



## The Handbook of Market Design

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### CHAPTER

## 18 A Mechanism Design Approach to Legal Problems

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### Abstract

The chapter describes a mechanism design framework that could help identify a set of procedural mechanisms that would minimize the resources used to achieve one of the main goals of the court system, which is to differentiate between those who obeyed the law and those who did not. The proposed framework can also help to formulate and evaluate procedural rules, and to identify necessary and sufficient conditions for deciding disputes according to substantive law with minimal costs of litigation and delay. The chapter illustrates our approach using three examples: fee-shifting rules, discovery rules, and third party alternative dispute resolution mechanisms.

**Keywords:** [court systems](#), [mechanism design](#), [legal procedures](#), [fee-shifting rules](#), [discovery rules](#), [third party alternative dispute resolution](#)

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## Introduction

WE describe a mechanism design framework that could help identify a set of procedural mechanisms that would minimize the resources used to achieve one of the main goals of the court system, which is to differentiate between those who obeyed the law and those who did not. The proposed framework can also help to formulate and evaluate procedural rules, and to identify necessary and sufficient conditions for deciding disputes according to substantive law with minimal costs of litigation and delay. We illustrate our approach using three examples: fee-shifting rules, discovery rules, and third-party alternative dispute-resolution mechanisms.

The chapter proceeds as follows. We first identify a few inherent characteristics of the judicial process that make it apposite for modeling within a mechanism design framework, in which substantive law gives rise to a *social choice function*, and rules of procedure and evidence are captured by *game forms* or *mechanisms*. We

illustrate our approach using four examples: the design of fee-shifting rules, the design of discovery rules, the design of fee structures for lawyers in class actions, and the use of third-party alternative dispute-resolution (ADR) mechanisms.<sup>2</sup>

## Characteristics of the Civil Justice System

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### Background

A civil justice system must provide just and efficient resolution of disputes. It must ensure the rule of law, offer redress to those whose rights were violated, and sanction those who infringed those rights. It must be accessible, accurate, and impartial. And it must consume as few social resources as possible.<sup>3</sup>

Most civil justice systems aspire to accomplish all these goals and more. Many civil justice systems (those of the USA, England, and Australia, to name but a few) have gone through a significant revision of their procedural rules in the past twenty years. These reforms were all fueled by a similar sense of crisis, and they all share a common set of principles that underlie the reformed rules. Although their relative weight and exact formulation varies, the following objectives can be found in most modern reformed rules of civil procedure: cost-effectiveness; proportionality; expeditiousness; and equality.

Cost-effectiveness means efficient use of judicial, as well as parties', resources. Proportionality addresses the need to distinguish and prioritize among cases based on their value (private and social) and complexity, due to the judicial system's limited resources. Expeditiousness requires that cases be resolved as quickly as possible, cutting down the time between filing and disposal. And equality commands that litigation be conducted on equal footing between the parties.

Each legal system establishes the measures it deems necessary to satisfy these objectives. Here, too, a comparative study demonstrates close similarities among the proposed, and often adopted, procedural mechanisms. They can be divided into two main categories. The first category includes measures that are intended to render the management of courts in general and litigation in particular more cost-effective. These measures include early judicial case management, timetabling, and alternative calendar systems.<sup>4</sup> These measures can be analyzed using methodologies from management science, and are outside the scope of this chapter.

The second category, which is of more interest to economists, includes procedural rules that affect litigants' incentives and decisions. Such decisions can be further divided into filing decisions, litigation investment decisions, and settlement decisions.<sup>5</sup> Filing decisions include the plaintiff's decision whether to file a lawsuit or not, and the defendant's decision whether to defend against it. Litigation investment decisions include each party's decision regarding how much to spend on litigating the case. And settlement decisions include decisions regarding when to settle and for how much.

As fewer lawsuits are filed and defended, as litigants' investment in each case decreases, and as more of the lawsuits are settled, the justice system becomes less costly and delay is reduced. Yet, these three categories of decisions are interrelated, and may consequently interact with each other. For example, if litigation expenditures decrease, this may reduce incentives to settle, whereas the motivation to file and defend would increase. Moreover, these decisions affect the court's accuracy, and consequently attainment of its basic goal, which is to distinguish between liable and non-liable defendants.

A comparative study of civil justice reforms points to some procedural mechanisms that are often constructed to reduce cost and delay: dispute-resolution mechanisms based on third-party assistance; pretrial disclosure and discovery; fee-shifting rules; and pleadings procedures. Yet, there is little agreement

about the effectiveness of these procedural mechanisms or their effect on the implementation of substantive law mandates. As we show, the mechanism design framework offers a fresh perspective on these issues.

## The distinction between substance and procedure

One of the most fundamental distinctions in modern legal theory is the distinction between substance and procedure. Substantive law defines “rights, duties and powers of persons and institutions in their out-of-court relationships,” whereas procedural law governs the “decision-making process by which substantive legal interests are maintained or redressed through courts.” In its day-to-day application, the law of procedure implements substantive law.<sup>6</sup> Although the boundary between the two categories may be drawn differently depending on the context,<sup>7</sup> it is usually clear enough for practitioners to identify.

