The Value of Life: Has Voodoo Economics Come to the Courts?

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I. Introduction

The proliferation of substantial product liability awards has made the prospect of a six-digit payoff from a product liability suit a much more frequent occurrence than comparable payoffs from state-run lotteries. The leading money winner in the product liability sweepstakes in 1987 was a prize of $95 million (Jury Verdict Research, 1989). The general impression created in the media is that not only are liability suits on the rise, but the awards associated with this litigation have escalated as well. As a result, the total liability price tag has become considerably larger then in the past.

A frequent target of liability reform efforts has been to attempt to constrain the awards in some manner because of a belief that award levels are excessive. Although there have been few criticisms of the approach to calculating economic losses, which has changed very little, the determination of non-economic losses has come under considerable fire. This criticism has arisen not necessarily because of any demonstrable faults with pain and suffering awards, but rather from the fact that there are no clear criteria for determining the level of pain and suffering compensation. As a result, there is no formal justification for the award levels that are provided. Moreover, there is considerable uncertainty as to what the actual outcome will be with respect to pain and suffering and other non-pecuniary components.

Although the rise in award levels has led to considerable pressure for constraints on the awards levels, the developments in tort liability may be in the opposite direction. In recent years there has been considerable discussion of a "hedonic" damages concept in which individuals would be compensated for the loss in their enjoyment of life. If adoption of this damages concept becomes prevalent, the level of damages could easily increase by a factor of 10—an effect that would dwarf the recent increases in damages levels. In this paper I will explore the rationale for this approach, the economic literature with respect to its pertinence, and the size of the awards levels likely to result under this damages regime.

The focus here will be on personal injury awards in product liability cases. In particular, what is the rationale for each of the components of damages, and how should these components be calculated? The procedures for economic damages

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are more straightforward, and it is the distinctive aspects of personal injury that relate to the noneconomic losses inflicted that pose the greatest conceptual and practical problems.

We then turn to new damages concepts that have been developed. These approaches have sometimes been called the "hedonic damages" technique in litigation contexts. This approach is well established in the economics literature and is usually referred to in that literature as the value-of-life methodology. These concepts represent extensions of the principles that could be applied to assess pain and suffering damages. The main issue is not how we go about calculating these values. As we will see, there is a well-established methodology for doing so. Rather, my focus will be on the threshold issue of determining the circumstances for which it makes sense to utilize this approach. The shift to a value-of-life methodology would result in an explosion in the magnitude of court awards so that before its adoption the courts should scrutinize this damages approach very carefully to assess its appropriateness.

As is indicated in the conclusion, the major controversies in this area do not hinge on uncertainties with respect to the underlying economics. The principal reform decisions hinge upon a selection of the pertinent objectives that should be served by the compensation for personal injury. Once there is agreement on these objectives, the design of the appropriate product liability reform strategy becomes straightforward.

II. Damages Concepts

The task of setting damages in personal injury cases is complicated primarily by the fact that the losses in such accidents involve more than financial impacts. In a standard textbook case of property losses, the tort liability system functions quite effectively. The appropriate compensation in that instance is to compensate the accident victim for the entire value of the property loss. Either a strict liability or negligence regime will result in efficient levels of accident deterrence, provided of course that there is appropriate recognition of the role of contributory negligence on the part of the accident victim. The task of setting compensation levels is quite straightforward, and the general properties of providing for full restoration of property losses through court awards are attractive under a wide variety of situations.

In contrast, situations involving personal injury are much more problematic. The fundamental difficulty arises from the fact that life and health are irreplaceable commodities. Whereas one can easily pay for the repair of a car, the appropriate transfer in the event of a physical impact is less obvious. Consider a situation in which an accident makes one a paraplegic. If one adopted the principle used in property loss cases that compensation should make one "whole," then the compensation required may be enormous. Indeed, no monetary transfer may restore one to the same well-being that one would have had if the accident had not resulted in paraplegia.

Health impacts also tend to be irreversible and have an important temporal dimension that is not shared in the case of property losses. Individual well-being

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1 See, for example, the discussion in Polinsky (1989) and Shavell (1987).
for a healthy individual is determined largely by one's lifetime wealth and, more immediately, by swings in one's average level of income over a period of time. The welfare losses imposed by temporary financial impacts of accidents often can be ameliorated by drawing upon one's financial resources until compensation is paid. The subsequent compensation can, in effect, provide for purchases that will affect future welfare, thus offsetting the losses from the resources that were drawn down in order to meet the financial costs imposed by the accident. One's welfare consequently will be little affected since resources can be shifted across time.

