2014

Assessing the Insurance Role of Tort Liability After Calabresi

W. Kip Viscusi

Joni Hersch

ASSESSING THE INSURANCE ROLE OF TORT LIABILITY AFTER CALABRESI

JONI HERSCH*

W. KIP VISCUSI**

I
INTRODUCTION

In his landmark 1961 article, *Some Thoughts on Risk Distribution and the Law of Torts*, Judge Calabresi provides a theoretical framework for analyzing tort liability as a risk-spreading device that functions in a manner similar to insurance.[1] In our article, we examine the insurance objective of tort liability from the standpoint of modern tort law. Since Calabresi's foundational article, there have been many changes in tort law as a consequence of the rise in mass toxic torts, design-defect cases, hazard-warnings cases, and punitive-damages awards. The changes in tort law over the past half century have altered the legal landscape in a manner that compromises the private-insurance analogy for tort liability. In many situations, tort liability does address the losses suffered by injured parties, but the tort analog to an insurance premium for this coverage is either absent or incomplete. Nonetheless, understanding how tort liability serves an insurance function is critical to assessing the role of modern tort liability.

In this article, our objective is to examine the performance of tort liability, focusing particularly on its insurance role. We examine the situations in which tort liability is well suited to providing compensation and circumstances in which its role is more limited. In situations in which there are impediments to the successful role of tort liability, we examine whether these same impediments also hinder insurance markets. Despite impediments to achieving an outcome that provides both efficient incentives for safety and optimal levels of insurance, on balance tort liability performs a socially constructive role.

Calabresi's insight that the tort system serves a fundamental insurance function has proved to be a seminal contribution to the discipline of law and economics, which at the time of his article largely consisted of only one other

This article is also available at http://lcp.law.duke.edu/.

* Professor of Law and Economics, Vanderbilt University Law School.

** University Distinguished Professor of Law, Economics, and Management, Vanderbilt University Law School. We acknowledge perceptive comments from an anonymous reviewer, our conference discussant, Guido Calabresi, and editors of *Law and Contemporary Problems*.

1. 70 YALE L.J. 499, 499–507 (1961).

major contribution, Coase's analysis of externalities.[2] Unlike the Coase theorem, which highlighted the potential efficiency of private bargains, Calabresi emphasized that the tort system serves a critical insurance role in ensuring that the price of goods reflects their true cost.[3]

Calabresi's risk-spreading theory of tort liability has had tremendous impact on the conceptualization of the role of tort liability. Law-and-economics theories derived from Calabresi's seminal insight continue to regard insurance and deterrence as the two principal objectives of tort law.[4] Much of the impetus for the adoption of strict liability rather than negligence-based liability can be traced to this insurance function. Strict liability for product-related accidents has an attractive feature in that it establishes a form of product-risk insurance for all product damages irrespective of concerns regarding negligence.[5] The fundamental role of tort liability in providing insurance is so great that it serves as one of the chief criteria for determining whether strict liability is the applicable liability rule. In particular, the widely used risk–utility test for strict liability for products includes the following insurance concept: "The feasibility, on the part of the manufacturer, of spreading the loss by setting the price of the product or carrying liability insurance."[6] Thus, based on this approach, whether a firm should be found liable for the harm under strict liability depends on whether the cost can feasibly be spread by the seller of the product. In that instance, exploiting the risk-spreading role of tort law makes imposing liability on the seller more desirable. How and when tort liability does in fact serve this insurance function given the structure of modern tort law is the focus of our article.

In this article we provide only a partial assessment of the role of tort liability, focusing primarily on the insurance function. Tort liability also serves a deterrence role, which we document. Moreover, even if tort liability has shortcomings, the appropriate reference point for assessing its performance is not a hypothetical perfect social institution, but rather is the performance of institutions that currently exist or which feasibly could be established, such as safety regulations. In many situations the same types of challenges affecting tort liability also are shared by private-insurance efforts.

Our starting point for exploring the insurance role of tort liability is a review of Calabresi's risk-distribution theory of tort law. As Calabresi observes, the functioning of tort liability parallels that of conventional insurance in many respects.[7] After an accident or an injury, there is a transfer of funds to the injured party to address the losses that have been incurred. In the case of a

2. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 1–6 (1960).

3. Calabresi, *supra* note 1, at 514.

4. STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 257 (2004) [hereinafter SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW].

5. *Id*. at 261–64.

6. John W. Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. L.J. 825, 838 (1973).

7. Calabresi, *supra* note 1.

standard insurance policy, the party suffering the loss files a claim with the insurer to which the injured party has been paying insurance premiums. In the case of tort liability, such as a product-related injury, the injured party files a tort claim against the manufacturer. Higher expected tort costs associated with a product will raise the product price. A principal difference between insurance and tort liability is that the price of the tort insurance is not explicit, because it is embedded in the price of the potentially hazardous product. In each instance, the sometimes large losses are spread across a large number of people. The insurance purchasers pay more modest premiums than the size of the average loss, and purchasers of dangerous products likewise pay price premiums that in aggregate will cover the losses but impose much more modest individual burdens. Thus, wholly apart from the deterrence function of tort liability, which is a matter that Calabresi specifically sets aside, tort damages achieve a socially valuable risk-distribution function.[8] Consumers will be insured, and product prices will internalize the costs of harms—a central theme in Calabresi's analysis.[9]

The insurance function of tort liability will generally be attractive to people who are risk averse, as most of us are.[10] The thriving U.S. insurance industry, which offers personal and commercial insurance of various kinds, exemplifies the importance of such risk-spreading concerns. The "insurance premium" for tort-liability insurance is embedded in the product price or, in the case of workers' compensation, in a lower wage rate.

The principal example of a risk situation used by Calabresi to illustrate the insurance role of tort liability is workers' compensation. Calabresi refers to workers' compensation as "a handy way of spreading losses through the price mechanism to a broad group of people—the consumers."[11] Calabresi treated the cost of workers' compensation as being shifted to consumers through higher prices, but subsequent research has focused on empirical evidence in which workers accept a wage cut, shifting costs to workers rather than consumers. Given what he views to be a successful risk-spreading activity, he questions why this approach is not applied more generally. In part II, we examine whether a workers' compensation type of insurance system could be extended to other situations where tort liability currently serves a prominent insurance role.

For tort liability's insurance function to feasibly operate through higher product prices, some kind of market relationship is required. Calabresi observes that the tort damages automobile drivers inflict on pedestrians do not fit the insurance framework because such damages for harms to pedestrians cannot be

8. *Id.* at 517–19. For a discussion of the value of tort liability independent of its deterrence function, see SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW, *supra* note 4, at 258–64.

9. Calabresi, *supra* note 1, at 500–07.

10. Charles A. Holt & Susan K. Laury, *Risk Aversion and Incentive Effects*, 92 AM. ECON. REV. 1644, 1653 (2002) (concluding from experimental results that most individuals are risk averse).

11. Calabresi, *supra* note 1, at 501.

included in the price of cars.[12] The more general reason, however, is that pedestrians and drivers of automobiles are not involved in a market exchange or any kind of bargaining relationship. Rather, this type of accident involves strangers. There is no mechanism by which such accidents would have any bearing on the purchase price of the car from the automobile manufacturer. No insurance-type arrangement between the pedestrian and the driver is feasible, because there is no way to establish an analog to paying an insurance premium. Tort liability serves both a deterrence and an insurance role in that it ensures damages the driver inflicts on the pedestrian can be addressed. However, unlike with products liability, the pedestrian pays neither an explicit nor an implicit insurance premium for this coverage.

Although Calabresi drew on interpersonal comparisons to justify the importance of risk aversion in the market for insurance or commensurate tort liability, economic theory and evidence demonstrate that one need not resort to an interpersonal comparison of utility. Risk aversion is a within-person concept, not an across-person concept.[13] It is not necessary to ask, as does Calabresi, whether a dollar for one person has a higher welfare value than a dollar for someone else.[14] Irrespective of whether an individual is rich or poor, if a person would prefer a known loss to the equivalent expected loss in an actuarially fair gamble, the person is risk averse, and insurance is potentially desirable.

An aspect of Calabresi's discussion that is of less concern in the current economy is the role of tort when there are monopolies. How the risk-spreading device will function in situations that do not fit the competitive-market paradigm is a matter of considerable concern to Calabresi. In his article, he explores other market contexts, with a detailed exploration of how the analysis changes in markets in which the producer is a monopolist or operates in an oligopolistic industry with a small number of firms rather than in a competitive industry.[15] Concerns with monopolies were more prevalent in Calabresi's quite different economic world of 1961 in which, for example, the only U.S. telephone company was AT&T and the big three American automobile companies—General Motors, Ford, and Chrysler—dominated the U.S. market.[16] Common current monopolies are the natural monopolies of public utilities, but their operations are highly regulated.[17]

---

12. *Id.* at 506.