That such distinction exists does not imply, however, that procedural rules do not affect primary behavior, *ex ante*, before any dispute arises. Since procedural law imposes costs on litigants and because it influences the accuracy with which questions of rights and remedies are decided *ex post*, it also affects behavior *ex ante*.<sup>8</sup> Therefore, any measure of efficiency of the justice system must incorporate its *ex ante* effects.

The incorporation of *ex ante* deterrence effects and *ex post* costs of the judicial system into a single framework is a complex task. Whereas it is conceptually feasible to construct procedural mechanisms that would make litigants internalize all *ex post* litigation costs, it is much more difficult to do the same for deterrence. The deterrent effect of litigation is an *ex ante* effect, on behavior that pre-empts (and sometimes may even prevent) the dispute. By the time the dispute is brought into court, that behavior is already “sunk” Litigants, therefore, do not internalize the deterrent effects of their litigation decisions. This is referred to in the literature as the divergence between the social and the private incentive to use the legal system.<sup>9</sup>

The problem of civil justice reform has thus far been approached in two ways. One approach, which has been adopted by most reformers, was to ignore the *ex ante* deterrence effects and focus on *ex post* minimization of litigation costs and delay. From a social planning perspective this approach is at best incomplete. The other approach, which is sometimes used in the law and economics literature, is to ignore the inherent distinction between substance and procedure, and collapse all legal rules into one framework, in which the objective is to maximize *ex ante* efficiency. Because the distinction between substance and procedure is so fundamental in all legal systems, we believe that it should also be respected by the mechanism design analysis of legal problems, especially since this distinction is not merely a formalistic construct, and it may be explained on economic grounds as well.

First, the time gap between *ex ante* behavior and *ex post* litigation (*ex ante* and *ex post* relating to the time of dispute) makes it difficult to identify and quantify the deterrence effects of procedural rules. Consequently, the problem of constructing *ex post* procedural rules, which would be optimal from an *ex ante* perspective, may not be only conceptually difficult but also practically intractable.

Second, the *ex ante* deterrent effect of the same procedural mechanism may depend on the context in which it is applied. For example, the same discovery rule may influence behavior differently when the litigating parties are in a close relationship *ex ante*, as in a contractual setting, and when they are unaware of each other before the dispute, like in a typical tort case. Theoretically, then, it may be optimal to devise different discovery rules for different substantive contexts.

However, one inherent manifestation of the distinction between substance and procedure is that most modern procedural rules are trans-substantive. That is, they apply to all lawsuits, irrespective of their substantive cause of action. Therefore, associating an optimal procedural mechanism with a substantive

context is usually unacceptable. A practicable framework for analysis must therefore allow for constraining the variability of procedural mechanisms across substantive contexts.

Finally, most people are unaware of procedural rules when conducting their out-of-court behavior. Procedural rules are usually in the realm of lawyers only. Hence, it may often be the case that the rules of procedure have no actual *ex ante* effect whatsoever. Distinguishing between rules that carry such effects, since individuals are aware of them *ex ante*, and those that do not, proves to be a difficult task.

To summarize, civil justice reforms have tended to ignore the *ex ante* effects of procedural rules, whereas the economic literature has often overlooked the inherent distinction between procedural rules and substantive law. We suggest a third alternative, which respects the distinction between substance and procedure, yet accounts for the influence of procedural rules on the implementability of substantive law. As explained in the next section, we do so by using a mechanism design framework, in which the social goal is to minimize litigation costs subject to the mandates of substantive law. Procedural rules are used to determine game forms or mechanisms, for litigants to “play”. We then look for procedural rules that would implement the social goal.

## Private information and conflicting interests

The goal of the judicial process is to convey information to the court (judge or jury) so it can decide the dispute according to substantive law. Procedural rules regulate pretrial and trial activity, and consequently influence the sharing of information between the parties and its conveyance to the court.<sup>10</sup>

There are two types of information that the court does not hold. The first type is information shared by both litigants, but not by the court. This includes not only information regarding past events, but also information concerning specialized issues that require expert evidence in court. More generally, this is information which is observable by both parties, but is costly to verify in court.

The second type is information that is privately held by only one of the litigants, which the other litigant, as well as the court, does not know. Very often the defendant is privately informed about various aspects of her liability (what level of care she took, what information she had, etc.), whereas the plaintiff holds private information regarding her losses.

The lack of information makes the just and efficient implementation of procedural rules difficult. An uninformed court cannot apply such rules optimally without first learning the litigants private information. Thus, for example, the decision whether to allow the plaintiff to use discovery measures against the defendant depends on the utility of such discovery and its costs, both unknown to the court. To take another example, a court contemplating whether to employ a provisional remedy against the defendant must weigh its costs against its utility in case the plaintiff prevails. Yet, the weights depend on the probability of plaintiff victory on trial, which the court does not know at the early stages after the lawsuit is commenced.

To overcome its lack of information the court relies on the adversarial nature of the lawsuit (even under inquisitorial systems<sup>11</sup>), which motivates litigants to reveal the relevant information and educate the court. Yet, it is exactly the adversarial behavior of the parties, or, more concretely, their conflicting interests, that requires innovative design of procedural mechanisms and active involvement of the court. Without such involvement, the litigants may engage in wasteful competition, spending more resources than socially optimal.

