

Economic Theories of Legal Liability

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Most civil disputes concern liability. The defendant is liable when the law requires him to pay damages for harm done to the plaintiff. Legal scholars discuss at least three objectives of liability law: compensating victims, deterring injurers, and spreading risk. Economic theories, in contrast, tend to understand liability law as a search for efficiency in incentives and risk-bearing.

This essay synthesizes and re-conceptualizes some central results of the economic analysis of liability law and sketches the legal details that drive them. Three different legal mechanisms for creating efficient incentives are examined in turn. The first mechanism uses the legal rule of strict liability to internalize costs. The second mechanism uses a negligence standard to create and enforce efficient standards of behavior. The third mechanism uses law to channel transactions into voluntary exchange. The initial explanation of the three mechanisms makes simplifying assumptions of perfect information, solvency, costless dispute resolution and risk neutrality, before examining the results of relaxing these assumptions. The rules of the three major bodies of liability law—property, contracts and torts—will be analyzed as examples within these three mechanisms. Contract law concerns broken promises, tort law concerns accidental or intentional harm to people or property, and property law concerns appropriation of ownership rights or interference with them.

Internalization and Strict Liability

Liability law can price an externality by making the injurer strictly liable for any damage caused, thus creating incentives for efficient behavior. When “strict” liability applies, the injurer who caused the harm must compensate the victim, even if the injurer was not at fault. To illustrate, the buyer who breaks a contract by refusing to take delivery on a good must pay the seller the difference between the contract price and the market price at which it can be resold. The fact that breach was not the promisor’s fault is no defense. Similarly, manufacturers are liable for consumer injuries caused by defective products. The fact that some defective products slip past the best quality control is no excuse.

When a court finds the defendant liable for harming the plaintiff, damages are computed by juries or judges in accordance with particular rules for different bodies of law. The goal of perfect compensation apparently lies behind many of these rules, where perfect compensation is the sum of money that restores the victim to the level of well-being that would have prevailed but for the injury.

Basic facts about injuries must be supplied to courts by the victims, who obviously have an incentive to exaggerate. Courts have responded by adopting rules that exclude compensation for certain kinds of harm. First, some harms are so ephemeral that courts bar compensation of them to keep uncertainty about damages within reasonable bounds; for example, compensation is less likely for fear than pain. However, U.S. courts have expanded compensation for ephemeral harms in recent years and seem more willing to use the best available measure, rather than proceeding as if ephemeral harms were nil.

Second, some harms are too speculative to allow compensation, notably unrealized profits. To illustrate, a party who is wrongfully prevented from exploratory drilling for oil probably cannot recover its expected value (no compensation for “economic harms”), but must rely instead upon indirect measures of loss that are more objective, such as costs incurred on exploration.¹

Third, many harms are too remote to be compensable. The question of remote versus proximate harm provides tort law with one of its most vexing problems and some of its most improbable cases. In one case, the porter on a departing railway coach helped a man to leap onto its steps, but the man dropped his Fourth of July package under the train’s wheels, where it exploded and jarred loose the scales on the adjacent platform. The court found that a

¹See for example, *Freund v. Washington Square Press, Inc.*, 34 N.Y.2d 379, 357 N.Y.S.2d 857, 314 N.E.2d 419 (N.Y. Ct. App. 1974) (expected royalties from publishing contract unrecoverable because they are uncertain and speculative); *Universal Commodities, Inc. v. Weed*, 449 S.W.2d 106 (Tex. Civ. App. 1969) (prohibiting recovery of consequential damages for a breach which arguably kept plaintiff from establishing a new business); *Dobbs* (1973); but see, *Fera v. Village Plaza, Inc.*, 396 Mich. 639, 242 N.W.2d 372 (1976) (reinstating jury verdict which awarded a new business lost profits caused by the breach of a lease).

woman injured by the falling scales could not recover from the railway company because the porter's act was not the "proximate cause" of the injury.²

One reason why the porter's act was held to be "remote" is that the actual harm could not have been foreseen by a reasonable person. Foreseeability limits damages arising from broken promises as well as accidents. For example, an English court found that the party who received a broken mill shaft for repair could not foresee that the mill would close pending its return (the mill might have had a spare shaft), so unreasonable delay in returning the shaft by a circuitous route did not trigger liability for profits lost by the mill's closing.³

Finally, some harms such as dismemberment, disfigurement, or death may be incomparable in the sense that the plaintiff would not have submitted to the harm in exchange for any amount of money. When courts speak of "compensation," say, for the death of a child, the term cannot have its literal meaning.

The imperfections listed so far tend to result in under-compensation; imperfections that tend toward over-compensation are discussed later. When compensation is too low or too high, a rule of strict liability distorts incentives, internalization is imperfect and the law will be inefficient. However, law is too cunning to be thwarted so easily. Internalization is not the only way to create efficient incentives. The problem of imperfect prices can also be overcome by setting legal standards of behavior, as discussed next.

Compliance With Negligence Rules

The fact that the injurer's behavior was reasonable and free of fault is not a defense in suits where courts apply strict liability, like the examples of contracts and consumer product injuries cited above. In contrast, physicians who follow reasonable practices of their profession are not liable to injured patients. Medical malpractice is governed by a negligence rule, not a rule of strict liability. A negligence rule imposes a legal standard of behavior and imposes liability only on people who fail to comply.