13. More formally, a person is risk averse if the individual's utility function for wealth has a positive first derivative and a negative second derivative. This calculation of risk aversion does not require comparison of interpersonal utility. *See* ANDREU MAS-COLELL, MICHAEL D. WHINSTON & JERRY R. GREEN, MICROECONOMIC THEORY 185–94 (1995) (providing a formal definition of risk aversion and listing the mathematical properties of the utility function of a risk-averse individual).

14. Calabresi, *supra* note 1, at 527.

15. *Id.* at 503, 507.

16. JOHN KENNETH GALBRAITH, THE NEW INDUSTRIAL STATE, 186 (1967) (discussing the market power over prices of General Motors, Ford, and Chrysler); W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & JOHN M. VERNON, ECONOMICS OF REGULATION AND ANTITRUST, 367–68 (4th ed. 2005) (discussing the breakup of AT&T in the 1980s).

17. Although market-concentration concerns have diminished with the rise of international

II
THE BASICS OF INSURANCE THROUGH LIABILITY

The nature of tort liability's risk-spreading relationship can be illustrated by considering the situation of a manufacturer of a potentially defective product. Assume that a consumer who purchases the product would suffer some damages amount D. If there are N consumers of the product and only one randomly determined consumer will suffer a loss, the expected damages amount incurred by any single consumer is D/N. In the absence of tort liability, if consumers are aware of this risk and are risk neutral, then the product price will be reduced by this expected cost D/N, as compared to equivalent products that do not pose such a risk. If consumers are risk averse and consequently value losses at more than their expected value, then the amount that consumers are willing to pay for this tort insurance will exceed D/N. Competition among firms will limit the extent of any price markup for this insurance function.

Tort liability can provide an alternative to price reductions for risky products and consequently can serve a potentially constructive function both from the standpoint of the consumers and the seller of the product. If the damage D will be paid through tort liability, then risk-averse consumers will no longer be deterred by the risk of such a loss from buying the product, nor will they require a price reduction to do so. Instead, the seller will cover the cost of the expected loss by raising the price to each consumer by D/N (plus associated administrative costs, which for expositional purposes we set as zero). Risk-averse consumers will prefer a certain loss of D/N to a $1/N$ chance of a loss D. In effect, tort liability serves as a form of insurance in which a person pays a small price premium D/N in return for coverage of more serious harms.

The safety-incentive role of tort liability becomes even greater if consumers are not aware of the product risk. In situations of risk ignorance, there will be a market failure. Consumers will tend to purchase too much of a dangerous product because they fail to account for the risks posed by the product. Tort liability will compensate injured consumers for this damages amount irrespective of whether it is anticipated. Because of this expected tort-liability cost, the producer who is knowledgeable of the risk $1/N$ of harm D will raise the product price in a competitive market by D/N as in the full information case. The tort-liability cost will also create incentives for the firm to provide safer products even if consumers are unaware of the risk.

Even in situations in which there is no virtual premium, tort liability still serves a risk-spreading function. As we discuss in part IV, situations exist in

markets for many consumer goods, recent theoretical work has shown that market-concentration issues might influence the properties of the tort regime and perhaps have been given too little attention in the contemporary law-and-economics literature. *See* Andrew F. Daughety & Jennifer F. Reinganum, *Cumulative Harm and Resilient Liability Rules for Product Markets*, 30 J.L. ECON. & ORG. 371, 371–76 (2014); *see also* Andrew F. Daughety & Jennifer F. Reinganum, *Cumulative Harm, Products Liability, and Bilateral Care*, 15 AM. L. & ECON. REV. 409 (2013).

which compensation is paid although firms are unable to charge consumers for this coverage, such as when there are latency periods or changes in liability rules. In this situation, tort-liability payments do serve an insurance role for injured parties. However, if the firm does not recoup the expected cost of the payments, the insurance function might not be a financially viable system. When a firm is bearing the cost, the ultimate incidence of this cost depends on the ownership structure of the firm.

How insurance and tort liability provide alternative but similar means of distributing risk can be understood by examining the workers' compensation system. In addition to paralleling Calabresi's focus on workers' compensation, our discussion of this program utilizes a rich set of empirical results for understanding the economic role of tort liability. We recognize that this no-fault system differs from other prominent tort contexts, such as medical malpractice and products liability. We choose to focus on workers' compensation because empirical evidence is far more limited for other areas of tort law than for workers' compensation. In the case of medical malpractice, there are studies of possible effects on defensive medicine as a behavioral response by doctors, but there is no empirical evidence on cost shifting or overall safety incentives. For products liability, there are studies of effects of tort liability on innovation rates and the pricing of vaccines, but not of the effect of liability on product prices and product-safety levels.

Individual states administer workers' compensation programs in the United States. These programs establish the benefit levels associated with different types of job injuries based on predetermined payment schedules.[18] Workers' compensation payments address the income loss associated with the injury, but not pain and suffering or legal expenses. For example, the scheduled benefits can provide for replacement of two-thirds of the worker's wage rate up to a cap amount plus the provision of a scheduled damages amount for a specified injury, such as the loss of sight in one eye.

The distinctive feature of workers' compensation is that unlike conventional tort liability, it is a no-fault compensation system whereby all work injuries are compensated irrespective of worker fault or company negligence. The principal requirement that must be met is that the injury "arose out of and in the course of employment."[19] This administrative compensation system also eliminates the potential for workers to file civil liability cases against the employer, thus reducing the transaction costs associated with injuries.[20] In addition, one might expect that making the employment relationship less confrontational would also help to preserve the employment relationship, thus facilitating the return to work of employees who have suffered an injury.

18. *See, e.g.*, CAL. LAB. CODE §§ 4451–4460 (West 2013) (detailing how benefit payments are calculated in California).

19. 4 J.D. LEE & BARRY A. LINDAHL, MODERN TORT LAW: LIABILITY AND LITIGATION § 43:12 (2d ed. 2006).

20. For an overview of the workers' compensation system, see 1 *id.* §§ 1–9 (2d ed. 2003).

Although workers are unable to file claims against their employers under the no-fault workers' compensation system, they are permitted to file claims against the producer of the job-related products that caused the injury. Thus, if a lift-truck driver is injured due to a faulty design of the lift truck, the worker can sue the lift-truck manufacturer. Likewise, the workers' compensation program can file a subrogation action against the lift-truck manufacturer to recoup the value of the workers' compensation costs.[21] Consequently, workers' compensation does not narrow the range of available legal remedies except with respect to those remedies that pertain to the worker's ability to sue the employer for damages.

The formal division of workers' compensation costs does not coincide with the actual economic burdens after cost shifting. As Calabresi observes, from the standpoint of economic theory, the formal designation is irrelevant. It makes no difference whether the employer or the worker is nominally assigned the cost.[22] The market will adjust accordingly. If we assume, as does Calabresi,[23] that workers underestimate the injury risk, then the presence of workers' compensation will be an additional cost to the firm and will lead the firm to raise prices. However, if workers were cognizant of the risks, prices would already have been raised because risky jobs would command additional hazard pay—a well-established economic result for both fatal and nonfatal injuries.[24] By providing workers' compensation insurance, the employer makes risky jobs more attractive to workers when they are cognizant of the risks, because the monetary costs associated with an injury will be reduced or eliminated.[25] Consequently, workers will be willing to accept a lower wage rate to work on a hazardous job if workers' compensation coverage is provided.[26]

In practice this wage effect is much more than a hypothetical economic phenomenon. The wage offset is so great that it exceeds the cost of workers' compensation benefits.[27] Thus, from the standpoint of employer costs, the workers' compensation program more than pays for itself.[28] That this should be the case is not surprising. Workers who are risk averse will value insurance at

21. *See id.*

22. Calabresi, *supra* note 1, at 505.

23. *Id*. at 506.

24. W. KIP VISCUSI, FATAL TRADEOFFS: PUBLIC AND PRIVATE RESPONSIBILITIES FOR RISK 51–74 (1992).

25. MICHAEL J. MOORE & W. KIP VISCUSI, COMPENSATION MECHANISMS FOR JOB RISKS: WAGES, WORKERS' COMPENSATION AND PRODUCT LIABILITY 34–52 (1990) [hereinafter MOORE & VISCUSI, COMPENSATION MECHANISMS].

26. *See id.* at 34–68 (providing a complete and detailed treatment of workers' compensation and the decisions of workers under that system); *see also* Michael J. Moore & W. Kip Viscusi, *Promoting Safety Through Workers' Compensation: The Efficacy and Net Wage Costs of Injury Insurance*, 20 RAND J. ECON. 499, 501–02, 508–13 (1989) (discussing the interaction between workers' compensation regimes and fatality rates) [hereinafter Moore & Viscusi, *Promoting Safety Through Workers' Compensation*].