This combination of private information and conflicting interests complicates the design of an optimal procedural system. The more adversarial the system, the more information is uncovered, but the more costly the whole judicial process. On the other hand, if the court is endowed with greater powers to regulate and interfere in litigation decisions, then total litigation costs may be reduced but less information may

be conveyed to the court. Consequently, the courts decision would become less accurate, which often implies its decision is less just and efficient. The challenge is therefore to harness the litigants' private information in a way that would motivate them to educate the court about it, without increasing costs.

Mechanism design is a theoretical framework that is based on the two attributes described above: private information and conflicting interests. It allows the analyst to examine current and proposed mechanisms in situations that have these two attributes, and determine whether they are capable of implementing what is defined to be the social choice function. The next section presents the basic model for such analysis and demonstrates some of its possible applications.

## The Mechanism Design Approach

A mechanism design framework requires the analyst to define a social choice function or correspondence  $f:\Theta \rightarrow C$  that maps every "state of the world" into an "outcome." Given the distinction between substance and procedure, and their above characteristics, we define the social choice function according to *substantive law* as follows:

The set of states of the world, denoted  $\Theta$  with typical elements  $\theta \in \Theta$ , describes everything that is relevant as far as the substantive law and the parties involved are concerned, including the involved parties' preferences and past actions. The states of the world are therefore not the *ex ante* states, before the dispute, but the *interim* states, after the dispute yet before litigation.

The set of outcomes, denoted  $C$  with typical elements  $c \in C$ , describes the set of all possible consequences, as conceived by substantive law. This set is independent of the procedural rule that is adopted to implement substantive law.

To take a simple example—the law of torts prescribes a remedy for the victim for any past action or omission of an alleged tort-feasor. Suppose that the alleged tort-feasor could have taken any one of  $n$  different actions,  $a_1, \dots, a_n$ . Suppose that, according to substantive law, if the alleged tort-feasor had taken any one of the actions  $a_1, \dots, a_k$  then he is liable and should compensate the victim accordingly, and if he had taken any one of the actions  $a_{k+1}, \dots, a_n$  then he is not liable and should not pay the victim anything. Hence, the state of the world consists of the action taken by the alleged tortfeasor, or  $\Theta = \{a_1, \dots, a_n\}$ , and the set of outcomes is given by the set of pairs  $(x, y)$  of non-negative real numbers, where  $x$  is the defendant's total liability, and  $y$  is the plaintiff's total recovery. If the damage to the victim is normalized to 1, then the social choice function under a negligence standard  $f(a_i)$  is  $(1, 1)$  if  $i$  is between 1 and  $k$ , and  $(0, 0)$  if  $i$  is between  $k + 1$  and  $n$ . That is, the tort-feasor pays the victim's loss if the act or omission was negligent, and pays nothing otherwise.

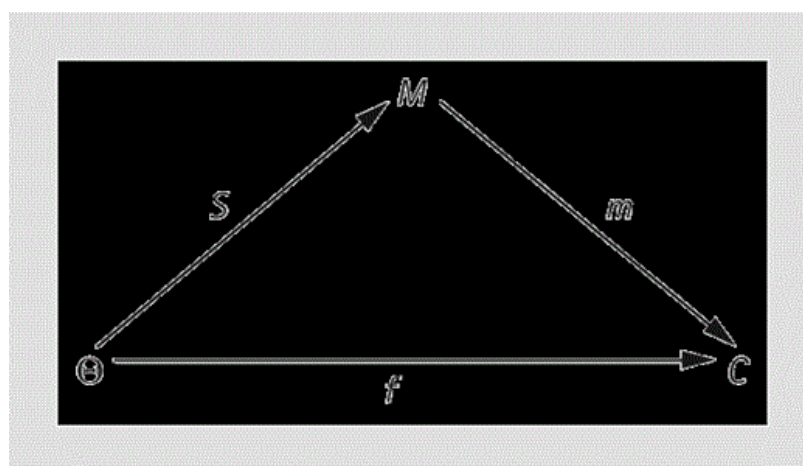
p. 443 Notice that the states of the world in this example are defined after the tort-feasor has already acted (and a loss was incurred). Thus, this formulation restricts attention to *liability rules* that determine the possible remedy after an action has been taken.<sup>12</sup>

Substantive law features twice in this model. First, it is instructive upon the court in its decision. Second, it describes the social choice function. The two are not the same because not all cases end in trial. The set of outcomes,  $C$ , describes the expected liabilities of the alleged tort-feasor and the expected recovery of the victim, which consists of cases that are litigated to judgment, as well as cases that are settled before or after they are brought to court. In particular, the case where the tort-feasor pays roo in court with certainty, and the case where she pays 200 in settlement with probability 0.5, are treated as the same outcome for our analysis, assuming no litigation costs. The cases would be different if litigation costs were positive.

The problem of mechanism design is how to design a *game form* or a *mechanism*,  $M$ , whose solutions would belong to  $f(\theta)$  for every state of the world  $\theta \in \Theta$ .<sup>13</sup> We interpret the choice of a mechanism as a choice of a procedural rule. Thus, the problem of finding a mechanism that accomplishes a certain goal or implements a certain social choice function becomes a problem of how to design a procedural mechanism that would implement substantive law.