The efficiency of the standards-and-sanctions approach depends upon the accuracy of the standard and the adequacy of the sanction. According to the traditional legal formulation of the negligence standard, care should be "reasonable under the circumstances." Sometimes courts hold that it is unreasonable for the injurer to give more weight to his own benefit than to the costs he imposes upon others. To develop this second idea, let b denote the benefit to the injurer from doing a specific act, and let q denote the probability that the act causes harm d_c to the victim. An act is wrong that benefits the injurer less than its expected external cost to others: $b < q \cdot d_c$.

²Palsgraf v. Long Island Railway Co., 248 N.Y. 399, 162 N.E. 99 (1928).

³Hadley v. Baxendale, 9 Exch. 341 (Exch. 1854).

This definition of wrongdoing was promulgated in *United States v. Carroll Towing Co.* (159 F.2d 169, 2d Cir. 1947), the torts case most celebrated by economists. A tug boat tried to remove one barge from a string of them to which it was tied, but a second barge broke loose and sank a third barge. Should liability fall on the owner of the tug boat, the second barge, or the third barge? Judge Hand found that a party was at fault if its cost of avoiding the accident was less than the resulting harm multiplied by its probability. He even expressed this argument in mathematical notation similar to the definition just presented, thus endearing himself to economists forever. The Hand Rule was subsequently refined by interpreting its variables as marginal values, not total values.

Before applying his formula, Judge Hand determined that the operators of barges and tug boats had no standard of care that applied in the circumstances. When no community standard of care exists, courts may determine “reasonable care” in the circumstances. The Hand Rule is accepted by many commentators on law as the legal definition of reasonable care (*Restatement (Second) of Torts*, 291–293).

When a community standard of behavior already exists, however, courts usually defer to it. For example, if ophthalmologists test for glaucoma as part of routine eye examinations for middle-aged patients, then most courts will hold a physician at fault who does not conform to this practice, and conversely, a physician who conforms will be found non-negligent. However, courts sometimes criticize the standards of specialized communities. One court held that an ophthalmologist was liable for failing to test for glaucoma even though the disputants agreed that the patient was below the age at which such tests were routinely given in that state.⁴

Deference to community standards can be economically justified, even without a cost-benefit test, by the incentive structure of the interaction in which the standard emerged.⁵ Community standards that arise from repeated interactions are often efficient with respect to the players’ interests. To illustrate, the accounting profession as a whole benefits from rules that provide a clear signal to potential investors concerning the financial condition of an audited firm. Instead of trying to improve upon generally accepted accounting practices, courts should insist that all accountants conform to them.

Although the standards of a profession usually balance the cost and benefits of its customers, they may not take into account externalities that accrue to third parties. There is no presumption that the accounting profession will generate rules to provide clear signals to the Internal Revenue Service. Community standards do not deserve deference from law makers when their effects spill over to third parties.

⁴Helling v. Carey, 84 Wash.2d 514, 519 P.2d 981 (Wash. 1974). However, this court decision was subsequently preempted by state legislation recognizing custom as a defense.

⁵See Cooter (1990) responding to Rubin (1977), Priest (1977), and Goodman (1978).

Negligence rules that impose liability for accidental harms do not license intentional harms. Punishing a forbidden act is different from pricing a permitted act. A person who pays the price of a permitted act faces no further exactions for doing it. For example, a person who breaches a contract usually owes the same amount of damages whether the breach was intentional or accidental ("efficient breach hypothesis"). When an act is forbidden, however, the law increases the sanction for doing it repeatedly or intentionally. Thus a repeat offender receives an enhanced sanction, whereas a repeat purchaser of goods often receives a discount. A person who accidentally violates a standard of care is liable for compensatory damages, whereas a person who violates it intentionally may be liable for punitive damages or criminal prosecution. Laws prescribing punishment recognize that deterring unintentional lapses from a legal standard requires different policies than deterring calculated violations. A full analysis of the law would require economic models of decision-making to incorporate more psychological phenomena associated with diminished rationality, such as weakness of will, lack of attention, and rationalization.

Is liability for compensatory damages sufficient to deter intentional wrongdoing? A risk neutral, rationally self-interested person will be deterred from wrongdoing when the benefit, denoted b , does not exceed the expected liability. The expected liability equals the probability of harm resulting from the act, denoted q , times the probability that courts will hold the injurer liable, denoted p , times the damages, denoted d . Thus the condition for compliance can be written $b < q \cdot p \cdot d$.

An implication of this condition is that a rational injurer always conforms to a Hand Rule negligence standard when compensation and enforcement are perfect. (To see why, recall that under the Hand Rule $b < q \cdot d_c$. If $d = d_c$ and $p = 1$, then $b < q \cdot p \cdot d$.) Conversely, a rational injurer may violate a Hand Rule standard when compensation is too small or the enforcement probability is too low. These enforcement errors arise when the victim is unaware of the harm, unable to prove that it occurred, unable to prove who caused it, or unable to prove that the person who caused it was at fault.