27. W. KIP VISCUSI, REFORMING PRODUCTS LIABILITY 179 (1991) [hereinafter VISCUSI, REFORMING PRODUCTS LIABILITY].

28. *Id.* at 179–80.

more than the expected value of the losses that they will incur.[29] Much the same kind of relationship is observed in a wide variety of other insurance contexts: On average people pay more for insurance coverage than they receive in terms of payments for their losses.[30] Although firms nominally pay the costs of workers' compensation, the workers who benefit from the coverage are actually bearing the burden of the program costs through the wage offset.

The empirical documentation of this wage-offset mechanism has more general ramifications for the functioning of tort liability as a risk-spreading device. The same type of economic mechanism that generates a wage offset for workers' compensation will lead to a price increase to cover tort-liability costs of product-related risks.[31]

It is worth noting that tort-liability costs are not simply transfers between injurers and victims, but also are likely to have incentive effects that should be taken into account when assessing the overall merits of tort liability. Even though workers bear the cost based on the expected benefits that they receive, firms must pay premiums for their workers' compensation coverage. These premiums will be greater for firms with worse accident records. Thus, even when firms can purchase insurance for prospective tort damages, there is an incentive effect through the experience rating of the insurance. Particularly for large firms, the costs of workers' compensation are strongly linked to the safety performance of the firm.[32] This relationship in turn provides a powerful financial incentive for safety. Although Calabresi sets deterrence issues aside, in practice workers' compensation has had strong incentive effects. Empirical estimates suggest that in the absence of workers' compensation, worker fatality rates in the U.S. would increase by about thirty percent.[33] This safety-incentive effect is a desirable consequence of workers' compensation. The empirical evidence supporting the deterrence effect of linking a firm's workers' compensation costs to the firm's accident record also provides support for the more general claim that tort liability can enhance safety in other contexts as well.[34] By effectively linking the incidence of tort liability to safety levels, compensating injured workers and imposing these costs on firms will serve both

29. W. Kip Viscusi & Michael J. Moore, *Workers' Compensation: Wage Effects, Benefit Inadequacies, and the Value of Health Losses*, 69 REV. ECON. & STAT. 249, 260 (1987).

30. Insurer loss ratios (that is, the ratio of losses to premiums) below 1.0 ensure that premiums exceed losses. Insurance premiums can also be invested to earn interest before the losses are incurred.

31. George L. Priest, *The Modern Expansion of Tort Liability: Its Sources, Its Effects, and Its Reform*, J. ECON. PERSP., Winter 1991, at 31, 46. *See generally* A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS (3d ed. 2003); STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW (1987) [hereinafter SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW].

32. *See* MOORE & VISCUSI, COMPENSATION MECHANISMS, *supra* note 25, at 126–35.

33. *See* VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 178.

34. *See* MOORE & VISCUSI, COMPENSATION MECHANISMS, *supra* note 25, at 34–53; Moore & Viscusi, *Promoting Safety Through Workers' Compensation*, *supra* note 26, at 501–02, 508–13. The safety-incentive effect of workers' compensation is particularly great for large firms. These firms have the strongest experience rating of their workers' compensation premiums. From an economic standpoint, this safety effect should generalize to other contexts in which tort liability establishes similar kinds of incentives.

an insurance function and a deterrence function. When considering institutional alternatives to tort liability, it is important to recognize this dual function.

The fundamental role of these incentive effects is quite general and is a principal advantage of tort liability over private insurance. Suppose that instead of potential products liability for dangerous products, all consumers had universal coverage by a social health-insurance program. Similar to tort liability, the program would cover all injury costs. However, in the absence of any linkage to product riskiness, there would be no beneficial incentive effect. Indeed, an opposite and problematic effect would arise, because dangerous products would be subsidized by social insurance, leading to greater product risks than if there were no social insurance or tort liability.

Tort liability can fail as a risk-distribution mechanism for many of the same reasons that insurance markets can fail to be viable. Thus, these are difficulties facing insurance operations generally, not just tort liability. Well-known problems that we do not discuss here include moral hazard, in which the insured take actions that affect the risk of harm, and adverse-selection problems, which arise if only the riskiest consumers purchase the product.

We emphasize six other problems in our subsequent discussion. First, tort liability can entail substantial litigation costs. Second, insurance is viable only if expected losses are predictable. Tort liability likewise will not function well as insurance if liability costs are not predictable, because it will not be feasible to charge for the liability costs through higher product prices after the damages have occurred. Third, just as insurance companies can be unable to cover truly catastrophic losses, enormous tort costs can outstrip the firm's ability to pay for the losses. Fourth, many tort situations, particularly those involving mass toxic torts, involve correlated risks. Thus, the risk-spreading function of insurance can be undermined. Fifth, if there is a temporal gap between the implicit purchase of tort insurance via the product price and the determination of liability, there can be a mismatch between the tort "insurance" losses and payments. Sixth, the control of risk information by the company can impede efforts by the courts to assess liability for the risks. We address these situations in the remainder of this article from the standpoint of tort liability as insurance. Note, however, that even if tort liability might not function as a viable insurance mechanism in some instances, there might be other rationales for the role of tort liability pertaining to optimal deterrence.

III
THE TRANSACTION COSTS OF TORT LIABILITY

Operating an insurance program via tort liability is not as seamless as Calabresi's discussion suggests. Just as transaction costs pose difficulties for Coasean bargains for externalities, there might be substantial transaction costs associated with the tort system that limit its efficacy as an insurance program.[35]

35. *See generally* Coase, *supra* note 2 (discussing the problems of transaction costs).

As a result, tort liability might not perform as efficiently as commercial insurance operations, though even these operations might entail substantial transaction costs. In this part, we provide empirical evidence on transaction costs of tort litigation but do not provide a comparison with private insurance.

Choosing a well-regarded program such as workers' compensation as the template for the role of tort liability might provide an overoptimistic portrayal of the efficacy of generalizing this insurance function for other kinds of tort liability. In workers' compensation situations, the employer has a supervisory relationship to work operations whereas a firm does not monitor the consumer's use of the product, generating a profound difference in the structure of the mechanisms. Workers' compensation is an administrative remedy in which no-fault coverage is provided and payments are determined using schedules based on the type and severity of the injury. Although there are sometimes disputes over certain types of matters, for example whether an injury such as cancer or carpal tunnel syndrome is job-related and merits coverage, the process is quite different than for a products-liability claim. Even in the case of a disputed claim, the worker does not file a civil claim against the employer to obtain payment.[36] About eighty percent of all workers' compensation costs are paid out to injured workers, so that the payout rate of workers' compensation insurance is quite high.[37]

In contrast, tort liability is a comparatively inefficient form of insurance. The source of the difference stems from the different structure of the programs. Unlike workers' compensation, tort liability is not a no-fault system. Once liability is established, the determination of damages is much more complex than selecting a damages amount from a predetermined schedule. Damages for economic loss such as lost earnings, medical costs, and household services generally entail calculations specific to the circumstances of a particular case. In addition, depending on the nature of the injury and the jurisdiction, tort liability also provides compensation for pain and suffering, loss of enjoyment of life, and punitive damages—none of which are included in the determination of workers' compensation benefits.[38]

The additional complexities of tort liability as compared to workers' compensation can generate an additional cost. There is often substantial disagreement between the injurer and the victim about whether the injurer should be liable and to what extent. Even in situations in which the case is settled and is not tried to a court verdict, the legal fees and associated litigation expenses can be substantial.

36. WORKERS' COMPENSATION GUIDE § 1:4 (West 2013), *available at* Westlaw database identifier WCSG.

37. *See* VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 180.

38. WORKERS' COMPENSATION GUIDE, *supra* note 36, § 1:6 (listing the compensation typically provided for by workers' compensation schemes).

The estimates we present in table 1 provide a sense of the magnitude of transaction costs involved.[39] These calculations using closed insurance claims data from Texas include the legal costs and expenses incurred by the parties to the insurance claim but do not include the cost of administering and operating the U.S. court system, thus providing an underestimate of the transaction costs associated with operating tort liability. The first column of statistics includes all claims and pertains to the legal expenses divided by the net payment received by the injured party, while the second column focuses only on litigated claims. Because the transaction costs are greater for litigated claims than for settled claims, as one would expect, the litigated-claims column involves greater proportional-cost levels than the all claims column. Across all types of damages claims, tort liability is a costly insurance mechanism. For every dollar received by the injured party, the average transaction cost is $0.75 for all claims and $0.83 for litigated claims. There is not a great deal of variation across categories. The lowest cost claims category is automobile liability, which addresses relatively routine accidents. However, even for this liability line, the legal expenses divided by the net payment amount is $0.64 for all claims and $0.76 for litigated claims. Unlike administrative compensation schemes, such as workers' compensation, transaction costs are much greater due to the tasks of determining liability and setting damages amounts. Sorting out causality for injuries does, however, serve to establish the linkages needed for the deterrence function of tort law.