For health impacts, it is less feasible to undertake such transfers across time in an effort to smooth out one's well-being. An accident may inflict substantial pain and suffering. The prospect of being ultimately compensated through a tort liability award may enable one to draw down one's future resources and spend more now, but these financial expenditures may do little to ameliorate the welfare losses being imposed by adverse health effects. What will be provided by the courts is future compensation, and there is no mechanism to trade off health losses now for financial rewards. The non-transferable and irreversible nature of health impacts greatly impedes efforts to restore welfare, thus greatly limiting the role that any compensation mechanism can play.

The literature dealing with the valuation of health impacts often uses terminology such as the "value of life" or the "hedonic value of life." This terminology is somewhat confusing. There is no unique value of life, as the appropriate value may depend on the context that we are considering. Whose value is of interest? Is the concern with accident prevention or compensation of survivors of accident victims? Similarly, the hedonic value of life terminology has two different origins. The economics literature introduced this terminology to refer to the statistical procedures used to disentangle compensation that individuals receive for risk from other quality components of the product or job imposing the risk. The early economic literature in this area focused on hedonic price indexes for automobiles, which were simply quality-adjusted estimates of the price of autos taking into account changes in the various attributes of different automobile models. More recently, the courts have used this phraseology to refer to the lost pleasures of life, which is also a quality component.

To clarify the concepts involved, we will distinguish two different measures of damages—the insurance value and the deterrence value. Consider first the value of compensation from the standpoint of insurance. The appropriate reference point here is not the insurance amount that individuals actually do select since that will be influenced by their understanding of the risk and the nature of the insurance pricing. Rather, the insurance value will be the amount of individual insurance that people would select if economic markets were perfect. In particular, the insurance amount is based on the level of compensation that would be selected if the individual fully understood the risk and if there were actuarially fair insurance available, i.e., the price of the insurance corresponds to the person's specific risk, and there are no administrative costs.

In such a situation, individuals who are risk-averse, as most of us are, would choose to fully insure losses involving property damage. However, the optimal level of insurance after an adverse health impact will be indeterminate. In particular, we cannot say whether an individual would choose a level of insurance
that would fully restore him to the pre-accident level of welfare, or whether it would provide more or less than this amount of compensation.

We can, however, address the factors that are likely to influence any discrepancy from the amount of compensation required to make the accident victim whole by restoring the pre-accident level of welfare. In particular, the optimal level of insurance is driven by how the accident affects one's ability to derive benefits from additional expenditures. In the extreme case of one's death, the appropriate bequest will seldom restore one's entire lifetime wealth level, since the accident eliminates one's ability to benefit from these expenditures. The accident victim will typically wish to leave a bequest, but this bequest will be less than the amount that the desired overall lifetime wealth would have been since he will not be alive to consume this amount. Much the same result holds for the typical on-the-job injury. For the typical work disability, an amount of insurance compensation less than full restoration of welfare would be what the workers would select if faced with perfect insurance markets (Viscusi and Evans, 1990).

There may, however, be situations in which the accident may boost the well-being one can derive from additional consumption expenditures. There is some evidence that minor health impacts such as poisonings may be of this type. Moreover, one can envision circumstances under which expenses for electronic equipment such as computers, televisions, and stereos might enhance one's well-being more after a disabling accident than before. A van (with handicap access and seating), for example, clearly enhances the well-being of the disabled.

One should be careful in making all-inclusive judgments along these lines, however. In the usual circumstance, many important expenditures such as this are already subsumed under the medical expense damages component. For example, the cost of vans and the expenditures needed to adapt one's residence after an accident generally are included in the medical component of tort liability awards so that there is no additional need to provide for such compensation through a pain and suffering award.

As a general rule, people will generally insure the monetary loss involved, except for catastrophic accidents. The desired insurance will not, however, generally be sufficient to eliminate all of the effects on one's well-being from adverse health effects since higher levels of expenditure may be comparatively ineffective in offsetting the irreversible impacts of a decline in one's health.

The second approach to valuing personal injury might best be termed the deterrence value. The genesis of these deterrence values is as follows. Consider a situation in which the accident victim is facing a small risk. For concreteness, suppose that this risk equals the average hazard posed by a typical job—an annual risk of death of 1/10,000. Suppose that this worker is willing to face this risk for an additional wage premium of $500 per year. The presence of the risk and the required wage offset establishes the risk-dollar tradeoff for the individual, thus effectively establishing a price for bearing risk.