If imperfect damages and enforcement prompt a rational injurer to violate a negligence standard, deterrence can be restored by holding the injurer liable for punitive damages in addition to compensatory damages. "Punishment" usually refers to damages that exceed the amount necessary for perfect compensation ($d > d_c$). To implement this idea, define the punitive multiple m as the ratio of damages to perfect compensation: $m = \text{def } d/d_c$. Thus $m = 1$ indicates perfect compensation, whereas $m > 1$ indicates punishment. The definition of the punitive multiple can be substituted into the previous equation to obtain $b/(q \cdot p \cdot d_c) < m$, which indicates the minimum punishment necessary for a rational injurer to comply with the legal standard.

A special case is important for law. Assume that the injurer's benefit from wrongdoing equals the victim's expected harm: $b = qd_c$. Under this assumption, the preceding relation implies that deterrence will hold when $m > 1/p$. This

“rule of the reciprocal” states that deterring wrongdoing requires the punitive multiple to equal or exceed the reciprocal of the enforcement probability (Cooter, 1989a).⁶ To illustrate, assume that 50 percent of the injurers who would be held liable if courts had perfect information are actually held liable. The rule of the reciprocal asserts that a punitive damage multiple of 2:1 is needed for deterrence.

Courts rarely award punitive damages, and they have not settled upon an explicit standard like the rule of the reciprocal for computing their extent (Ellis, 1982; Landes and Posner, 1987, pp. 302–307). Even so, the damages routinely given by courts often contain an implicit element of punishment. To see why, consider the famous example of sparks emitted from a railway train that occasionally set fire to farmers’ fields (Coase, 1960). Assume that an inexpensive filter placed in the smokestack of a locomotive reduces spark emissions by one-third, and the damage from fires falls from 100 units to 67 units. Under a negligence rule, a railroad that installed filters would escape liability for fires, whereas a railroad that failed to install filters would be liable.

A suit brought by a farmer would raise the question, “Did the railroad’s negligence cause the fire?” In other words, would the spark that ignited the field have passed through a filter or been trapped by it? The most precise answer is that due care would have reduced the probability of harm by 33 percent. Perfect compensation requires the courts to discount the victim’s actual harm by the expected harm that would occur without the injurer’s negligence, so the negligent railroad’s total liability should be 33 units. However, trial courts are likely to award damages of 100, rather than 33. Similarly, exposure to a carcinogen increases a pre-existing risk of cancer, or negligent monitoring of management by directors increases a pre-existing risk of self-dealing. Since courts fail to discount liability by pre-existing risk, an award of nominally compensatory damages often contains a punitive element.

The element of punishment causes the expected costs of the wrongdoer to jump at the partition between right and wrong action.⁷ This discontinuity figures prominently in economic models of negligence. Because of it, most injurers are not balancing benefits and costs at the margin. Corner optima have important consequences for the elasticity of the supply of precaution, as will be explained later.

Exchange, Disgorgement, and Markets for Rights

Exchange does not correspond to a distinct type of rule, like strict liability or a negligence standard. Rather, it refers to a strategy that encourages

⁶Numerical examples of the rule of the reciprocal appear in Landes and Posner (1987; p. 160, footnote 12) and Shavell (1987; example 6.2 on page 131).

⁷The discontinuity was assumed, but not explained, in Brown (1973). Also see Goetz (1984, pp. 292–306). A detailed explanation is in Cooter (1985). Mark Grady has criticized this theory, notably in (1988a, 1988b, 1989).

bargaining and sale of liability rights, which can be pursued in the context of any legal rule. Thus, liability rights are treated as if they were property rights. I begin this section with a general account of property rights, and then proceed to discuss the exchange of liability rights.

Property

Property law creates a zone of discretion and a framework for voluntary exchange, which together sustain individual autonomy and channel transactions into markets (Klevorick, 1985; Posner, 1985; Shavell, 1985a). The traditional remedy in civil disputes over property is a court order (called an "injunction") to perform a specific act: for example, return the property, stop trespassing, or end unauthorized use. Injunctions in property disputes restore possession and control of property to its owner.

Injunction has another advantage: it often obviates a court determination of damages. This is especially desirable for unique goods. To illustrate, the ancestral heirs to the Blackacre estate may value it far more than its sale price. If they are wrongfully dispossessed of Blackacre, the court will return it to them, rather than allowing the trespasser to remain and pay compensation. Thus the court does not have to measure the consumer's surplus enjoyed by the heirs of Blackacre. Similarly, an art dealer who offers damages in lieu of delivering the promised painting can be forced to supply it by the court upon the buyer's insistence (Kronman, 1978).

Courts are prudent to rely upon injunction in disputes over unique goods that yield large amounts of unobservable consumer surplus. However, circumstances arise when injunctive relief is impossible, inappropriate, or insufficient. A lumber company cannot put back the trees that it cut from someone else's land. Returning a stolen painting is impossible if the thief destroyed it. Ordering the return of a stolen painting may be inappropriate if the thief disappeared after selling it to an innocent purchaser. If a trespasser's misuse of someone else's property goes undetected for several years, merely enjoining future trespass allows the wrongdoer to keep the gains from the past wrong, which will not deter future wrongdoing.

Courts usually require a person who profited by wrongfully using another's property to return the gains to the owner, which is called "disgorgement." For example, suppose a director of company *A*, who owns a controlling interest in company *B*, uses his position to induce *A* to buy goods from *B*, without divulging his ownership of *B* to the directors of *A*. Fiduciary law requires the director to "disgorge" the "secret profit," even if the transaction were in the best interests of corporation *A* (Eisenberg, 1988). This rule deters secret self-dealing and channels transactions into voluntary exchange.