Table 1: Tort-Liability Costs as a Share of Tort Payments

Legal Expenses/Net Payment

	All Claims	Litigated Claims
General liability	0.82	0.89
Auto liability	0.64	0.76
Multiperil liability	0.78	0.87
Medical professional liability	0.82	0.85
Other professional liability	0.84	0.90
Average	0.75	0.83

Source: Joni Hersch & W. Kip Viscusi, *Tort Liability Litigation Costs for Commercial Claims*, 9 AM. L. & ECON. REV. 330, 360 (2007). The authors used Texas Department of Insurance closed claims data, 1988–2004. *Property and Casualty Reports*, TEXAS DEPARTMENT OF INSURANCE, http://tdi.texas.gov/reports/report4.html (last updated June 4, 2014) (select reports under subheading "Closed Claim Data").

39. Joni Hersch & W. Kip Viscusi, *Tort Liability Litigation Costs for Commercial Claims*, 9 AM. L. & ECON. REV. 330 (2007).

Because of high transaction costs, one might be tempted to supplant tort liability in other situations by attempting to replicate the workers' compensation model for other hazards. A prominent example in which the U.S. Congress considered such a proposal pertained to asbestos claims. Rather than inundate the courts with asbestos cases, Congress contemplated establishing an administrative compensation system similar to workers' compensation.[40] But difficulties immediately arose with respect to implementation of such a policy due to the infeasibility of determining which sick patients to cover when dealing with a disease not solely caused by exposure to asbestos. For example, mesothelioma is a signature disease in that it is almost always attributable to asbestos exposures and can therefore certainly be considered asbestos-related. However, lung cancer can be attributable to a variety of different exposures, of which asbestos is but one. Compensating all lung cancers, including those due to smoking and other hazards, would lead to a dramatic increase in the costs of such a scheme and result in overcompensation for diseases not caused by asbestos. Tort liability is a more focused mechanism that seeks to ascertain causality and liability before awarding damages.

IV
CHANGES IN THE NATURE OF TORT LIABILITY: DESIGN DEFECTS, HAZARD WARNINGS, AND MASS TOXIC TORTS[41]

Risk pooling through insurance is successful if there are offsetting risks in the portfolio.[42] Risk pooling of uncorrelated risks enables the insurer to avoid extremes in the loss amounts incurred.[43] For an insurance operation to be viable, there must be some way to spread the costs across those who purchase the insurance. Having a low probability of product failure is no assurance that the risk can be insured. If all items produced were to fail at the same time, then the producer would face a situation of perfectly correlated risks. Although independent risks cancel one another out in the insurer's portfolio, thereby reducing the worst-case scenario of losses to manageable levels, with correlated risks the insurer is engaged in a high stakes all-or-nothing gamble. Whether such a risk could feasibly be spread over time by, for example, banking the

40. *See generally* W. Kip Viscusi, *Toward a Diminished Role for Tort Liability: Social Insurance, Government Regulation, and Contemporary Risks to Health and Safety*, 6 YALE J. ON REG. 65 (1989).

41. *See* Sanders v. Quikstak, Inc., 889 F. Supp. 128, 131 (S.D.N.Y. 1995) (involving a design defect involving hydraulic machinery); *In re* Agent Orange Prod. Liab. Litig., 611 F. Supp. 1223, 1262 (E.D.N.Y. 1985) (concerning a mass toxic tort involving a dangerous herbicide), *aff'd*, 818 F.2d 187 (2d Cir. 1987); Connelly v. Gen. Motors Corp., 540 N.E.2d 370, 374–76 (Ill. App. Ct. 1989) (concerning a hazard warning involving automobile tires); VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 62–86, 132–74 (providing a complete discussion of design defects, hazard warnings, and mass toxic torts).

42. *See, e.g.*, GEORGE E. REJDA, PRINCIPLES OF INSURANCE 345 (1982) (discussing an example of risk pooling in an insurance context).

43. *See* KENNETH S. ABRAHAM, THE LIABILITY CENTURY: INSURANCE AND TORT LAW FROM THE PROGRESSIVE ERA TO 9/11, at 198–219, 223, 230 (2008) (discussing correlated loss in detail).

insurance payments in periods in which there is no risk depends on the magnitude of the loss and the probability of its occurrence. If sufficient funds have not been banked to pay for the possibility of this future catastrophe, the clustered nature of the losses can exceed the producer's ability to pay. If time does not permit the possibility of banking sufficient funds to cover future losses, a correlated loss can lead to insolvency for the producer in much the same way that a catastrophic flood might bankrupt a private insurer.[44]

Risks that are highly correlated and move in tandem are not unprecedented. A dramatic case in point involving correlated risks is the recent U.S. financial crisis in 2008 and 2009. If banks' portfolios of mortgages only involved independent risks facing borrowers, such as whether a particular borrower would be unable to make payments due to illness, those hazards would not have caused insurmountable problems, and risk pooling would have turned out well.[45] But the financial crisis of 2008 and 2009 created a common risk arising from the collapse of the housing market in combination with banks' portfolios being comprised of a large number of home mortgages. The financial viability of banks became jeopardized because of the widespread insolvency of mortgages.

Highly correlated risks might very well be present in tort-related contexts. To be sure, isolated job accidents and occasional manufacturing defects in products fit the well-functioning insurance model of tort liability quite ably.[46] But more recurrent accidents, or more systematic defects, might indeed turn out to represent the sort of correlated or tandem risks that can render risk pooling ineffective.

A. Design Defects and Hazard Warnings

The liability landscape at the time of Calabresi's article was quite different than it is today in that there were fewer tort-related correlated risks. In the decades since his classic article, the scope of liability has changed substantially. Two shifts that are of particular interest pertain to design defects and hazard warnings. In the case of a design defect, the chance of a product malfunction is not an independent event across a product line, but rather is a problem that can contaminate the entire product line. The Copper-7 intrauterine device is one such example that ultimately led to liability costs that in a single year were fourteen percent of total sales, leading the manufacturer, G.D. Searle &

44. *Id.* Indeed, the fear of bankruptcy has no doubt led to the exclusion of flood risks from conventional homeowners' coverage and, in turn, to provision of federal flood insurance.

45. NAT'L COMM'N ON THE CAUSES OF THE FIN. & ECON. CRISIS IN THE U.S., THE FINANCIAL CRISIS INQUIRY REPORT 83–101, 127–55 (2011) (concluding that "untrammeled growth in risky mortgages" contributed to the financial crisis); *see also* VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 25–37 (discussing how the insurance market reacted to the products-liability crisis of the 1970s and 1980s).

46. *See generally* SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW, *supra* note 31, at 207–15 (developing more fully the theory of tort liability, insurance, and the ideal solution to the "accident problem"); SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW, *supra* note 4, at 260–67 (discussing the function of tort liability with and without the availability of insurance).

Company, to abandon sales of the product.[47] The Dalkon Shield intrauterine device was also the target of litigation. A.H. Robins, the manufacturer, reorganized under bankruptcy law and established a $3 billion fund to pay for the claims.[48] The Firestone tires defect litigation and the ongoing litigation over the unintended acceleration problems affecting Toyota vehicles are more recent examples of systematic product defects that affected entire product lines.[49] That some excessively risky products either undergo major redesigns or are no longer marketed is a favorable outcome from the standpoint of tort law creating incentives for the appropriate levels of product riskiness. However, products-liability litigation over correlated risks does represent a departure from the stylized risk-spreading scenario.

Hazard-warnings cases pose a similar problem in that the warning is common across the product line. If the warnings for a product are found to be inadequate, then this deficiency will potentially be used as a basis for a liability claim for all users of the product who have suffered an injury. The great expansion of the role of hazard warnings over the past half century and the accompanying rise of liability for inadequate warnings have created another test for products to (potentially) fail.[50] Each of these developments in the bases for liability claims creates the potential for strongly positively correlated losses, thus threatening the risk-spreading function of insurance.

B. Latency Periods, Shifting Liability Criteria, and Mass Toxic Torts

Changes in the structure of tort-liability rules affect the manner in which tort liability can function as an insurance mechanism. The regulatory and liability landscape has changed dramatically in the past half century. In addition to the establishment of a wide variety of agencies charged with the task of risk and environmental regulation, there have also been changes in tort law. The belief that tort liability can serve a risk-spreading function has figured prominently in much of this development, particularly with respect to strict liability.[51]

There can be particularly acute problems for risks that emerge over time and are accompanied by a long latency period. If the risks are not known at the time the product is sold but emerge later, the insurance analogy breaks down. At the time of the sale, the tort insurance premium is not included in the price,

47. VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 66.

48. *Id.* at 40.

49. For a brief summary of the facts underlying the Firestone tires litigation, see Keith Bradsher, *Tire Company is encouraged to Broaden Recall Plans*, N.Y. TIMES, Aug. 15, 2000, at C1. For background on the Toyota acceleration issue, and an example of the litigation arising therefrom, see Jaclyn Trop, *Toyota Will Pay $1.6 Billion over Faulty Accelerator Suit*, N.Y. TIMES, July 20, 2013, at B3.

