

Mistakes, Negligence and Liability

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ABSTRACT

We show that, when individuals can make mistakes, the negligence rule has the characteristics of the strict liability rule. Potential injurers then either choose prevention above the standard of care or buy liability insurance as protection against the risk they will make a mistake.

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1. Introduction

Reflecting widely held views, Shavell (2000, pp. 171-172), argues that under a negligence rule liability insurance is purchased to protect against three distinct possible risks: 1) risks due to the uncertain operation of the legal system; 2) risks due to momentary lapses in care; and 3) risks to principals due to the negligent behavior of agents. There is a large literature, going back to Craswell and Calfee (1986) and Png (1987), examining the effects of judicial errors in determining liability. Sarath (1991), Gutierrez (2003) and Fagart and Fluet (2009) examine the relationship between judicial errors in applying the negligence rule and purchases of liability insurance. Mistakes by the legal system affect the risk of being found negligent, but do not affect the relationship between the potential injurer's decisions and the risk of accidents. Mistakes by potential injurers, on the other hand, affect both the risk of accidents and the risk of being found negligent. To our knowledge, only Diamond (1974) considers the effect of mistakes by potential injurers. However, Diamond assumes that liability insurance is not available.

The objective of this paper is to determine whether the fact that people make mistakes and suffer momentary lapses in care is sufficient to create a demand for liability insurance under a negligence rule. We distinguish between the intended or usual level of precaution and the level of care at a particular moment, which due to a mistake, may deviate from the intended level of precaution. Thus, the question becomes whether people will buy liability insurance as protection against the risk they will make a mistake resulting in negligence liability. In determining negligence, the courts consider the actual care taken rather than the precaution intended.

2. Mistakes and Liability

The model is the standard model of unilateral accidents between strangers. Following Diamond (1974), we distinguish between precaution, which is the usual or intended level of effort to avoid injuring others, and care, which deviates randomly from precaution and is measured at the time an accident occurs. Intended precaution is x ($x \geq 0$) while care is $\tilde{y} = (1 + \varepsilon)x$, where ε is the mistake or random deviation from precaution, and $E\{\varepsilon|x\} = 0$ ($\tilde{y} \geq 0$). The probability of an accident is p , where $p' < 0$ and $p'' > 0$. However, we assume that p depends on the level of care, \tilde{y} , rather than the level of precaution. If, as the result of a momentary lapse, the level of care falls, then the risk of an accident increases.

We assume that, when an accident occurs, the realized value of care is immediately and accurately observed by the injurer, the victim, the insurer and the court. The court is then able to determine whether the realized level of care meets the negligence standard or not. Once an accident occurs, victims know with certainty whether or not they will win a lawsuit. The victim always sues if they will win and never sues if they will lose. We are agnostic regarding whether precaution is observed by the insurer; the observability of precaution by the insurer is not central to our analysis.

It is tempting to interpret ε as mismeasurement of precaution by the court. However, mismeasurement by the courts does not affect the relationship between precaution and the risk of accidents, so the risk of an accident would be deterministic. The interpretation of ε as mismeasurement introduces legal uncertainty and implies that the victim's litigation decision will be a function of the expected payoff to the lawsuit, factoring in the injurer's expected care, the distribution of errors by the court, and the cost of litigation. In particular, if litigation is costly, then for some victims litigation costs will be greater than the expected recovery and these

victims will not sue. The assumption that care is observed immediately after an accident occurs rules out this possibility. In the analysis here, victims observe the realization of care, know with certainty whether the injurer will be found negligent, and sue as long as litigation costs are less than damages.

We let $F(\cdot|x)$ represent the distribution function for care, conditional on the level of precaution. We let $f(\cdot|x)$ denote the corresponding density function. If z is the standard of due care, then $F(z|x)$ is the probability that care falls below the standard and the injurer is negligent, given precaution x . We assume $F(z|x) > 0$ for all x and $\partial F(z|x)/\partial x < 0$ and $\partial^2 F(z|x)/\partial x^2 > 0$. We assume that z is the socially optimal level of care, although this is not important for our results.

Potential injurers maximize the expected value of $u(w) - \tilde{y}$, where $u' > 0$ and $u'' < 0$. Potential injurers have fixed initial wealth w . If an accident occurs, the victim suffers damages $d < w$. If the injurer is liable, then victims are fully compensated for their damages. Victims are assumed to be risk neutral. An insurance policy consists of a premium, α , paid if no loss occurs and a net indemnity, β , received in the event of a loss. A policy provides full coverage if $\alpha + \beta = d$. Since care is known immediately after an accident, the insurance policy could be conditioned on observed care. Liability policies typically promise to pay “all sums for which the insured shall become liable.” To reflect the way that policies are written in practice, we assume that the insurance policy is conditioned on the outcome of the trial.