The victim may prefer disgorgement rather than compensation for a variety of reasons. First, disgorgement sometimes exceeds compensatory damages. To illustrate, a director may steal a corporate opportunity that is more profitable to him than to the corporation. Second, the injurer's gain may be easier to prove and compute than the victim's loss. For example, the director

who steals a corporate opportunity and exploits it will enjoy actual profit, whereas the corporation's loss is only hypothetical.

Third, sometimes the plaintiff can dramatically alter the burden of proof in court by asking for disgorgement. To illustrate, stockholders can make a director disgorge a secret profit without proving that the director's action harmed the corporation. These special rules, called "presumptions of disloyalty," increase the enforcement probability. (Of course, the reduction in false negatives is obtained by an increase in false positives.)

Unfortunately, a thief cannot be deterred by requiring him to return the stolen money whenever he happens to get caught. Effective deterrence requires more than disgorgement. American courts rarely impose punitive damages for breach of a duty arising from a consensual relationship, such as the fiduciary relationship (Sebert, 1986; Leslie, 1987; Chutorian, 1986). Even so, the disgorgement often contains an element of punishment. Wrongdoing sometimes uses up the injurer's resources and opportunities. Thus, a corporate director may forego another profitable opportunity in order to self-deal and he may go to some lengths to disguise his identity. When the court orders the director to disgorge his profit, he will not be allowed to deduct out-of-pocket expenses or opportunity costs. Furthermore, courts often excoriate wrongdoers in ways that damage their business reputations.

Markets for Liability Rights

In principle, any legal right can be "privatized" by permitting and facilitating its sale. Think of the victim to whom law assigns a liability right as its original owner. If the victim sells the liability right and suffers harm, the injurer owes damages to whoever owns the liability right. To illustrate, suppose *A* purchases *B*'s right to recover damages for medical malpractice by physician *C*. If *C*'s negligent medical technique harms *B*, then *A* sues *C* for the harm done to *B*. *A* might be a law firm that specializes in medical malpractice. Or a health maintenance organization owned by doctors might offer to buy the rights of its patients to recover damages for medical malpractice.

Such sales would yield a surplus whenever the buyer values the liability right more than the victim. As long as sales are not obstructed by transaction costs, liability rights will end up being owned by the party who values them the most, as required for economic efficiency. Coase's (1960) development of this argument, which elicits scholarly comment 30 years later (for example, Schwab, 1987), marks the conventional beginning of the modern economic analysis of law. The Coase Theorem asserts that the court's allocation of legal rights does not matter from an efficiency viewpoint as long as transaction costs do not obstruct their exchange. In the case of medical malpractice, if courts give liability rights to injurers rather than victims (a rule of no liability), and victims value them more than injurers, then victims will buy them from the injurers.

Or suppose smoke from a factory soils the wash at a laundry. The problem could be solved by installing a filter on the factory's smokestack or sealing the

windows at the laundry. Bargaining between them should reach the lowest cost solution, regardless of the underlying law. The strength of the bargaining positions of the parties determines how they will divide the cost of protecting the laundry. The bargaining position of the pollutee is strongest when he can enjoin the polluter, strong when the polluter is strictly liable for the harm, and weak when the polluter is only liable for harm caused by negligence. So law affects the bargaining strength of the parties (distribution), but not the allocation of resources (efficiency).

The Coase Theorem predicts that as transaction costs fall, different forms of liability law become equivalent with respect to efficiency. Underlying this proposition is the hypothesis that efficient outcomes in strategic games approach 100 percent as transactions costs approach zero (Regan, 1972). This hypothesis seems glib in light of subsequent theoretical developments about games with asymmetrical information, including models of legal disputes that Coase partly inspired.⁸

However, Coase apparently wanted to get to the conclusion that voluntary exchange of liability rights is efficient. This is true in perfectly competitive markets and problematic under other circumstances. The right to recover damages under liability law is a contingent claim that matures when an injury occurs (Cooter, 1989b). By “maturing” I mean that the obligation falls due, just as with a matured bond. It is possible to envision how a perfectly competitive market in unmatured liability claims would work. The “underlying value” of a liability right refers to the expected payoff from holding the contingent claim to maturity. Competition would drive the price of each liability right up to its underlying value. The seller in a competitive market could be confident of getting the underlying value of his right even though he knows nothing about the law and accident probabilities that determine it.

To illustrate, suppose a plaintiff expects to win \$1,000 with probability $1/2$ at trial. If symmetry between plaintiff and defendant in the timing and magnitude of the transaction costs of a dispute is assumed, most bargaining models predict an equal split of the surplus. So the parties should settle out of court for approximately \$500. Furthermore, suppose the probability of an accident that gives rise to such a dispute equals $1/5$. Then the expected value of the unmatured claim is \$100. Competition among buyers of the unmatured liability claim would bid its price to \$100.

Now consider the market from the injurer’s viewpoint. The injurer who wants to extinguish his liabilities by purchasing the recovery rights of potential victims will have to pay a price in a competitive market equal to the underlying value. If the court system works perfectly, the market price of \$100 equals the external cost of the risk the injurer imposes upon others. Thus, under the assumptions of perfectly compensatory damages and symmetry in the transaction costs, the externality will be internalized in the market.