50. For a history of the development of warnings for products, see W. KIP VISCUSI, SMOKE-FILLED ROOMS: A POSTMORTEM ON THE TOBACCO DEAL 136–42 (2002).

51. *See* George L. Priest, *The Invention of Enterprise Liability: A Critical History of the Intellectual Foundations of Modern Tort Law*, 14 J. LEGAL STUD. 461, 483–96 (1985) (discussing generally the development of enterprise liability).

because neither the buyer nor the seller is aware of the risk. Consumers cannot be charged retrospectively for the liability costs, so any tort payments become a fixed cost to the firm and cannot be recouped. Yet, despite the breakdown in the insurance-market analogy, there is still compensation of the injured parties to the extent that the firm has resources sufficient to pay for the damages.

There are some risk situations in which problems associated with a latency period are particularly likely to arise. Unlike acute product injuries, illnesses and birth defects arising from drug or chemical exposure often have a latency period from the time of the exposure to the time the harm becomes apparent. Cancer risks are a paradigmatic case of risks that might not have adverse effects for a decade or more after exposure. Many of the risks posed by smoking, such as lung cancer, have a latency period. A strikingly long latency period is associated with the risk outcomes linked to antinausea drug Diethylstilbestrol (DES).[52] Use of this drug by pregnant women affected their risk of breast cancer, the fertility of the female children born to these women, and potentially the health of DES-exposed grandchildren as well. Until the DES-exposed children reached childbearing age, the nature and extent of the harm was not apparent.[53]

The difficulties posed by risky products and latency periods become magnified as the latency period grows longer, because that will increase the population of consumers exposed to the risk. At the time the risks are identified, the producer can have a potentially large population of consumers affected by the product. For example, if there are 100,000 consumers in any given year and a latency period of twenty years, the number of consumers exposed to the risk will be two million. Suppose as well that the producer was not aware of the nature and extent of the harm until some illnesses manifested. The producer will consequently have a potentially large inventory of illness-related tort costs for which it has never charged consumers a price premium, so these costs are simply losses to the firm. Moving forward it is not feasible to charge consumers for these retrospective costs. Even if the product risks have remained unchanged, consumers will only be willing to pay a price premium associated with expected liability costs that pertain to products not already purchased. These expected liability costs are legitimate marginal costs associated with the product. The retrospective liability burden is a fixed cost that a competitive firm cannot recoup. If a firm attempts to charge more to recoup the value of past losses, new entrants will undercut the price.

Another example of a temporal phenomenon with consequences almost identical to that of latency periods is a situation in which the tort-liability landscape shifts over time and the product is a durable good. As in the case of latency periods, the firm will have a large inventory of affected products with associated liability costs that were not incorporated into the product price and

52. NAT'L CANCER INST., FACT SHEET: DIETHYLSTILBESTROL (DES) AND CANCER, http://www.cancer.gov/cancertopics/factsheet/Risk/DES (last updated Oct. 5, 2011).

53. *Id.*

that cannot be recouped in the future. From the standpoint of insurance, there is no difference between the shift in liability costs that occurs because of a latency period before the risk is discovered and an increase in liability costs that arises due to an expansion in liability rules. In each instance, the failure to anticipate future costs at the time of the product sale affects the role of tort liability as an insurance mechanism for those risks.

A prominent case study of the phenomenon in which expansions in liability prevented firms from recouping liability costs is that of the U.S. private-aircraft industry. Liability costs for private planes soared in the 1980s, threatening the viability of the producing firms. Manufacturers sought to incorporate the liability burden of the existing stock of planes into the product price for newly produced planes but were not successful in doing so because consumers balked at the additional charges. Taiwanese imports without such a liability burden from past sales were able to undercut their prices.[54] In 1990 the average liability cost had risen to over $100,000 per plane, leading Beech Aircraft and Cessna Aircraft to cease production of lower cost planes.[55] From 1979 to 1987, the production of small American planes had plummeted from over 17,000 to 1085.[56]

Inordinate costs that cannot be successfully spread through tort liability can arise even if there is not a change in liability rules over time. Mass toxic torts constitute an entire class of hazards that do not fit the tort-liability-as-insurance model. Unlike conventional tort cases such as automobile accidents involving a single car, these torts have two defining characteristics. The mass aspect of the tort is that large numbers of people are injured at the same time, which is incompatible with the usual risk-spreading insurance function. The toxic aspect of the tort typically entails some latency period, which exacerbates the scale of the losses. Thus, in addition to the large number of people affected in any given year, there is a long time period of accumulated exposures before the risks become evident. The producer is no longer dealing with a risk-spreading situation of dividing a small expected liability cost across a large number of consumers. Rather, the task is to deal with an extraordinarily large liability burden which, because of the time lags involved, might not be feasibly spread across consumers since the liability costs were not fully anticipated. Changes in scientific evidence regarding product risks have effects akin to shifts in legal standards in that regard, and they too generate inordinately large costs.[57]

Partial tallies of the number of mass toxic tort claimants indicate 210,000 claimants with Dalkon Shield–related claims; 190,000 with asbestos claims against Manville; 150,000 with other asbestos claims; 125,000 with Agent Orange claims; and over 1000 apiece with claims related to DES or Bendectin.[58]

54. *See* VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 8, 38.

55. *Id.* at 39–40.

56. *Id.* at 8, 39.

57. For a complete discussion of all of these issues, see *id.* at 57–67.

58. These tallies were developed by plaintiff's attorney Paul Rheingold. *Id.* at 159 (reporting

The prominent role of mass toxic torts is exemplified by their role in the tort-liability crisis in the 1980s. Products-liability cases in the federal courts soared during that decade, due largely to the surge in asbestos litigation.[59] From 1975 to 1989, the share of asbestos-related personal-injury cases in the federal courts rose from close to zero to sixty percent of all personal-injury products-liability cases.[60] Having a single product responsible for sixty percent of all personal-injury cases in the federal courts shows the substantial influence that a single product can wield in the court system.

C. Informational Barriers Arising with the Expansion of Tort Liability

Tort liability can provide insurance for losses incurred by injured parties only if liability can be established, which will depend on the answers to several questions. First, did the person suffer harm? Second, in the product-safety context that is our illustrative liability situation, was the harm caused by the product? If the liability regime is a strict-liability or absolute-liability situation in which the producer is liable for the harm irrespective of negligence or failing a risk–utility test, then demonstrating that the product caused the injury will trigger liability for the injury. Third, if the standard is not strict or absolute liability, was the producer negligent in the design or production of the product?

Examining each of these three issues often requires information that is not easily accessible by the plaintiff. An important case study analyzed by Joni Hersch involves silicone gel-filled breast implants.[61] Some women with breast implants were diagnosed with various autoimmune diseases that they attributed to their breast implants. Thus, there appeared to be some kind of physical harm, but the daunting task involved establishing that the harm was attributable to breast implants and determining whether the product met reasonable safety standards. This is a common situation for mass toxic torts generally. Silicone gel-filled breast implants were unregulated when they were introduced to the market in the early 1960s. Although the Medical Devices Amendments of 1976 gave the Food and Drug Administration (FDA) authority to regulate breast implants and other medical devices, in 1978 the FDA General and Plastic Surgery Devices Panel recommended classifying breast implants as class II medical devices, in the same category as hearing aids. Under this classification, manufacturers were not required to seek premarket approval that would require safety testing.[62] Consequently, there was no large-scale database that plaintiffs could draw on to document the presence of a product risk.

---

tallies).

59. *See id.* at 20–21.

60. *Id.* at 23.

61. Joni Hersch, *Breast Implants: Regulation, Litigation, and Science*, *in* REGULATION THROUGH LITIGATION 142 (W. Kip Viscusi ed., 2002); *see Regulatory History of Breast Implants in the U.S.,* U.S. FOOD & DRUG ADMIN., http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/ImplantsandProsthetics/BreastImplants/ucm064461.htm (last updated Sept. 25, 2013).

62. Hersch, *supra* note 61, at 162–63.

The plaintiffs in the breast-implant cases began to win these cases starting in 1977 based on a suspected linkage between breast implants and autoimmune disease combined with the presence of plaintiffs who had identifiable illnesses. Undertaking studies to assess the level of the product risk is very expensive. Furthermore, companies controlled access to the data—there was no national registry of breast-implant recipients, so there was no adequate database to assess the risk given companies' failure to fund such studies. After litigation generated media attention on the possibility of breast-implant risks, the FDA required that companies fund risk-related studies. However, in 1992, the FDA concluded that the safety information provided by the companies was inadequate and imposed a moratorium on silicone gel-filled breast implants for cosmetic augmentation purposes.[63] This moratorium was quickly followed by a class action joined by more than 440,000 women alleging that breast implants caused connective-tissue diseases or symptoms of such diseases.[64] Epidemiological studies and subsequent studies undertaken by companies seeking premarket approval to market silicone gel-filled breast implants for augmentation purposes did not demonstrate the presence of a significant risk, and since 2006, the FDA has approved the use of silicone gel-filled breast implants for augmentation purposes.[65]

The problem of information gaps is not restricted to medical devices. A similar situation has arisen in ongoing litigation regarding unintended-acceleration problems of Toyota vehicles.[66] There have been fatalities and other demonstrable harms, but are these harms due to problems with the Toyota vehicles or driver error? The potential causal link involves the computer systems that control many functions of the car, but evaluating the properties of these systems is technically challenging and very complex.[67] Neither plaintiffs nor the National Highway Traffic Safety Administration had the internal capabilities to make the assessment, but the government has funded a study to resolve the matter.[68] We anticipate that as technologies continue to evolve, there will be additional need for government regulation to foster the requisite information distribution.