More formally, a procedural mechanism consists of a pair  $M = (A, m)$  where  $A$  is the set of actions that each party can take, and the mapping  $m: A \times \Theta \rightarrow C$  describes the expected consequences of a profile of actions  $a \in A$  when the state of the world is given by  $\theta$ . The mechanism design problem can be conveniently described diagrammatically as shown in Figure 18.1.<sup>14</sup>

**Figure 18.1.**



The mechanism design problem expressed as a Mount—Reiter triangle.

With reference to Figure 18.1, the mapping  $f$  describes the social choice function that maps states of the world in  $\Theta$  into consequences in  $C$ . The mechanism  $M$  defines a set of rules that, together with the parties' preferences and relevant history as described in the relevant state of the world  $\theta \in \Theta$ , induces a game. The letter  $S$  denotes the "solution concept" that is applied to this game. For example, in some situations, it may be reasonable to assume that the parties will play a Nash equilibrium; in other situations, a stronger solution concept such as dominant strategy equilibrium, or a weaker solution concept such as the sequential elimination of strictly dominated strategies, may be more appropriate. The point is that different states of the world will give rise to different games and different equilibrium outcomes, which will be mapped by the function  $m$  into different consequences. As explained earlier, the objective is that the outcome function,  $m$ , would map every relevant state of the world,  $\theta \in \Theta$ , into  $f(\theta)$ .

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Going back to the tort example, one procedural mechanism that can be examined is a pleadings rule. The defendant-alleged tort-feasor may be required to choose between acknowledging her liability or not. If she acknowledges her liability then she pays the plaintiff some amount. If she denies her liability then the plaintiff decides whether to pursue the case to trial or drop it. If he drops the lawsuit then each litigant gets some (possibly negative) payoff. If the plaintiff decides to proceed to trial then the court decides the case accurately, and, depending on its decision, awards each litigant some (possibly negative) payoff.

Different assumptions about the knowledge and beliefs of the parties, and about the appropriate  $S$  or "solution concept," translate into different mechanism design problems. In the tort example, the state of the world is privately known by the defendant, and so the appropriate solution concept is Bayesian Nash equilibrium.

Two remarks are in order. First, we assume that the outcome function,  $m: A \times \Theta \rightarrow C$ , depends on the parties' actions and on the state of the world. This formulation is more general than the common assumption in the implementation and mechanism design literature, where the outcome function depends only on the players' actions. The difference is due to the fact that a procedural mechanism typically involves a judge or an arbitrator, who may be able to observe the state of the world and to condition a decision on its realization.

Second, there are sometimes several procedural mechanisms that implement the same substantive rule. In such a case, we are interested in finding the mechanism that is optimal according to some other criterion of social welfare, such as the minimization of the sum of costs to the parties.

The next four sections illustrate the usefulness of the mechanism design approach through four examples: the design of fee-shifting rules, the design of discovery rules, the design of fee structures for lawyers in class actions, and the use of third-party alternative dispute-resolution (ADR) mechanisms.

## The Design of Settlement and Fee-Shifting Procedures

p. 445 One important mechanism for inducing litigants to change their main litigation decisions is the shifting of litigation costs. Fee-shifting rules determine when and to what extent one litigant should reimburse another for her litigation costs. Fee-shifting rules can be divided into two main categories. First, there are outcome-based fee-shifting rules, which condition cost reimbursement on the outcome of trial. The two prominent fee-shifting rules in this category are the American rule, according to which each litigant bears her costs irrespective of the trial's outcome, and the English rule, in which the loser on trial fully reimburses the winner for her costs. Second, there are offer-of-settlement rules (sometimes called offer-of-judgment rules), which condition cost reimbursement on settlement offers that are rejected during litigation. One such rule is Rule 68 of the American Federal Rules of Civil Procedure, according to which "if the judgment finally obtained by the offeree is not more favorable than the offer, the offeree must pay the costs incurred after the making of the offer."

The law and economics literature has extensively analyzed the effect of both outcome-based fee-shifting rules,<sup>15</sup> and offer-of-settlement rules,<sup>16</sup> on the incentives to sue, settle, and invest in litigation. Yet, most of these studies have not attempted to identify the optimal settlement procedure and fee-shifting rule when the goal is to minimize the cost of litigation subject to the constraints imposed by substantive law such as maintaining deterrence.

An important exception is Spier (1994a), who offers a characterization of the fee-shifting rule that minimizes expected litigation costs or maximizes the likelihood of settlement but does not consider deterrence. In Klement and Neeman (2005) we extend her work by explicitly incorporating deterrence, and thus substantive law, into the analysis. We show that a settlement procedure that we call a *pleading mechanism* together with the English fee-shifting rule, according to which the loser in trial bears the legal costs of the winner, maximizes the likelihood of settlement, and maintains deterrence, as required by substantive law. We outline the main argument as follows.