⁸The large literature on models of courts is reviewed in Cooter and Rubinfeld (1989).

Markets for certain kinds of liability rights apparently operate much as in the preceding example. Merchants often sell goods for the promise of future payment. Promises to pay, which are called “accounts receivable,” are often sold by merchants to financial institutions. The market price of accounts receivable reflects the judgment a court would render in a suit after the debt matures. In principle, similar markets could develop for rights in each branch of liability law. For example, property owners could sell their right to exclude trespassers, promisors could limit their right to recover damages for breach of contract, and potential accident victims could sell their right to compensation for future accidents.

However, imperfections in the market might disrupt this result. For example, the injurer may achieve immunity by purchasing potential claims from gullible victims, and then take too little precaution in the future, resulting in too many accidents. Also, many markets might be thin. The manufacturer of a complex product might be the only one able to assess the underlying value of potential liability claims from injured consumers. Such issues concerning the workings of markets for liability rights remain largely unexplored in theory or practice.

In the late 19th century, manufacturers often externalized risk by contracts that disclaimed injurer’s liability or waived victims’ recovery rights. Courts responded, not by improving the market for liability rights, but by closing it. Some important liability rights cannot be sold or assigned by law. For example, courts usually refuse to enforce terms in sales contracts that limit the manufacturer’s liability for consumer injuries caused by defective products, and courts usually refuse to enforce contract terms that excuse the injurer from the consequences of his own negligence (*Restatement (Second) of Contracts*, 195). A U.S. plaintiff may sell an interest in a mature liability claim to his own attorney (“contingency fee”), but not the entire claim (“rule against champerty”). The first-best principal-agent contract between risk-neutral parties usually requires the agent to pay a fixed sum to the principal in exchange for the right to any returns from the enterprise. Forbidding a contingency fee of 100 percent blocks this contract. In fact, contingency fees scandalize European lawyers, and are usually forbidden outside the United States.

It is virtually impossible for U.S. attorneys (or attorneys anywhere else) to purchase liability rights before an accident occurs. In addition to preventing victims from selling their rights, law prevents injurers from assuming excessive liability. In particular, courts refuse to enforce clauses in contracts that stipulate damages for breach in excess of the actual harm.⁹

Various ways exist to circumvent legal obstacles to the transfer of liability rights. Some liability rights can be transferred by selling the goods to which they adhere. For example, the purchaser of land usually acquires the right of

⁹For example, see *Priebe & Sons, Inc.*, 332 U.S. 407, 68 S.Ct. 123, 92 L.Ed. 32 (1947); Williston (1957).

action for past and future harms done to it, and the buyer of a corporation usually acquires liability for tort claims against it ("successor doctrine"). Some companies formed by attorneys specialize in purchasing patents solely to pursue infringement claims, without ever manufacturing the product. Similarly, a promisee may assign his contract rights to someone else in whole or in part without diminishing them, including the right to recover for past or future breaches. This means that if buyer *A* promises to purchase goods from seller *B*, and seller *B* sells the rights to seller *C*, then *C* can enforce them against *A*.¹⁰

Insurance permits the sale of potential liabilities and recovery rights without selling the good to which they adhere. An automobile insurance policy may require the insurer to pay for any harm done to the policy-holder's automobile, and the policy holder's rights to recover from the injurer may be assigned to the insurance company ("subrogation"). Potential injurers may even be able to insure against liability for punitive damages (Priest, 1989). Insurance is discussed in detail later.

These examples show that law obstructs and burdens markets for liability rights without closing them completely. The rising cost of liability has caused American industry to mount a political campaign to cap legal liability. A better solution may be to create competition in markets for liability rights. Economists have an important role to play in this policy debate by demonstrating the harm done by obstructing and burdening markets for liability rights.

Relaxing Special Assumptions

Three allocative mechanisms of liability law have been discussed to this point: internalization through strict liability rules, enforcement of standards through negligence rules, and markets for rights. The first—internalization—dominates contract law, some areas of tort law (ultra-hazardous activities, consumer product injuries), and selected regulations (for example, unauthorized use of credit cards). The second mechanism—negligence standards—dominates most areas of tort law (household accidents, automobile accidents, medical malpractice), and those areas of administrative law that apply a test of reasonableness to regulations. The third mechanism channels transactions into voluntary exchange by adopting clear and simple rules that enjoin appropriation of property and force disgorgement of wrongful gains. The market mechanism figures prominently in property law and various specialized areas of law, such as fiduciary's duty of loyalty. Market transactions could theoretically extend to rights in each branch of liability law, since strict liability and negligence rules define liability rights that could be traded in principle.

Under ideal conditions, each of the three allocative mechanisms can provide efficient incentives. Consequently, the discussion so far gives little reason

¹⁰The exception is negotiable instruments. See articles 3 and 4 of the Uniform Commercial Code.

why different mechanisms predominate in different areas of law. The next step is to relax the special assumptions and contrast the three mechanisms.