The principal lesson from the breast-implant litigation and the unintended acceleration cases pertains to information gaps rather than specific research findings. Access to the requisite information to document liability claims is often controlled by the defendant in these cases, either because the information is internal to the firm or because the firm has the resources, the expertise, and the financial stake in the entire product line. Companies do not have the

63. *Id.* at 165–66.

64. *Id.* at 173.

65. *See* U.S. FOOD & DRUG ADMIN., *supra* note 61.

66. *See NHTSA-NASA Study of Unintended Acceleration in Toyota Vehicles*, NHTSA (Apr. 15, 2011), http://www.nhtsa.gov/UA.

67. *Id.*

68. *Id.*

incentive to undertake such studies because identifying product risks and continuing to manufacture the product might increase the likelihood that the company will be found liable for punitive damages. Marketing a potentially risky product might be viewed as reckless behavior. Government regulation to foster the generation of safety information can potentially remedy this problem and better enable tort liability to function in such situations.

V

NEW DIMENSIONS OF TORT LAW: PAIN AND SUFFERING, LOSS OF ENJOYMENT OF LIFE, ENVIRONMENTAL HARMS, AND PUNITIVE DAMAGES

A critical difference between tort liability and insurance as a risk-distribution mechanism is illuminated by considering the treatment of nonmonetary losses and penalties in excess of losses. Conventional insurance does not cover nonmonetary losses or levy punitive damages to punish the injurer. Both conventional insurance and tort damages awards include compensation for monetary losses such as earnings loss, medical costs, and rehabilitation services. But tort awards also provide compensation for nonmonetary losses such as pain and suffering and are sometimes used to foster deterrence through punitive damages.

A. Noneconomic Damages

Although Calabresi does not delve into the various tort-damages components, focusing on how the risk-spreading aspect of tort liability relates to different elements of damages helps to illuminate the economic role of compensating for monetary losses and nonmonetary harms. Standard forms of insurance that are purchased by the general public involve payments of insurance premiums in return for partial or complete coverage of monetary losses, such as those associated with motor-vehicle damage, property theft, or a fire at one's residence. The forms of insurance that are provided in market contexts are consequently narrower than the scope of tort damages. Insurance provides coverage for monetary harms but not for nonmonetary losses associated with accidents and other catastrophes. Homeowners' policies provide coverage for the damage loss due to a fire but not for the grief one experiences because a photo of one's great-grandfather has been burned. Not compensating for emotional loss also avoids the problem of determining the extent of the emotional loss and monetizing its value. The injured party has an incentive to overstate the magnitude of the loss if compensation will be provided. Insurers limit the amount of reimbursement to the value of the property or its replacement cost; doing so ensures that there are no windfall gains associated with insurance payouts. The potential for windfall gains would reduce the insured's incentives to exercise care and could even promote insurance fraud by the insured causing injuries that will lead to windfall gains.

In contrast, tort liability allows for compensation for nonmonetary loss. Standard jury instructions in personal-injury cases include several aspects of

harm apart from the monetary loss. The various components of nonmonetary harms in tort cases are exemplified by the following jury instructions from the state of Pennsylvania:

> The Plaintiff has made a claim for a damage award for past and for future noneconomic loss. There are four items that make up a damage award for noneconomic loss, both past and future: (1) pain and suffering; (2) embarrassment and humiliation; (3) loss of ability to enjoy the pleasures of life; and (4) disfigurement.[69]

Typical jury instructions for noneconomic damages provide little concrete guidance regarding how jurors should approach the assessment of damages for noneconomic loss:

> You are instructed that Plaintiff is entitled to be fairly and adequately compensated for all physical pain, mental anguish, discomfort, inconvenience, and distress that you find (he)(she) has endured from the time of the injury until today and that the plaintiff is also entitled to be fairly and adequately compensated for all physical pain, mental anguish, discomfort, inconvenience, and distress you find (he)(she) will endure in the future as a result of (his)(her) injuries.[70]

But what amount of money "adequately compensates"? Unlike compensation for monetary loss, there is no established reference point that jurors can use to map the amount of harm into a dollar loss amount. Vague jury instructions with respect to the determination of nonmonetary loss create difficulties for jurors who are seeking to translate their assessments of the nonmonetary aspects of the harm into a monetary damages figure. If such intrinsically imprecise jury instructions create variability and unpredictability in the court awards, tort-liability "insurance" can become a source of uncertainty for both the plaintiff and the defendant. The optimal insurance framework can help in conceptualizing how one should set noneconomic damages in the tort-liability case. Let us consider first the failure of insurance to provide coverage for accident harms, including pain and suffering from an injury and perhaps loss of enjoyment of life in the case of permanent impairment or death. In the case of monetary loss, the economic theory of optimal insurance amounts is straightforward. If insurance is available at an actuarially fair basis, people will purchase insurance so that the marginal utility of income is the same in both the accident and no-accident situations. Because the individual's utility function is the same in both situations, equating the marginal utility across possible states is the same as equating utility levels. Thus, people will purchase insurance so that their level of well-being is the same irrespective of whether an accident has occurred. This result implies that the optimal insurance amount will make the victim whole after an accident, incurring no loss in welfare.[71]

In the case of serious personal injuries, however, the accident might involve an injury that affects one's ability to derive utility from one's financial

69. PA. R. CIV. P. 223.3.

70. *Id.*

71. MAS-COLELL, WHINSTON & GREEN, *supra* note 13, at 187–201 (providing a full treatment of optimal insurance).

resources.[72] In the extreme case of death, the person is no longer alive and will derive no benefit after death. Before death, a person might have some anticipatory concern with his or her bequest, but he or she will generally value bequest-directed resources less than spending after one's death.[73] Permanent disabilities and other serious injuries likewise can reduce the marginal utility of income, and empirically this effect is borne out for serious job injuries.[74] Although very minor injuries, such as temporary hand burns, might be thought of as affecting well-being in a manner that can be compensated with money, serious injuries involve welfare losses for which money is not an effective substitute.[75]

Thus, from the standpoint of optimal insurance compensation, the "make whole" damages approach is not adequate for nonmonetary losses. Applying the optimal-insurance model to an analysis of the various components of tort damages helps to illuminate the appropriate levels of compensation after an accident. Although additional funds for pain, suffering, and other nonmonetary harms are valued even if the marginal utility of money is reduced, such compensation would not be valued enough for a person to be willing to buy insurance for such harms.[76] In this instance, applying Calabresi's risk-spreading model of tort liability to make victims "whole" will increase the price of the dangerous product to such an extent that, in effect, the person will be purchasing insurance for a relatively low-valued form of coverage. If such purchases are not desirable when considered in isolation, bundling the tort-liability insurance with the product price should not be desirable either.

Compensation for nonmonetary loss serves a practical constructive function. Plaintiffs must pay the legal fees and expenses associated with the case. The optimal outcome is to provide compensation that is sufficient so that even after accounting for legal expenses there is an efficient level of insurance. For monetary harms, the injured party should be made whole after deducting the portion of the award for legal expenses. Thus, some nonmonetary award is essential for tort payments to provide adequate insurance.

Available evidence indicates that compensation for noneconomic damages is often substantial. Joni Hersch, Jeffrey O'Connell, and W. Kip Viscusi use medical-malpractice data from Florida and Texas to estimate the share of noneconomic damages for closed medical-malpractice claims.[77] The

72. W. Kip Viscusi, *Empirical Analysis of Tort Damages*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS 460, 467–69 (Jennifer Arlen ed., 2014) [hereinafter Viscusi, *Empirical Analysis of Tort Damages*].

73. *Id.*

74. W. Kip Viscusi & William N. Evans, *Utility Functions that Depend on Health Status: Estimates and Economic Implications*, 80 AM. ECON. REV. 353, 371–72 (1990).

75. William N. Evans & W. Kip Viscusi, *Estimation of State-Dependent Utility Functions Using Survey Data*, 73 REV. ECON. & STAT. 94, 101–03 (1991).