Under a strict liability rule, expected utility for the potential injurer is

$$U(\alpha, \beta, x) = (1 - \bar{p}(x))u(w - \alpha) + \bar{p}(x)u(w - d + \beta) - x. \quad (1)$$

Expected profit for the insurance company is

$$\Pi(\alpha, \beta, x) = (1 - \bar{p}(x))\alpha - \bar{p}(x)\beta, \quad (2)$$

where $\bar{p}(x) = E\{p(\tilde{y})|x\}$.

To be liable under the negligence rule, the individual must cause harm to another. This occurs with probability $p(y)$. The individual's realized level of care at the time of the accident, y , must also fail to meet the standard of care, $y < z$. The probability of observing care y , given an accident has occurred, when intended precaution is x is

$$g(y|x) = p(y)f(y|x) / \int_0^{\infty} p(s)f(s|x)ds. \quad (3)$$

Let $G(y|x)$ be the corresponding cumulative distribution function. The probability of being found negligent is then $\lambda(x) = \int_0^z p(s)f(s|x)ds = \bar{p}(x)G(z|x)$.

Then expected utility for the potential injurer is

$$U(\alpha, \beta, x) = (1 - \lambda(x))u(w - \alpha) + \lambda(x)u(w - d + \beta) - x. \quad (4)$$

And expected profit for the insurance company is

$$\Pi(\alpha, \beta, x) = (1 - \lambda(x))\alpha - \lambda(x)\beta. \quad (5)$$

Expected utility and expected profit are the same as under a strict liability rule where the probability of an accident is $\lambda(x)$. This yields our first result:

Proposition 1: Assume a negligence rule. Then the possibility that individuals may make mistakes implies that ex ante the negligence rule has the characteristics of a strict liability rule.

At the time an individual is deciding whether to purchase insurance, the strict liability and negligence rule differ with respect to the probability the individual will become liable for damages. However, the decision faced by the individual is the same.

Since the decision is the same under strict liability and negligence, it follows that individuals will purchase liability insurance.

Proposition 2: Assume a negligence rule. The possibility that individuals may make mistakes implies that there is a demand for liability insurance.

Thus, the fact that individuals make mistakes provides one explanation why there is a market for liability insurance under the negligence rule. This result holds under fairly general assumptions. We have not made any assumption about the market structure of the insurance industry. We have not made any assumptions about pricing; premiums may be actuarially fair or there may be a premium loading. Premiums may be proportional to coverage or may be non-linear. Precaution may be observed by the insurer or there may be moral hazard.

The effect of precaution on the expected probability of liability is $\lambda'(x) = \bar{p}'(x)G(z|x) + \bar{p}(x)\partial G(z|x)/\partial x < 0$. We also have $\lambda''(x) = \bar{p}''(x)G(z|x) + 2\bar{p}'(x)\partial G(z|x)/\partial x + \bar{p}(x)\partial^2 G(z|x)/\partial x^2 > 0$. That is, increasing precaution reduces the probability of liability but at a decreasing rate. Then λ , probability of liability, has the properties assumed for p , the probability of an accident, in the standard model of strict liability. This suggests that many results that are valid under a strict liability rule are valid under the negligence rule where λ replaces p .

In the deterministic case where potential injurers do not make mistakes, potential injurers just meet the (optimally set) standard of care and do not buy liability insurance (Shavell, 1982, Proposition 5). This raises the question of whether there are any circumstances under which this conclusion holds when individuals do make mistakes. The answer, as we now show, is no.

Proposition 3: Assume a negligence rule. The possibility that individuals may make mistakes implies that individuals either insure or choose precaution above the standard of care.

From Proposition 2, potential injurers buy liability insurance against the risk of a mistake that leads to care falling below the negligence standard. If potential injurers do not purchase liability insurance, they must be able to completely avoid being negligent. But if $F(z|x) > 0$ for all x , this is not possible. Suppose instead that the distribution of care and the standard of care are such that there is an \hat{x} for which $F(z|\hat{x}) = 0$. While z is the legal standard of care, \hat{x} is the de facto

standard of care. Observe that $F(z|z) > 0$ implies $\hat{x} > z$. If potential injurers choose precaution \hat{x} and do not buy insurance, then the level of precaution exceeds the negligence standard. Alternatively, if potential injurers choose the level of precaution below \hat{x} , then they are exposed to liability risk and will buy insurance.

Proposition 3 formalizes the intuition in Posner (2006, p. 181), "Being careful means having attitudes, acquiring skills and knowledge, etc., that reduce the probability of a careless slip but do not eliminate it; to eliminate it would require an excessive investment in care." Individuals who choose not to make "an excessive investment in care" will purchase liability insurance.

3. Conclusion

In this paper we examine the effect of mistakes by potential injurers on tort law and on the demand for insurance. We show that mistakes increase the expected probability of loss under strict liability, but otherwise have no effect. We show that, when individuals can make mistakes, they face the same insurance decision under strict liability and negligence. Potential injurers then buy liability insurance as protection against the risk they will make a mistake. We show that individuals will either insure or choose precaution above the standard of care.

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