Bilateral Precaution

In many situations the victim has access to precautions that reduce the probability and magnitude of harm. To illustrate, stockholders can monitor managers, promisees can hedge against promisor's breach, and pedestrians can watch out for cars. When efficiency demands precaution by both the injurer and the victim, the situation is described as "bilateral precaution." In a situation of bilateral precaution, strict liability with perfect compensation gives efficient incentives to the injurer, but does not provide efficient incentives for victim's precaution. After all, perfect compensation makes the victim indifferent about whether or not an accident occurs.

Ideal negligence rules, on the other hand, do provide efficient incentives for bilateral precaution. Tort law contains a variety of negligence rules, such as comparative negligence, negligence with a defense of contributory negligence, and strict liability with a defense of contributory negligence. However, all the forms provide efficient incentives for bilateral precaution, assuming (i) Hand Rule standards of negligence, (ii) no enforcement error, (iii) costless dispute resolution, and (iv) risk neutrality (Brown, 1973).¹¹ The intuition behind this startling equivalence theorem is easily explained. Any negligence rule allows one of the parties to escape liability by satisfying the legal standard. A rational injurer will do so, assuming Hand Rule negligence, perfect compensation, and no enforcement error. (This argument was developed earlier.) A legal standard set by the Hand Rule is efficient. So one party takes efficient precaution to avoid liability.

Once this party satisfies the legal standard, all accident costs must fall upon the other party. The party with residual liability has incentives for efficient precaution because he internalizes all of its benefits. Therefore both parties take efficient precaution. This conclusion about bilateral precaution also extends to bilateral harms, in which both parties suffer injury and inflict it (Arlen, forthcoming).

Activity Level

As just explained, any form of the negligence rule allows one of the parties to escape accident costs by satisfying the legal standards. Legal standards of care usually apply to some, but not all, of an actor's control variables. The party who escapes accident costs by satisfying the legal standards has no incentive to choose efficient values for the control variables that are not subjected to

¹¹For the systematic development of torts theory, see Shavell (1987).

standards. To illustrate, the probability of automobile accidents depends upon how carefully and how much people drive, but liability depends only upon how carefully they drive. So careful drivers have an incentive to drive too much. In general, legal standards usually apply to the care with which an activity is done, but not its frequency. In other words, liability law applies standards to precaution but not activity levels (Shavell, 1980).

A related proposition concerns the impact of liability law on the size of an industry. Consider an industry whose products sometimes injure consumers. In principle, a negligence rule permits producers to escape liability by satisfying the legal standard, whereas a rule of strict liability does not. Thus the cost of supplying the good will be lower under a negligence rule and higher under a rule of strict liability. If liability only affects demand by affecting prices, the industry will be larger under a negligence rule than under a rule of strict liability.

To illustrate, assume that consumers are ignorant about the risk of exploding pop bottles, so changes in risk do not affect demand for bottled pop. Under a negligence rule, a bottler with reasonable quality control escapes liability, whereas a rule of strict liability forces the bottler to bear accident costs. The supply of pop will be larger under the former rule than under the latter rule.

Information and Error Costs

The three different allocation mechanisms described in this essay require different kinds of information. To internalize an externality, a strict liability rule must set damages at the perfectly compensatory level. To deter inefficient behavior, the legal standard of negligence must be set at the efficient level of care. Thus, a simple prescription is for courts to adopt strict liability rules when damages are knowable and negligence rules when efficient standards are knowable. Damages are knowable by courts when harms are monetized, and damages are unknowable by courts when harms involve consumer surplus or uncertain payoffs. Efficient standards are knowable by courts when repeated interactions between the same people produce efficient community norms. Efficient standards are often unknowable by courts or difficult for them to know when no community standard exists, so they must apply the Hand Rule themselves.

This prescription can be fleshed out by considering the costs of error. Under strict liability, many injurers are balancing costs and benefits at the margin, so the precautions of injurers are relatively elastic with respect to errors in awarding damages. In contrast, a negligence rule usually creates a discontinuity in the injurer's cost function at the legal standard of care. Most potential injurers continue conforming to the standard in spite of small changes in the magnitude or probability of damages. If a negligence rule imposes a clear legal standard, injurers minimize costs by satisfying it exactly. Thus, errors in setting damages distort behavior more under a strict liability rule than

under a negligence rule. However, errors in setting the legal standard of care distort behavior under a negligence rule, whereas a rule of strict liability dispenses with legal standards of care.

A vague legal standard presents the parties subject to it with uncertainty over possible liability. In principle, randomness in a legal standard can result in over-precaution or under-precaution. As the variance increases, a situation is approached in which expected liability is the same regardless of the actor's precaution level, thus destroying incentives for precaution. As the variance diminishes, the actor has an incentive to exceed the legal standard to provide a margin for court error within which liability is avoided (Craswell and Calfee, 1986; Johnston, 1987; Calfee and Craswell, 1984).

The third mechanism, market exchange of liability rights, does not require courts to know damages or standards. Rather, the court must be able to induce competitive markets. This mechanism is limited by market imperfections, not imperfections in the court's information.

Costly Dispute Resolution

The pricing mechanism of strict liability allows everyone who is injured to recover, and they need only prove causation to do so. The standard-setting mechanism, in contrast, only allows recovery for the victims of negligence. They must prove causation and negligence to recover damages. It would seem, then, that strict liability results in more transfer payments, which probably creates more disputes, whereas the negligence rule results in fewer disputes with more complicated issues. Whether litigation expenses are larger in aggregate with many simple disputes or few complicated disputes is an empirical question, but there is no good empirical study on this issue. One theoretical model of the decision to litigate suggests that strict liability with perfectly compensatory damages leads to excessive litigation, whereas negligence does not (Polinsky and Rubinfeld, 1988).