76. Viscusi & Evans, *supra* note 74, at 371–72.

77. Joni Hersch, Jeffrey O'Connell & W. Kip Viscusi, *An Empirical Assessment of Early Offer Reform for Medical Malpractice*, 36 J. LEGAL STUD. (SPECIAL ISSUE) 231, 239–44 (2007).

noneconomic-damages share for fatal injuries is sixty-five percent for those under age eighteen and seventy-five percent for victims eighteen and over. The noneconomic-damages share for nonfatal injuries is also quite large—sixty-four percent for those under age eighteen and eighty-four percent for victims age eighteen and over.[78] Although pain-and-suffering compensation provides a practical mechanism for giving claimants resources to pay attorney fees while still having enough funds remaining to cover their economic damages, these nonmonetary damages exceed usual contingency fees (generally, one-third of the damages award).[79]

The absolute magnitudes of noneconomic damages are, as one would expect, quite large. For tort cases in the 2005 Civil Justice Survey of State Courts data set, for which the value of noneconomic damages is positive, the average value of such damages is $675,360.[80]

An even greater potential for nonmonetary loss compensation is for loss of enjoyment of life. Government agencies routinely assess the fatality-reduction benefits of government policies using the value of statistical life (VSL), or the money–fatality risk tradeoff that people have for low-probability risks.[81] The most frequent context that is used for such assessments is the wage–risk tradeoff for dangerous jobs, which leads to values on the order of $9 million in 2013 dollars.[82] Various plaintiff-damages experts have sought to value loss of enjoyment of life using such estimates, and Posner and Sunstein have advocated a similar approach for wrongful-death cases in which the VSL would serve as a measure of the loss of enjoyment of life and would be compensation in addition to the value of economic damages.[83]

Returning to the insurance model of tort-liability damages indicates why such levels of compensation are not damages for which people would purchase insurance. Few people would choose to provide insurance coverage for their heirs equal to the present value of their future income plus an amount equal to VSL. Paying for such excessive insurance would shift one's resources from being available when one is alive to being available only after one's death, leading to a windfall for one's heirs at the cost of one's own financial well-being when alive.

Estimates of VSL do, however, have a place in both government policy and in the legal system. These values establish the appropriate price of safety from the standpoint of accident prevention. Thus, government agencies use these

78. *Id.*

79. *Id.*

80. These data are from Viscusi, *Empirical Analysis of Tort Damages*, *supra* note 72, at 51.

81. *See* W. Kip Viscusi, *The Devaluation of Life*, 3 REG. & GOVERNANCE 103, 113–18 (2009) (discussing the Environmental Protection Agency's decision to reassess the VSL used for its regulations) [hereinafter Viscusi, *The Devaluation of Life*].

82. *See* W. Kip Viscusi & Joseph E. Aldy, *The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World*, 27 J. RISK & UNCERTAINTY 5, 18–23 (2003) (discussing the range of values of statistical life derived from U.S. labor-market studies).

83. Eric A. Posner & Cass R. Sunstein, *Dollars and Death*, 72 U. CHI. L. REV. 537, 587–92 (2005).

values in setting the stringency of government regulations of health, safety, and the environment, but not for providing compensation.[84] Similarly, these estimates have a meaningful role in assessing whether companies have made adequate investments in product safety. In addition, the VSL can serve to indicate the total damages amount, consisting of punitive damages and compensatory damages, that is sufficient to create efficient incentives for safety.[85]

Other nonmonetary losses are similarly ill suited to an insurance role of tort liability. Damage to the environment, such as that caused by the BP Deepwater Horizon oil spill in 2010, clearly constitutes a real and important harm.[86] Rare archaeological artifacts or items of personal sentimental value likewise can be irreplaceable such that no amount of money is a substitute for their value. Monetary transfers to the citizenry for broad environmental harms or to the specific party bearing the loss might not be an effective substitute. The insurance function of tort liability is most successful for the kinds of monetary losses that are typically covered by private insurance.

B. Punitive Damages

Tort-liability damages awards can include punitive damages in addition to compensatory damages. But unlike compensatory damages, punitive damages do not serve an insurance role. After setting aside matters such as noneconomic loss, the optimal insurance amount that people would select in a market context would be the "make whole" amount—that is, compensatory damages equal to the value of the harm. Any amount above this level would constitute excessive levels of insurance. Punitive damages are amounts in excess of the damages amounts for economic and noneconomic losses and are awarded both to punish the injurer and to provide deterrence. The function of punitive damages is not to distribute risk. Consequently, punitive damages by their very nature will lead to excessive insurance.[87] Compensatory damages and punitive damages have both insurance and deterrence objectives. The difference is that compensatory damages do not provide for compensation in excess of the optimal insurance amount, whereas punitive damages do.

Punitive damages also serve a punishment function in addition to deterrence and compensation functions. The theoretical basis for this function is not well

84. *See* Viscusi, *The Devaluation of Life*, *supra* note 81, at 103–05, 108 (discussing controversy surrounding Environmental Protection Agency's use of the value of statistical life and providing a list of values of life used by various agencies).

85. Joni Hersch & W. Kip Viscusi, *Saving Lives Through Punitive Damages*, 83 S. CAL. L. REV. 229 (2010).

86. *See* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL & OFFSHORE DRILLING, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING, REPORT TO THE PRESIDENT (2011), *available at* http://www.gpo.gov/fdsys/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf.

87. If, however, legal fees exceed the value of the nonmonetary damages award, punitive damages can assist in making the victim whole.

articulated. Nor are there established guidelines for setting punitive damages for purposes of punishment. Many states have enacted laws prohibiting firms from being able to purchase insurance to cover possible punitive-damages penalties so that the responsible parties will bear the full brunt of the punitive award.

Modest punitive-damages awards create few inefficiencies, but truly substantial awards will drive a wedge between the value of the harm and the amount of the damages. Although extremely large punitive-damages awards are rare, to date there have been roughly 100 punitive-damages awards of $100 million or more.[88] We have termed these "blockbuster" punitive-damages awards.[89] Many of these blockbuster awards have been for tort cases.

A substantial law-and-economics theory indicates that there is a range of situations in which punitive damages can induce optimal deterrence.[90] But if firms are aware of the risks that would lead to punitive-damages awards, they will pass these expected costs to consumers. Whether consumer welfare will be enhanced by punitive damages depends on how successful the threat of punitive-damages awards is in promoting safety and how much the consumers value the safety improvement. Existing evidence suggests that damages at extremely high levels are less successful in providing safety incentives than are awards at more moderate levels of damages.[91]

VI

HAS THE SCALE OF LIABILITY CHANGED?

In the half century since Calabresi's article, there have been tremendous shifts in the role of tort liability as a result of the aforementioned developments. Although tort liability has long been a source of economic costs, claims that the economy was undergoing a tort-liability crisis involving rising liability costs did not become prominent until the 1980s.[92] The expressions of alarm with respect to the burden of tort liability might have stemmed in large part from expansions in the scope of tort liability. Our assessment suggests, however, that although there have been some changes in the role of tort liability, there has not been a stark upsurge in costs: Inflation-adjusted tort costs have kept pace with increases in the scale of the economy.

---

88. Alison F. Del Rossi & W. Kip Viscusi, *The Changing Landscape of Blockbuster Punitive Damages Awards*, 12 AM. L. & ECON. REV. 116, 120–23 (2010).

89. *Id.* at 116–24; Joni Hersch & W. Kip Viscusi, *Punitive Damages: How Judges and Juries Perform*, 33 J. LEGAL STUD. 1, 4–10 (2004); W. Kip Viscusi, *The Blockbuster Punitive Damages Awards*, 53 EMORY L.J. 1405, 1405–09 (2004).

90. See generally A. Mitchell Polinsky and Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869 (1998).

91. W. Kip Viscusi, *Does Product Liability Law Make Us Safer?*, *in* THE AMERICAN ILLNESS 137, 154 (F. H. Buckley ed., 2013).

92. For a discussion of the dimensions of the liability crisis of the 1980s, see VISCUSI, REFORMING PRODUCTS LIABILITY, *supra* note 27, at 14–41.

One reason tort costs might increase is that as society becomes more affluent, the value attached to good health increases. This increased valuation of safety has led to the emergence of a wide range of safety-related agencies, and it should also alter liability criteria and standards for negligence, which are likely to become more stringent as the benefits of greater safety rise. A countervailing influence is that technological progress should lead to a lower cost of providing safety, thus decreasing tort costs. The net effect on tort costs is unclear.

We consider three different measures of the trends in liability costs over the half century since Calabresi's article. First, we show that total liability costs have increased when measured in nominal terms, which might account for the increased attention to tort costs. Second, although adjusting for inflation mutes the extent of the liability cost increase, it does not eliminate it. Third, the scale of the economy has increased, and accounting for scale suggests that liability costs have not risen much at all.

