specially commissioned from leading law-and-economics scholars working at the cutting edge of research, display a wide range of both topics and methodologies. As editors, we made no special efforts to achieve this breadth – it was a natural consequence of the current state of the field. This reflects the continuing vitality of the economic approach to law and suggests that, although the field has reached a level of maturity after more than five decades, there is still much to be done. Our hope is that this volume provides inspiration for the next generation of theorists.

OVERVIEW OF THE BOOK

The variety of topics and methods, while welcome, posed something of a challenge in terms of organizing the chapters. We considered classifying the papers by subject matter, by methodology, by modeling technique used, or by a combination of those things. Table I.1 presents the results of

Table I.1 *Papers and topics in the volume*

Authors	Title (abbreviated)	Traditional Classification					Microeconomic Model Content:		
		Property	Tort	Contract	Pro-crime	Information	Decision-Making		
Grossman, Pincus, and Shapiro	Land assemblage: efficiency and equity	X							
Garoupa and Ulen	Activity levels in tort liability and regulation		X						
Miceli, Rabon, and Segerson	Liability vs regulation for product-related risks		X			X		X	
Segerson and Tsvetanov	Regulation vs liability: a behavioral perspective		X			X		X	
Baumann and Friehe	Strict liability when victims choose asset value		X						
Landeo, Nikitin, and Izmalkov	Incentives for care, litigation and tort reform		X			X		X	
De Mot and Depoorter	Tort standards and legal expenditures		X			X			
De Mot	Litigation success functions						X		
Emons and Fluet	The optimal amount of distorted testimony							X	

Dharmapala, Garoupa, and McAdams	Do exclusionary rules convict the innocent?	X	X	X	
Dharmapala and Miceli	Search, seizure, and false (?) arrest		X	X	X
Baker and Westelius	Crime, expectations, and the deterrence hypothesis		X		X
Anderlini, Felli, and Postlewaite	Active courts and menu contracts	X		X	
Wickelgren	Affirmative action with historical discrimination	X		X	X
Ramello	The multi-layered action of trademark			X	X

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some of these classification experiments. The table first indicates how each paper in the volume relates to traditional subject areas in law: property, torts, contracts, procedure, and crime. From the breakdown in the table, it is apparent that all branches of law and economics are well-represented in the volume.

Table I.1 also includes information about the methodology proposed in the paper. The column marked 'Information' records whether or not there is a significant informational aspect to the paper (i.e., hidden information about type or action), while the column heading marked 'Decision-making' indicates whether the paper contains some extension or modification of the usual assumption that decision-makers act rationally. Beginning in the 1970s, and culminating with the 2001 Nobel Prize awarded to George Akerlof, Michael Spence, and Joseph Stiglitz, the modeling and analysis of asymmetric information has become a fundamental component of nearly all fields of study in economics. A parallel development has been concerned with models of decision-making and the implications of the rationality axiom (reflected by the 2002 Nobel Prize awarded to Daniel Kahneman and Vernon Smith). The 'information' and 'decision-making' columns in Table I.1 indicate that these new and important aspects of economic analysis have come to occupy prominent places in the economic analysis of the law as well.

Summary of Individual Chapters

The first chapter by Grossman, Pincus, and Shapiro examines the problem of land assembly for the purposes of undertaking a large-scale redevelopment project. The common practice in such cases is for the government to use its eminent domain power to facilitate the acquisition as part of a private-public partnership. The drawbacks of this approach, however, are twofold: first, there is no guarantee that the transfer of land will be efficient, and second, owners may receive less than their true valuation since compensation is generally tied to the market value of acquired properties. Both problems stem from the lack of a market test for individual transfers, coupled with the inability of government to observe owners' true valuations. This chapter examines two alternative auction-based mechanisms aimed at overcoming the failings associated with this common practice. While both achieve the objective of inducing owners to truthfully reveal their valuations (i.e., both are incentive compatible), neither is capable of simultaneously achieving efficiency and full compensation (fairness): one guarantees full compensation but forgoes some efficient projects, while the other guarantees efficiency but sacrifices fairness. The authors compare the proposed mechanisms with the common practice (eminent domain

with market value compensation) using a modified Kaldor-Hicks welfare criterion adapted to account for fairness concerns.