Recall the tort example above. Suppose, for simplicity, that  $n = 2$ . That is, the tortfeasor is either liable or not, and the social choice function that one would like to implement, if possible, is  $f(a_1) = (1,1)$  and  $f(a_2) = (0,0)$ . We show that this social choice function cannot be implemented. Intuitively, the reason for this is that implementation of this function requires the parties to go to trial with a positive probability, which imposes on the parties additional litigation costs that are not captured by the substantive liability rule.



We therefore examine a weaker substantive standard, which mandates only that the difference between the defendant's expected liability if she is liable and if she is not is 1. A liable defendant is thus still required to compensate the plaintiff for the entire damages caused, as under the original social choice function, but because of litigation costs, and the necessity of (ex post, inefficiently) going to trial in order to achieve justice, it is impossible to ensure that the expected payoff to the plaintiff be equal to the damage caused when the defendant is indeed liable, and be equal to zero otherwise.

p. 446 We maintain the assumption that if the parties go to trial, then the court discovers whether or not the defendant is liable. And, we further assume that the court requires the defendant to compensate the plaintiff for her loss, 1, if she is found liable. We therefore assume a substantive law that does not allow decoupling, on the one hand, or punitive damages, on the other. In this example as well as in other contexts, substantive law imposes certain constraints, and procedural law provides the mechanism that satisfies these constraints.

However, since going to court is costly for both the plaintiff and the defendant, the objective is to design a settlement procedure that would compensate the plaintiff if and only if the defendant is indeed liable, and that would maximize the likelihood that the parties would settle outside of court and thus save the associated legal fees. The instrument that can be used for this purpose is fee-shifting rules.

As mentioned earlier, in Klement and Neeman (2005) we show that a *pleading mechanism*<sup>17</sup> together with the English fee-shifting rule maximizes the likelihood of settlement. The mechanism allows the plaintiff to make a take-it-or-leave-it settlement offer, which the defendant may either accept or reject. If the defendant rejects the offer then the plaintiff must decide whether to proceed to trial, and if she does then the court finds whether the defendant is liable or not, and allocates litigation costs according to the English fee-shifting rule.

The intuition for this result is the following. If it had been commonly known whether the defendant was truly liable or not, then, under the optimal mechanism, or the mechanism that maximizes the *interim* likelihood of settlement subject to a minimal deterrence constraint, the plaintiff and defendant would have settled with probability  $r$ , and because of the deterrence constraint, the difference between the expected settlements of liable and non-liable defendants would have been equal to the extent of the damage caused to the plaintiff. Obviously, such a mechanism is not incentive compatible. In a world in which the defendant's true liability is not known to anyone but herself, a liable defendant has an incentive to pretend she is not liable so she can settle for less. It follows that an optimal mechanism must provide an incentive for liable defendants to admit their liability.

Because the defendant's true liability can be verified only in court, the only way to do this involves going to court with a positive probability. Because going to court is costly, the probability of going to court has to be minimized under the optimal mechanism. Conditional on the case going to trial, the English fee-shifting rule is the one that maximizes the difference between the expected payments of liable and non-liable defendants. Therefore, because the optimal mechanism should provide the "cheapest" possible incentives for being truthful, deterrence implies that it must rely on the English rule, because in this way it is possible to satisfy the deterrence constraint with the lowest possible probability of going to trial. The reason is similar to the well known argument that efficiency requires setting very large fines for those caught violating the law, but very small probabilities of detecting offenders (Becker, 1968).

p. 447 One interesting outcome of the model is that the maximum probability of settlement equals the probability that the defendant is liable, and it is independent of the litigants litigation costs. This conclusion contradicts most theoretical and empirical findings, which identify a positive correlation between the probability of settlement and litigation costs. The intuition here is that under the English fee-shifting rule any increase in litigation costs renders litigation less profitable for the plaintiff, and she is therefore less willing to proceed



to trial. But then, liable defendants have a stronger incentive to deny their liability and refuse to settle, hoping that the plaintiff will drop the suit. Under the optimal mechanism these two effects cancel out, and therefore the probability of settlement is kept constant.<sup>18</sup>

## The Design of Discovery Rules

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Historically, the common law has relegated all information transmission between the parties to the trial stage.<sup>19</sup> Modern civil justice systems have recognized, however, that pretrial discovery and disclosure devices are necessary. These may include: depositions, which are oral or written questioning of witnesses; interrogatories, which consist of written questions to a party; production of documents; physical or mental examinations of parties or persons under legal control of a party; and requests for admissions, which require a party to admit proposition of fact tendered in a written request.

Discovery can serve various objectives: it may eliminate fictitious controversies, upon which the parties would agree after discovery, and may even encourage pretrial settlement based on the information discovered; it can simplify the presentation of evidence at trial, by allowing the parties to exchange documents and review them before trial, and reduce the “gaming” effect of litigation; and it can secure the submission of accurate evidence, not deteriorated by the passage of time until trial. To put things more generally, pretrial discovery has two main goals: to encourage early settlement, and to raise the accuracy of trial.