These results depend upon a model of the decision to litigate. High litigation costs discourage plaintiffs from asserting claims. Class action suits are designed to overcome this obstacle in cases where a lot of people are injured a little. The same effect is produced by augmenting damages, for example by awarding triple damages or attorneys fees to successful plaintiffs (Perloff and Rubinfeld, 1988).

A special concern in America is whether liability law has created opportunities for suits where a complaint is filed and a trial is threatened solely to extract a settlement. A plaintiff who can impose costly discovery and delay costs upon the defendant by filing an inexpensive complaint will demand a favorable settlement, even though the expected judgment is negligible. However, nuisance suits can only arise from such asymmetries in the timing or transaction costs of disputes (Rosenberg and Shavell, 1985; Bebchuk, 1988; Cooter and Ulen, 1988, p. 4). Lawmakers can attack the problem of nuisance suits at their source. For example, a plaintiff who seeks a temporary injunction to halt a

construction project could be required to post bond to compensate for delay of the project in the event that the court finds that the suit lacks merit.

Insolvency

The law encourages entrepreneurs to take risks with money voluntarily loaned to them by limiting the ability of creditors to recover from insolvent debtors. Unfortunately, the law sometimes encourages entrepreneurs to risk injury to third parties by extinguishing liability claims in bankruptcy. Legal doctrines have developed to limit the extinction of liability claims through bankruptcy, such as the “successor doctrine,” according to which the purchaser of a corporation acquires its full liabilities even if they should subsequently prove to exceed its assets.

To the extent that liability can be escaped through bankruptcy, each of the three liability mechanisms fails to provide efficient incentives. Introducing insolvency into an otherwise efficient liability system will result in less precaution. Greater levels of harmful activity by injurers will probably result as well, but this is not certain. The possibility of liability resulting in bankruptcy will cause the injurer to prefer assets that survive bankruptcy without being seized and sold to satisfy creditors. Furthermore, the injurer will prefer to distribute profits before the injury can materialize, rather than retaining profits that might be seized by creditors after liability materializes. These preferences over asset structure and the timing of payments could result in activity levels that are below the efficient level, rather than above it. For example, transporters of hazardous wastes might invest in too little physical capital (Posey, 1990).

The three liability mechanisms do not create equal incentives to escape liability through bankruptcy. Consider a generator of hazardous waste that will cause harm of uncertain magnitude in the future. A negligence rule permits the firm that takes reasonable precaution to avoid the possibility of a bankrupting suit. A rule of strict liability does not permit the firm to escape such suits. Consequently, the rule of strict liability will favor under-capitalized firms that can escape through bankruptcy. Thus, the distortion in incentives caused by the possibility of bankruptcy may be less under a negligence rule than under a rule of strict liability (Kornhauser and Ravesz, forthcoming).

Risk Aversion

The three mechanisms of liability law allocate the risk of harm differently. Pricing harm allocates risk to the party who causes it. Standards allocate the risk of harm to the party who does not comply with them. Markets allocate risk to the party who can bear it at least cost.

Some scholars have argued that certain bodies of liability law have risk-spreading as a goal. For example, the rule of law governing the liability of manufacturers for consumer product injuries has changed in America and other countries from negligence to strict liability during this century. Judges and scholars who support this change argue that strict liability spreads risk

farther than a negligence rule. In effect, strict liability insures consumers against injuries caused by defective products and absorbs the premium into the price of the good. (I return to this point in the discussion of insurance in the next section.)

Another example of risk-spreading is provided by the “impossibility doctrine,” which excuses breach of contract when an unforeseeable obstacle makes performance infeasible. When the closing of the Suez Canal after the 1967 war in the Middle East prevented the timely delivery of oil to Europe, as promised in numerous contracts, the parties who breached these contracts defended themselves on the grounds that performance was impossible. One line of economic analysis argues that liability should rest with the party who was in the best position to foresee the war, specifically the suppliers of oil who do business in the Middle East, rather than European manufacturers (Posner and Rosenfield, 1977). The other line of argument asserts that efficient risk-bearing requires spreading the risk among all buyers of oil by permitting the supplier to breach without liability (Trimarchi, forthcoming). Similar arguments can be made with respect to risks that are beneficial rather than harmful, such as the possibility of making more profit from a contract than originally expected (Polinsky, 1983). Choosing between the alternative rules requires empirical data that is lacking.

Insurance

I will briefly discuss how insurance affects the sketch of liability law in this essay. Insurance against liability is legal and available in most jurisdictions, with some exceptions. A notable exception is insurance against liability for punitive damages, which is illegal in some jurisdictions and excluded from private contracts in others (Priest, 1989). A purpose of liability law is to provide incentives for precaution. Since insurance undermines incentives for precaution, the argument goes, it should be forbidden.

However, this argument assumes that injurers respond to liability insurance by decreasing precaution. I accept this assumption for the moment and explore its consequences. Even if insurance causes more harm, it still results in a Pareto improvement in the simple model under any liability rule.