The chapter by Garoupa and Ulen is the first of several on tort (accident) law. It examines the relationship between so-called ‘activity levels’ and tort law. Standard economic models of accidents dating back to Shavell (1980) have distinguished between care and activity as alternative determinants of accident risk, where ‘care’ typically describes those actions that reduce the risk of a given venture, while ‘activity’ describes how intensively one engages in that venture. In the case of driving, for example, how fast one drives is a measure of care, and how many miles one drives is a measure of activity, where accident risk is assumed to be monotonic in both (decreasing in care and increasing in activity). One of the authors’ key points, however, is that accident risk is not necessarily monotonically increasing in activity, as when learning or other sources of non-convexity are present. A second point is that the distinction between care and activity is not always clear, and often amounts to simply defining care as those things that are included as part of negligence law and activity levels as those things that are not included, a definition that borders on tautology. A better definition is that care involves those actions that are verifiable by the court, while activity involves those actions that are not verifiable. Still, the authors argue that when activity levels are important determinants of accident risk, courts will often develop the ability to measure them for purposes of establishing due standards of behavior. And when courts cannot do this efficiently, the activity in question may be better controlled by regulation rather than tort law, anyway.

The next two chapters pick up on this theme of choosing between tort liability and safety regulation as alternative means for controlling risk. The chapter by Miceli, Rabon, and Segerson extends Shavell’s (1984) seminal analysis of this choice by comparing liability and regulation in the context of product-related accidents when consumers possibly misperceive the risk of an accident. When consumers all suffer the same expected harm, liability is preferred to regulation because under liability, consumers are fully compensated and so misperceptions do not distort consumer purchase decisions, which are therefore efficient (given that the product price accurately signals risk). Under regulation, in contrast, consumers bear their own damages and so over- or underconsume the product based on their misperceptions. When consumers vary in their susceptibility to harm, however, liability is no longer efficient because it does not induce consumers to self-select in their purchase decisions. Thus, there is a trade-off between liability and regulation: specifically, regulation is preferred when consumers perceive risk fairly accurately, and liability is preferred when consumers substantially misperceive risk.

Segerson and Tsvetanov also compare liability and regulation for controlling risk, but their focus is on how insights from the emerging field of behavioral economics can inform the choice when injurers make care decisions that are inter-temporal (i.e., there is a time lag between the care choice and the realization of damages). This setting is especially important for many environmental risks such as hazardous waste disposal or toxic discharges where harm can arise years or decades after the risk first emerged. The specific behavioral issue that the authors consider is the ‘temptation’ people often display to indulge immediate opportunities for gratification at the expense of long-term consequences. In the context of accident avoidance, for example, this might lead some injurers to forgo current care choices that would otherwise result in socially desirable accident avoidance. They show that even if injurers expect to be held fully responsible for all future damages under strict liability, they will underinvest in care as a result of temptation. Regulation might be superior in this context because, by setting a standard that injurers must meet, it eliminates the temptation for injurers to choose sub-optimal care. An important contribution of this chapter is to highlight how insights from behavioral economics can inform debates in the field of law and economics, often overturning conventional wisdom derived from traditional (neo-classical) models.

The chapter by Baumann and Friehe examines the efficiency of strict liability when victims can choose the value of the asset at risk of being damaged. When victims vary in their valuation of the asset and expect to be fully compensated for the value of that asset in the event of an accident, they will make inefficient purchase decisions because they will not take account of the full social cost of the asset (which includes the possibility that it will be lost). In contrast, a rule that sets damages equal to the average of asset values (so-called damage averaging) will induce efficient victim decision-making while still giving injurers efficient incentives for accident avoidance. In other words, it induces efficient decisions by both injurers and victims. A potential problem with this scheme, however, is that it ‘overcompensates’ low-damage victims, and therefore may induce some victims to participate in the activity who should refrain from doing so from a social standpoint. The chapter describes the damage scheme that prevents this excessive entry, and shows that it may be second best.