Yet, pretrial discovery has its faults. Most significantly, discovery is costly. Since it is not limited to evidence which is admissible at trial, and since it is not constrained by the court's time, discovery usually increases total litigation costs for cases that are not settled.<sup>20</sup> Moreover, litigants can use discovery strategically, to force litigation costs upon their rivals. The question therefore stands, whether discovery's benefits outweigh its costs, and, if they do, whether and how discovery should be regulated by the court.

p. 448 A large part of the literature has focused on the proper standard to implement in discovery disputes. That is, authors have attempted to draw up guidelines for deciding whether a specific discovery application is justified and should therefore be allowed, and possible mechanisms to induce litigants to take mostly justified discovery measures.<sup>21</sup>

One exception is Mnookin and Wilson (1998), who used a mechanism design framework to show that under the optimal mechanism the initial allocation of information between the parties does not affect their expected ex ante gains from a joint discovery plan. In their model, therefore, the tension between the direct costs of discovery and its benefit in encouraging settlement and consequently saving litigation costs may be resolved through Coasian, pre-discovery, bargaining. Yet, their model does not account for the effect of discovery on the implementation of substantive standards.

In Klement and Neeman (2005) we have considered whether the likelihood of settlement under the optimal *pleading mechanism* and fee-shifting rule can be increased by the addition of a discovery phase. We showed that this is impossible, since under the assumptions of the model the probability of going to trial is a martingale. The expected posterior belief (i.e. following discovery) that the defendant is liable equals the prior belief (i.e. before discovery). Since the maximum probability of settlement equals the probability that the defendant is liable, discovery cannot increase the probability of settlement. Thus, any gain that discovery would produce in the probability of going to trial in some states of the world must be offset by corresponding losses in other states of the world.

## The Design of Fee Structures for Lawyers in Class Actions

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Class actions are private lawsuits in which the represented members of the plaintiff class are absent throughout the litigation, yet are bound by its outcome. It is not uncommon that in a single class action millions of plaintiffs may be represented, hundreds of millions of dollars may be at stake, and whole industries may be at risk of liability.<sup>22</sup> However, it is the opportunity for private profit, and not the concern for class members' interests, which motivates private attorneys to litigate class actions, invest their time and money, and bear the risk of no compensation if they fail to win a favorable judgment. Class actions thus provide a new paradigm for litigation—the private attorney general paradigm.

p. 449 Courts have long been struggling with the challenges of managing class actions. Pursuing their own private profit often causes class attorneys to behave in an opportunistic manner, at the expense of the represented class. This tension, between the class actions' social goals and the class attorneys' private profit, has generated much concern and debate with respect to the issues of how to select the class attorney, how to monitor her behavior, and how to compensate her. This section addresses the latter issue. It examines the way in which an attorney fee structure that maximizes the expected recovery for class members may be implemented in practice.

Unlike ordinary litigation, where courts do not usually intervene in the litigants' choice of attorney, in their attorney fee arrangements, or in their settlement decisions, in class actions courts are required to do all of these, in order to secure for class members proper compensation, given the merit of their case. Although it may seem that the court's problem in designing optimal fee structures for class attorneys is similar to the one faced by litigants in ordinary litigation, three important features of class actions render this problem more complicated.

First, whereas individual clients may choose to pay their lawyers a non-contingent fee, a class attorney's litigation fee must be contingent on winning the trial. Class members are dispersed and are very costly to identify, especially when the defendant wins an adverse judgment, because no individual class member has an incentive to step forward and identify herself just for the sake of bearing the class attorney's costs. Furthermore, as a matter of law and practice, absent class members are not liable for costs of litigation or attorneys' fees in the event of an adverse judgment against the class, so class attorneys are not compensated unless they create a common fund for the class by winning or settling the lawsuit.

Second, individual clients have strong incentives to take adequate measures to directly monitor their attorneys, which class members and their representatives lack. Most class actions are "lawyer driven" and the class attorney maintains all but absolute control over the lawsuit. She usually initiates the suit, selects the class representative, and controls both the litigation process and settlement decisions. The class representative, while supposedly in charge of the litigation as fiduciary for all those similarly situated, is in reality only a token figurehead, with no actual control over the lawsuit. Other class members' involvement is even less significant, as they are inclined to free ride on any litigation investment, sharing its proceeds without bearing the associated costs.

Finally, and as we show, most importantly, in ordinary litigation lawyers "compete" for individual clients, and are thus forced to offer optimal fee arrangements given the merits of individual clients' cases, in spite of the fact that the individual clients themselves may not always be aware of all the salient features of their cases. In contrast, in class actions the choice of attorney is usually made only indirectly. Typically, the court chooses the representative class member out of the class members who initiated the lawsuit, and the representative's attorney is then automatically appointed to represent the class. Although such a selection process is instrumental in motivating lawyers to search for worthy causes of action and appropriate class representatives, it nevertheless undermines the competitive forces in the selection of the class attorney.

Moreover, the potentially large financial burden of the class action results in a limited and specialized class action bar, which further limits the possibility for a real market for class attorneys.

p. 450 Using a mechanism design approach, it is possible to show that if the court can observe the class attorney's effort (the number of hours she spent on the case), then the optimal expected payment to the class may be realized using the *lodestar* method—a contingent hourly fee arrangement which is currently practiced in many class actions— but only if the hourly contingent fee is multiplied by a *declining*, as opposed to the practiced *constant* multiplier. That is, the optimal contingent fee to the class attorney should be concave in the number of hours worked. In some circumstances, the same optimal fee structure can be implemented even if the court cannot observe the class attorney's effort, and is therefore forced to use a *percentage* fee. In such cases the class attorney can optimally be offered a choice among a schedule of fees, each consisting of a fixed percentage and a threshold amount below which the class attorney earns no fee, with the threshold increasing with the chosen fixed percentage. The class attorney is paid the fixed percentage chosen only for amounts won above the threshold.