If liability insurance is sold, the insurer and insured must be better off or they would not have entered into the transaction. But what about the victims of harm? By assumption, liability insurance results in more harm and more liability. If, however, liability results in perfect compensation of victims, as assumed in the simple model, then victims are indifferent over the frequency and extent of accidents, and victims are no worse off.

Of course, this argument for the Pareto superiority of liability fails when applied to harms whose compensation is imperfect, such as bodily injury, disfigurement, or death. If liability insurance results in more uncompensable injuries, the victims may be worse off. Similarly, the infringement of a property right frustrates the attempt of property law to channel exchange into voluntary transactions, even if compensation is perfect.

The preceding argument assumes that liability insurance results in more accidents, by reducing the liability damages actually born by the injurer on the margin. While correct in many circumstances, this argument is not universally true for two reasons. First, insurance can cause the damages born by injurers to increase, given bankruptcy laws. Suppose a firm worth \$400,000 might cause a future accident resulting in total tort claims as high as \$500,000. It may respond by paying excess dividends to reduce its capital value to \$300,000. Alternatively, if insurance is available, it may retain its capital at \$400,000 and buy \$175,000 worth of insurance. Thus insurance causes the potential liability payable from the firm's assets to rise from \$300,000 to \$325,000. In addition, liability insurance avoids externalizing \$200,000 in risk upon accident victims.

Second, the probability of accidents may actually fall as a result of insurance, if insurance companies monitor policy holders. Monitoring by insurance companies applies controls to accidents before they materialize, and may be especially effective against lapses, slips, carelessness, imprudence, or recklessness. These accidents do not arise from a careful balancing of benefits and costs, which is why economists have difficulty modelling them.

The preceding discussion has implicitly focused upon the policy choice between permitting or forbidding liability insurance. I have not discussed regulations that could possibly reduce moral hazard and adverse selection. For example, public safety regulation might in principle be a cheap substitute for insurance company monitoring of policy-holders, which is far from perfect.

An earlier generation of lawyers recommended imposing the highest and most complete level of liability on business enterprises ("absolute liability") in the belief that their owners would absorb some of the costs and the remaining costs would be spread among all customers ("theory of enterprise liability") (Priest, 1985; Kornhauser, 1982). Enterprise liability in effect replaces accident insurance by victims ("first party insurance") with liability insurance by injurers ("third party insurance").

Liability insurance is sometimes cheaper than accident insurance, as when oil companies can insure against liability more cheaply than the victims can insure against the harm caused by oil spills. However, liability insurance is usually more expensive than accident insurance for two reasons. First, transaction costs are much higher in courts than in markets. The plaintiff's attorney routinely takes at least one-third of any settlement or judgment as a contingency fee, which far exceeds overheads in accident insurance. Second, liability insurance attempts to provide perfect compensation, while accident insurance covers only risks that victims believe it worthwhile to insure against. If I am injured when my car is hit by an insured motorist who is at fault, the law forces the injurer to compensate me for pain and suffering. On the other hand, if the accident was caused by a patch of ice on the road, my recovery is limited by my insurance coverage, and even the most comprehensive policy does not cover pain and suffering.¹²

¹² Pain and suffering presumably lowers total utility without affecting the marginal utility of money. See Cook and Graham (1977); Schwartz (1988).

The fact that the tort system provides victims with more extensive insurance than they would purchase in the market represents a profound dilemma. Perfect compensation is required to internalize costs, but perfect compensation covers harms that victims would not insure against. Internalization and compensation are apparently at odds. In principle, the dilemma could be solved by a market for liability rights. If victims could sell their rights to recover damages for harms that are not worth insuring against, then unwanted insurance would be eliminated while injurers would still bear the cost of risks they impose on others.

Another final inefficiency caused by enterprise liability is that juries are more inclined to find liability for injuries arising from innovative products than from familiar ones. Consequently, enterprise liability has a “bias against the new and unfamiliar” that stifles innovation in American industry (Huber, 1988).

Summary and Conclusion

This paper has spelled out the three types of liability rules: strict liability, negligence, and property. These rules correspond to the economic mechanisms of prices, standards, and markets, whose economic purposes are internalization, compliance, and exchange. Strict liability dominates contract law, some areas of tort law, and selected regulations. Negligence rules apply to most tortious accidents, except consumer product injuries and ultra-hazardous activities. Market mechanisms dominate property law as well as various specialized areas of law, such as fiduciary’s duty of loyalty. Also, out-of-court settlements can be described as bilateral exchange of mature liability claims.

Economics intermingled with law at its inception. Adam Smith wrote not only *The Wealth of Nations*, but also *Lectures on Jurisprudence* (1766 [1978]). The elaboration of price theory by mathematical economists in this century, however, took the legal framework for granted. Liability law is an important mechanism for allocating resources, which should interest economists for its own sake. In addition, liability law is a repository of practical knowledge about incentives whose study is yielding fresh insights into power, externalities, markets, organizations, and other phenomena.

■ *This paper was written for a symposium at Stanford Law School in the spring of 1990, entitled “The Law and Economics of Liability,” organized by Mitchell Polinsky and Carl Shapiro, and sponsored by the John M. Olin Foundation. I am grateful for comments from the editors of this journal, Al Klevorick, Mitchell Polinsky, and other participants in this symposium.*

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