The chapter by Landeo, Nikitin, and Izmalkov uses behavioral economics to study tort litigation, but their focus is how ‘self-serving bias’ – the belief by litigants that the court will favor their position – influences litigation and incentives for care. Although there is considerable experimental evidence for such a bias, little theoretical work exists on this issue, save the early ‘differing perceptions’ models of pre-trial bargaining by Landes (1971) and Gould (1973), which attributed trials to the existence

of ‘mutual optimism’ by plaintiffs and defendants about the outcome of a trial. This chapter develops a sophisticated model of pretrial bargaining in the presence of asymmetric information and self-serving bias, thereby offering a hybrid of the differing perceptions and asymmetric information models of trials. In this context, the authors study the effects of tort reform policies aimed at capping non-economic damages and show that the purported benefits of those caps may not be realized in environments with biased litigants.

De Mot and Depoorter also develop a model of litigation in the context of tort law, but they use a traditional game-theoretic model to compare the costs of litigation under various forms of the negligence rule. Conventional wisdom holds that simple negligence is cheaper to litigate than comparative negligence because it involves fewer factual issues for the court to investigate (i.e., it need only consider the care of one party, not both). The current chapter shows that when litigation expenditures are endogenous, this may not be the case. In fact, the model compares simple, contributory, and comparative negligence, and derives the conditions under which each involves lower total litigation expenditures. The conclusions depend on specific elements of the case at hand, thus precluding general claims about costs under the various rules.

The results in the preceding chapter relied on the use of a particular ‘success function’ that determined the probability of victory at trial by a plaintiff or a defendant, based on their litigation efforts and other parameters. The chapter by De Mot studies in detail the characteristics of this function, called the ‘ratio form’ because it models the probability of each party’s success as depending on the ratio of that party’s expenditure to the total expenditure of the two parties (plaintiff and defendant). This is a popular formulation that has been widely used to study the economics of conflict (see, for example, Garfinkel and Skaperdas (2007)). The current chapter discusses the implications of this form for the outcome of litigation in particular, including a comparison of adversarial and inquisitorial systems. It also offers some empirical evidence in support of its predictions, and points out weaknesses.

The chapter by Emons and Fluet continues the analysis of the litigation process by examining the desirability of allowing parties to a legal dispute to present evidence to a judge regarding the value of the item in dispute (e.g., the magnitude of damages one party owes to the other). Testimony is costly and parties can misrepresent evidence in their favor, though it costs more to present erroneous evidence. The judge wishes to minimize a weighted sum of error and evidence costs, and decides whether to hear from one, both, or neither of the parties. (If he/she chooses one, he/she picks the more reliable one.) The results of the model characterize the

judge's optimal strategy under two scenarios: when he/she can commit to an adjudication rule, and when he/she cannot commit. (The reason that he/she may not be able to commit is that the true value of the disputed variable can be inferred with certainty *ex post* from the parties' evidence.) When the judge can commit, all three scenarios may be optimal, depending on parameter values. When the judge cannot commit, it is more likely that he/she will hear from both or neither party.

The chapter by Dharmapala, Garoupa, and McAdams turns to criminal litigation and examines the impact of exclusionary rules in criminal cases. In particular, it asks whether these rules benefit guilty defendants, as is commonly assumed, or if their impact is more complex. For example, might the jury not infer the existence of excluded evidence that would be detrimental to the defendant, and hence implicitly lower the standard of proof for conviction? Such a response would harm truly innocent defendants by increasing their chances of being convicted. An even more sophisticated jury, however, would take account of the motives of prosecutors, who, if self-interested, might try to take advantage of the lower implicit standard of proof and bring indictments against innocent defendants who otherwise would not have been charged. A rational jury would anticipate this and would raise the standard of proof accordingly. Overall, the analysis in this paper shows that the impact of an exclusionary rule on trial outcomes is complex and therefore is not easily generalizable.