Table 2A presents liability premium costs in nominal dollars from 1960 to 2010. The two lines of insurance included in this table are general-liability insurance and workers' compensation. General-liability coverage is a commercial line that includes injuries and property damage to others as well as coverage for inadequate provision of professional services. The general-liability statistics presented here include costs associated with medical-malpractice insurance as well as products-liability insurance, which together accounted for twenty-seven percent of general-liability premiums in 2000. Costs for these two insurance lines are available separately for later years but are not broken out separately for the table years through 1970 for medical malpractice and through 1990 for products liability. Pooling these forms of coverage with other general-liability insurance premiums provides a consistent frame of reference for the cost of general-liability insurance.

Table 2A: Liability Costs (in Thousands of Nominal Dollars), 1960–2010

	General Liability	Medical Malpractice	Products Liability	Workers' Compensation
1960	$962,831[b]	—	—	$1,419,362
1970	$2,139,671[b]	—	—	$3,492,307
1980	$8,967,877[b]	$1,275,603[b]	—	$14,238,646
1990	$22,137,745[a]	$4,014,622[a]	—	$30,957,411[a]
2000	$25,504,042[c]	$5,586,584[c]	$1,415,353[c]	$24,792,455[c]
2010	$46,821,368[d]	$9,092,317[d]	$2,050,510[d]	$31,483,419[d]

Note: The general-liability category did not separate products liability until the 2000 data and did not separate medical malpractice until 1975. For all years, the reported general-liability figures also include medical malpractice and products liability.

Source:

[a] INS. INFO. INST., FACT BOOK 1992: PROPERTY/CASUALTY INSURANCE FACTS, 28–29 (1992).

[b] INS. INFO. INST., INSURANCE FACTS 1981–82, at 25–26 (1982).

[c] INS. INFO. INST., THE FACT BOOK 2003, at 72–74 (2003).

[d] INS. INFO. INST., THE INSURANCE FACT BOOK 2012, at 109, 111, 113 (2012).

Focusing on the long-term trends in table 2A suggests that there has been an expansion in liability costs over the past half century. By focusing on a long timeframe such as this, the trends are not susceptible to temporary cyclical fluctuations such as the vagaries of the underwriting cycle, in which temporary decreases in interest rates reduce the rate of return that insurers can earn on the premium, which in turn leads to an increase in premium rates. Although general-liability costs were under $1 billion in 1960, by the year 2000 these costs had increased to over $25 billion and are now at $47 billion. The period of greatest absolute increase was the 1980s, which is the decade that witnessed changes often designated as a tort-liability crisis. In response to the rise in liability costs during that decade, many states enacted tort-liability reforms, which dampened the rate of premium increase.[93]

Similarly, workers' compensation costs also escalated over this half century period. As illustrated in table 2A, these premium amounts rose from their modest level of $1.4 billion in 1960 to a peak value of $31 billion in 1990 and 2010. The rapid rise in workers' compensation costs between 1980 and 1990 prompted many states to reduce the generosity of workers' compensation benefits and to institute cost-control measures. As a result, workers' compensation premiums dropped to $25 billion in 2000 and leveled off to $31

93. *See generally* Ronen Avraham, Leemore S. Dafny & Max M. Schanzenbach, *The Impact of Tort Reform on Employer-Sponsored Health Insurance Premiums,* 28 J.L. ECON. & ORG. 657 (2010).

billion in 2010.

Although the nominal premium cost trends suggest that the current liability landscape is different from that at the time of Calabresi's article, there is less evidence of a change in liability costs after adjusting for price changes. The premium levels in table 2B have all been converted to 2010 dollars and are consequently on a more comparable purchasing-power basis than the raw premium statistics. The overall patterns showing that premiums have risen remain, but the increases are less pronounced. Although liability premiums have increased since 1960, interestingly, these costs peaked for workers' compensation in 1990 and have diminished since. General-liability costs also declined from 1990 to 2000 but subsequently experienced resurgence. General-liability premiums adjusted for inflation increased almost sevenfold since 1960, while workers' compensation premiums roughly tripled. Clearly, the overall scale of liability measured by inflation-adjusted premiums has risen over time.

Table 2B: Inflation-Adjusted Liability Costs (in Thousands of 2010 Dollars), 1960–2010

	General Liability	Workers' Compensation
1960	$7,092,942	$10,458,084
1970	$12,024,951	$19,626,765
1980	$23,731,789	$37,732,412
1990	$36,970,034	$51,698,876
2000	$32,390,133	$31,486,418
2010	$46,821,368	$31,483,419

Note: Calculations based on data in table 2A converted to year 2010 dollars using the inflation-factor adjustments implied by the BLS inflation calculator, which is based on the CPI-U. *CPI Inflation Calculator*, BUREAU LAB. STATISTICS, http://www.bls.gov/data/inflation_calculator.htm (last visited June 11, 2014). As in table 2A, general-liability statistics also include medical malpractice and products liability.

Whether such an increase reflects a more costly liability regime depends on other contributing factors. A noteworthy influence is that the scale of the economy has increased, which will boost liability costs. As a measure of the scale of the U.S. economy, we use the inflation-adjusted value of the gross domestic product of the United States. This amount has risen by a factor of 4.6 from 1960 to 2010,[94] which is an increase that is somewhat greater than the

94. COUNCIL OF ECON. ADVISORS, ECONOMIC REPORT OF THE PRESIDENT 318 (2012); COUNCIL OF ECON. ADVISORS, ECONOMIC REPORT OF THE PRESIDENT 226 (2008). (Authors performed calculations using this data in addition to using the Bureau of Labor Statistics' inflation calculator to

comparable rise in premiums for workers' compensation but is less than the increase in general-liability costs. Thus, if the economy is viewed as being the same as in 1960, except larger in terms of overall scale, one would have expected an accompanying increase in premium costs that accounts for most of the increase in premiums that has occurred. Despite the many changes in modern tort liability from the role of tort law considered by Calabresi, the magnitude of tort costs relative to the scale of the economy is similar to what it was a half century ago.

VII
CONCLUSION

The principal insight of Calabresi's article is that conceptualizing the compensation function of tort liability recasts tort liability as providing an implicit form of insurance.[95] His original article stressed the positive aspects of this insurance function and its role in meeting the financial needs of those who have been injured, while at the same time providing a price adjustment for the injurer to, in effect, pay for this insurance in product-risk contexts. This framework remains the linchpin of economic theories of tort liability as a compensation mechanism. Understanding this insurance function also illuminates the situations in which tort liability can serve a particularly beneficial role and when its role might be more limited.

The ideal situations for tort liability mirror those for which insurance markets are most successful: Situations in which the harms are financial and liability costs are stable and predictable. Property damage associated with automobile accidents is a prime example of such a tort context. Automobile insurance losses tend to be stable over time, and the fairly routine nature of the cases reduces the relative share of litigation costs as compared to other tort damages. For insurance lines such as medical malpractice and products liability, the legal criteria and the losses have been more volatile, and the litigation costs relative to damages paid are greater. Less predictable losses make writing insurance difficult for insurance companies and also impede the implicit insurance efforts of tort liability. Rising liability standards over time, coupled with a latency period before the harms become apparent, pose particular problems because the purchasers of the products will be paying implicit prices for insurance that is inadequate for an expanded liability regime. Modern tort law's expansion of the scope of liability consequently makes covering the insurance costs of tort liability less feasible.

Wholly apart from changes in legal standards, there are some circumstances in which tort liability is simply not well suited to fulfilling the insurance objective and in which the role of tort liability in providing deterrence takes on

convert the 1960 figures from year 2000 dollars to year 2005 dollars. *CPI Inflation Calculator*, BUREAU LAB. STAT., http://www.bls.gov/data/inflation_calculator.htm (last visited Nov. 17, 2013).)

95. Calabresi, *supra* note 1.

greater importance. Transferring money is not an adequate substitute for replacing the loss of a person's life or for substituting for irreplaceable environmental goods. Such losses can be compensated but not fully insured in the sense that monetary payments might not fully restore either one's level of welfare or how expenditures affect one's welfare. The insurance role also breaks down for catastrophic losses, such as those arising from correlated risks associated with mass toxic torts, which can exceed the defendant's ability to pay. Insurance is only viable if losses can be anticipated and priced accordingly. Large loss outliers in the tort context are difficult to predict, as are major natural disasters for private insurers, and in each case the usual insurance arrangements can fail.

That the insurance function of tort liability has limits does not imply that tort liability does not serve an important constructive role with respect to risk distribution. In some situations tort liability will be a sufficient policy instrument. In other instances, tort liability can serve a constructive but incomplete insurance role. Payments to survivors for lost earnings and medical costs in a wrongful-death case will not replace the loss they have incurred but will serve to eliminate the monetary component of the loss.

When tort liability has a limited but constructive role to play, there are other social institutions, such as government regulation, that can serve a constructive function by working in tandem with tort liability. In situations in which adverse events cannot be adequately insured through tort liability, it is particularly vital to engage other government regulators to control these risks because they cannot be adequately compensated.