Both fee schedules allow the class attorney to capture a positive rent, over and above her reservation value. This positive rent is a direct consequence both of the court's inability to secure optimal effort by the class attorney (the moral hazard problem) and of the court's lack of information concerning the attorney's ability and the merit of the case (the adverse selection problem). The possible equivalence of the optimal percentage and lodestar methods suggests that the adverse selection problem should be of much concern to courts and regulators when considering how to reform class actions. This finding should be contrasted with the extensive attention given by the literature to lawyers' moral hazard problems, and the scant discussion, if any, devoted to adverse selection issues.

To gain some intuition for our results, suppose first that the court can perfectly observe and monitor the time the class attorney spends on the case but is not completely informed about either the attorney's ability, or the merits of the case. In other words, the court does not know the class attorney's production function—the way in which her effort would affect the expected judgment—which implies that the court faces the problem of determining the level of effort that should be optimally exerted by the attorney.

Clients in ordinary litigation do not usually face such a problem, for two reasons. First, the attorney can be paid her regular hourly fee independently of the outcome of trial. When paid the reservation value of her time, the attorney is likely to abide by both professional and ethical duties toward her client, and invest optimally in the case. Second, even assuming away professional and ethical considerations, competition among attorneys is likely to drive attorneys' fees toward their respective reservation values, leaving all the surplus to the client.

p. 451 In contrast, in class actions the attorney's compensation must be contingent on winning, and therefore it must be adjusted to account for the risk of non-payment. The lower the probability of winning, the higher the likelihood of non-payment, and the higher should be the adjustment of the attorney's fee. In the absence of any competitive forces ↵ the attorney may therefore be tempted to pretend that the probability of not winning is higher than it actually is, in order to win a higher adjustment. Such behavior generates inefficiency, for two reasons. First, in order to reduce the rent a high-probability attorney can obtain from pretending to have a lower probability of winning, the court has to limit the number of hours paid to low-probability attorneys, thus having them exert less effort than their optimal level in the absence of asymmetric information. Second, this implies that it is impossible to prevent high-probability attorneys from obtaining a positive informational rent.

By pre-specifying different levels of effort and adjustments, the court should optimally screen among the different "types" of attorney, in order to have each attorney's investment in the case be as close as possible

to the optimal investment, given her information. However, such optimal screening cannot avoid underinvestment of the attorney's effort on the one hand, and overpayment to the attorney on the other.

The main result of Klement and Neeman (2004) is that when the class attorney possesses private information about the probability of winning the class action, the rent that she extracts under the optimal fee schedule may be so large that, by using a percentage fee schedule, the same optimal pairs of effort and adjustments can be implemented even if the attorney's effort cannot be observed at all. Intuitively, a percentage fee induces the class attorney to work on the case up to the point where her marginal return equals her per-hour cost. Since the attorney's marginal return is increasing in her percentage, so is her choice of effort. Klement and Neeman (2004) show that to implement the optimal fee schedule the percentage that is chosen by the attorney must be increasing in her estimated probability of winning. At the same time, to extract at least part of the attorney's informational rent, each percentage must be coupled with a threshold amount below which the attorney earns no fee. They show that optimal screening among attorneys according to their estimated probabilities of winning requires coupling a higher percentage with a higher threshold, which still leaves the attorney an informational rent that increases in her probability of winning. As it turns out, the informational rent of the attorney under this payment scheme need not be higher than the rent she obtains under the optimal fee schedule when her effort is observable.

## The Design of Third-Party ADR Mechanisms

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Most proposals for reform of the judicial system include detailed plans to encourage litigants to use alternative dispute-resolution (ADR) mechanisms. Among those, two stand out: arbitration and mediation. Arbitration is an adjudicative procedure, in which a privately hired third party hears the evidence and then delivers a (potentially) binding decision. Mediation is a facilitative procedure, where the third party assists the litigants to reach an agreement and settle their dispute.

p. 452 There is a vast amount of theoretical and empirical literature on the use of third-party ADR mechanisms.<sup>23</sup> Yet, none of this literature seems to answer a fundamental puzzle: how can third parties improve either the quality of decision-making or the efficiency of settlement negotiations? Indeed, a number of results in the mechanism design literature that describe how in some contexts it is possible to “decentralize” any social choice rule suggest that they cannot.<sup>24</sup>

Both mechanisms have many effects that go beyond the scope of a simple rational behavior model. Nevertheless, it would be interesting to examine their more limited implications within such a model. ADR mechanisms may figure into our framework in two possible variations – arbitration and mediation. In the first, one would replace the court with an arbitrator who could deliver an “intermediate” judgment. That is, the arbitrator, unlike the court, would not be required to decide the dispute on an all-or-nothing basis, and may therefore decide that the defendant should compensate the plaintiff for only part of his losses. More generally, an arbitrator would not be bound by substantive law. The question, thus, is whether relaxing this constraint can help implement substantive standards more efficiently.