Dharmapala and Miceli continue in this vein by examining Fourth Amendment prohibitions on unreasonable searches and seizures in criminal investigations. The Supreme Court has interpreted this to require that police obtain a warrant prior to search and that illegally seized evidence be excluded from trial. A consensus has developed in the law and economics literature, however, that tort liability for police officers would be a superior means of deterring unreasonable searches. The authors argue that this conclusion depends on the assumption of truth-seeking police, and develop a game-theoretic model to compare the two remedies when some police officers ('bad' types) are willing to plant evidence in order to obtain convictions, while other police ('good' types) are not (where an officer's type is private information). They characterize the perfect Bayesian equilibria of the asymmetric-information game between the police and a court that seeks to minimize error costs in deciding whether to convict or acquit suspects. In this framework, they show that the exclusionary rule with a warrant requirement leads to superior outcomes (relative to tort liability) in terms of the truth-finding function of courts, because the warrant requirement can reduce the scope for 'bad' types of police to plant evidence.

The chapter by Baker and Westelius continues on the theme of crimi-

nal law, but turns to the actual commission decision by the criminal. The paper specifically re-examines the deterrence hypothesis, first developed in Becker (1968), that criminals are rational economic agents who respond to costs and benefits of committing crime. The authors extend the simple Becker model to account for the effect of future and past conditions on current criminal behavior. For example, because past crimes reduce an agent's job market prospects, current offenders will be more prone to commit crimes in the future, all else equal. Ultimately, the model predicts that current crime rates depend both on past crime and the expectation of future crime, as well as on enforcement variables. Using this model, the authors develop a novel procedure for estimating the effect of enforcement policies on crime rates and show that once expectations are accounted for, elasticities of crime with respect to enforcement variables are larger than have been previously estimated.

The chapter by Anderlini, Felli, and Postlewaite turns to contract law by examining a contractual environment in which two parties may profit from trading a good whose value is potentially increased by *ex ante* investment by the buyer prior to trade. The buyer, however, has private information about his type, which affects the value of trading different varieties of the good in question. The analysis incorporates litigation over disputes by showing that an 'active court,' defined to be one that can void certain contracts, can improve on welfare by eliminating an inefficient pooling equilibrium. The paper goes on to consider a situation in which the informed party (the buyer) can offer so-called 'menu contracts.' In this richer setting, the authors show that active courts can still improve on welfare by again eliminating inefficient pooling equilibria.

The next chapter, by Wickelgren, focuses on employment law. It specifically examines the desirability of affirmative action policies based on the rationale of correcting for past discrimination. Assuming that job success depends on ability and schooling and that ability is inherited from one's parents, victims of past discrimination who achieve equal educational achievement will on average be more able because they have had to overcome discrimination. Thus, it is rational for employers to favor minorities with equal (or even slightly lower) education because they will have higher average ability. In this sense, voluntary affirmative action is efficiency enhancing. Coercive affirmative action is possibly justified if voluntary affirmative action does not eliminate racial differences quickly enough. This might be true if education and ability are complements in job performance, because then there is a potential future benefit from creating a higher correlation between ability and class (income). The offsetting cost is a current-period misallocation of jobs.

The final chapter, by Ramello, considers the economics of trademark

law, which falls under the broad heading of intellectual property law. The chapter begins with a discussion of the traditional economic functions of trademark – namely, to provide consumers with signals about product quality in the presence of asymmetric information, thereby mitigating the ‘lemons’ problem – but then goes on to discuss its role in creating product ‘brands,’ which can allow firms to differentiate their products from competitors and thereby generate market power. Ramello relies on insights from the field of semiotics, or the study of ‘signs,’ to explain specifically how branding occurs in the market through the conveyance of meaning from producers to consumers. He concludes that the efficiency-enhancing function of trademarks under the traditional theory has been supplanted by firm efforts to use product identity as a way to create differentiated products and brand loyalty. The resulting market power and barriers to entry are not necessarily conducive to efficiency, suggesting a more complex perspective on the economic functions of trademark. This chapter, along with the one by Garoupa and Ulen, show that rigorous theorizing can still be done without the need of a formal (mathematical) model.

NOTES

1. See Posner (2005) for a discussion of the early history of law and economics.
2. 159 F.2d 169 (2d. Cir., 1947).
3. The case involved a barge that broke free from its moorings and collided with another ship, causing the barge to sink. The question at hand was whether the barge owner’s failure to post an attendant to make sure it was properly moored constituted negligence. Since the care choice here was dichotomous (attendant or no attendant), the proper application of the Hand rule is as a cost-benefit comparison of the two options.
4. See, for example, Shavell (1987) and Landes and Posner (1987).

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