Notice that the parties may opt for arbitration either before the dispute or after it. Signing an arbitration agreement before the dispute is not always possible. Yet, when it is possible, the parties would do so only if it would minimize their litigation costs, subject to the substantive law constraint (assuming, of course, that substantive law is efficient). That is, they will choose arbitration only if it is *ex ante* efficient. On the other hand, if the arbitration option is available only after the dispute, the parties would attribute no value to maintaining the substantive law constraint. They will, therefore, select arbitration only if its outcome is *ex post* efficient for both. It is interesting to examine the effect of the different timing of selection on the optimal structure of arbitration mechanisms.

In the second variation, we may want to allow the litigants to use a mediator who can transfer information between them before they decide whether to settle, and to help them coordinate on a specific correlated equilibrium. Referring back to Figure 18.1, the mediator can affect both the mechanism,  $M$ , and the appropriate solution concept,  $S$ . Some important work on these questions has already been done by Brown and Ayres (1994). Yet, they, too, have not accounted for the effects of mediation on the implementation of substantive standards.

A crucial first step toward addressing these issues hinges on the questions of when and how it is possible to find simple “practicable” game forms that would implement the same social choice function as some given abstract direct-revelation mechanism. These questions, which are still very much open questions in mechanism design theory, can be answered in some contexts (cf. auction theory). The challenge is to come up with a general answer that would shed light on the question of mediation versus arbitration versus abstract mechanism design.

## Concluding Remarks

p. 453

This chapter draws a template for future research. It introduces a framework that respects the ingrained distinction between substance and procedure, yet does not undermine the substantive (or primary) effects of procedural rules. Using a mechanism design approach in which substantive law defines the social choice function and procedural rules describe possible game forms that may implement it, may prove useful in realizing the possible effects and limitations of various procedural mechanisms.

However, like any other model or approach, the mechanism design approach also has its weaknesses. It tends to abstract away from many complicating factors that often prove very important in practice. And it may prove to be sensitive to the allocation of information between the litigants, to their renegotiation opportunities, and to various sources of bounded rationality.

Mechanism design is therefore one more instrument in the policy-maker’s toolkit. It may offer a fresh perspective over long-debated issues. Combining it with other theoretical and empirical methodologies would prove fruitful in the search for more efficiency and justice in legal systems.

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## Notes

2 The same framework may also be applied to analyze the rules of evidence. In fact, the approach advocated in this chapter closely resembles that of Sanchirico (1997).

3 See for example Rule 1 of the American Federal Rules of Civil Procedure; Rule 1.1 of the English Civil Procedure Rules.

4 See for example the reform proposals in England (Woolf, 1996), Hong Kong (Chief Justice’s Working Party on Civil Justice Reform, 2004), and British Columbia (Civil Justice Reform Working Group, 2006).

5 See Hay and Spier (1998), Spier (2005), and Daughety and Reinganum (2012).

6 See James et al. (1992, p. 2). On the history of this distinction see, for example, Risinger (1982).

7 See Cook (1933).

8 See Scott (1975).

9 See Shavell (1977, 1982a).

10 The law of evidence, which is not analyzed here, determines which information can be brought to the court’s attention, how, and what weight it should be given in the court’s decision.

11 On the adversarial nature of civil procedure in continental, usually perceived as inquisitorial, systems such as France, Italy, and Germany, see Davis (2002).

12 This is opposed to *property rules*. The distinction between liability rules and property rules goes beyond the scope of this chapter. See, for example, Calabresi and Melamed (1972).

13 Sometimes, the more stringent requirement that the solutions of  $M$  coincide with  $f(\theta)$  for every state of the world  $\theta \in \Theta$  is invoked.

14 This diagram, which is known as a Mount-Reiter triangle, appeared in Mount and Reiter (1977).

15 See, for example, Shavell (1982b), Braeutigam et al. (1984), and Katz (1987).

- 16 See, for example, Miller (1986), and Chung (1996).
- 17 In Klement and Neeman's pleading mechanism the defendant is asked to plead whether she is liable or not. If she pleads liable, then she has to fully compensate the plaintiff for the damage caused. If she pleads not liable, then the plaintiff decides whether to litigate to trial or drop the case.
- 18 For a similar conclusion see Nalebuff (1987), proposition 3.
- 19 Equity cases were different, in that these facilitated the transmission of documentary evidence before trial. This was meant to overcome a party's privilege at common law trials not to testify against his own cause. See James et al. (1992, pp. 232–3).
- 20 See Kakalik et al. (1998).
- 21 See for example Sobel (1989), Cooter and Rubinfeld (1994), and Hay (1994).
- 22 The most dramatic example is the asbestos industry, which has been exposed to numerous class actions since the 1970s, resulting in several defendants turning insolvent (Hensler et al., 1985).
- 23 See for example Shavell (1994) and Bernstein (1992).
- 24 For example, the second-price auction is a decentralized mechanism that implements the optimal allocation in a single good auction.