In this case, the price per unit risk is quite substantial. In particular, $500 compensation for each risk of 1/10,000 of death implies a total compensation level per statistical death of $5 million. Viewed somewhat differently, if 10,000 workers each faced an annual risk of death of 1/10,000 and were compensated at $500 each for facing the risk, then the total risk compensation for the one
expected death would be $5 million dollars. This $5 million figure establishes the price the individual bearing the risk has established for his valuation of it. Thus, from the standpoint of the accident victim it provides the appropriate measure of the deterrence price that should be charged so that the producers inflicting the accident will not, in effect, be getting a free ride at the expense of the accident victim.

From the standpoint of the producer, paying the $500 premium to each individual who must bear the risk of 1/10,000 of death will foster safety incentives. In particular, the firm will be faced with a choice of either making a financial expenditure for greater safety or providing appropriate financial compensation to those exposed to the risk. The compensation mechanism described above will lead to an efficient degree of care on the part of producer, thus ensuring appropriate safety incentives.

This scenario for voluntary market choices generating safety incentives requires that individuals make conscious choices with respect to product risk. Individuals must have some awareness of the risk in advance and be compensated either through higher wages or lower prices for bearing it. In contrast, tort liability generally addresses situations in which there is believed to be some shortcoming of the market, either because of a lack of any voluntary trade whatsoever or a failure to fully appreciate the risks that are present. In these situations, the compensation will not be paid in small increments in advance, but instead will be paid after the fact in a lump sum to the particular accident victim.

From the standpoint of creating safety incentives, it matters little whether we pay 10,000 individuals exposed to the accident $500 each or we pay the particular accident victim the $5 million amount. In each case, provided that there are appropriate adjustments for the fact that the compensation is being paid on a deferred basis, the same safety incentives will be created for the firm. The firm's price tag for not providing safe working conditions or products will be identical. The firm will then make the decision as to whether it is worthwhile to make the safety investments, and as a result the court awards will generate the efficient risk level if the deterrence values are used in setting these awards.

From the standpoint of compensation, however, the situation in which the single accident victim's survivors receive a payoff of $5 million is quite different from that in which each of the 10,000 individuals exposed to the risk receives $500. The premium before the accident, which is the ex ante compensation for the risk, in effect makes all of the potential accident victims whole from the standpoint of their expected welfare. In particular, from an economic standpoint the functioning of such compensation is to give the person bearing the risk the same expected welfare as he would have had if there were no risk imposed by the product. Indeed, by definition, the appropriate level of compensation on an ex ante basis is the amount that gives the individual bearing the risk the same welfare level he or she would have faced had no risk been imposed. For the situation in which the compensation is provided after the fact, however, there is no clear link to the accident victim's welfare. A $5 million award to one's survivors will not restore the well-being of the deceased. The main justification for such compensation will be that of deterrence rather than insurance.

The deterrence values that are widely used through the economics literature have been derived based on compensation levels before accidents occur. In these
Table 1
Choice of the Damages Approach

<table>
<thead>
<tr>
<th>Producer's Safety Decision</th>
<th>Compensation Concept</th>
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<tbody>
<tr>
<td></td>
<td>Insurance Value</td>
</tr>
<tr>
<td>No safety investments</td>
<td>Optimal insurance, inadequate incentives</td>
</tr>
<tr>
<td>Moderate safety investments</td>
<td>Optimal insurance, possibly adequate safety incentives</td>
</tr>
<tr>
<td>Safety investments just below efficient standard of care</td>
<td>Optimal insurance, excessive incentives</td>
</tr>
<tr>
<td></td>
<td>Deterrence Value</td>
</tr>
<tr>
<td></td>
<td>Overinsurance, adequate incentives</td>
</tr>
<tr>
<td></td>
<td>Overinsurance, excessive incentives</td>
</tr>
<tr>
<td></td>
<td>Overinsurance, possibly adequate safety incentives</td>
</tr>
<tr>
<td></td>
<td>Insurance/Deterrence Mix</td>
</tr>
<tr>
<td></td>
<td>Overinsurance, inadequate incentives</td>
</tr>
</tbody>
</table>

situations, use of the deterrence values by the market fosters efficient outcomes. Using these values to set tort awards will have some but not all of the attractive properties of efficient markets. Compensation will be paid after the fact and will be concentrated on a single individual as opposed to spreading it across all individuals bearing the risk. This approach can foster the appropriate deterrence, but it concentrates too much of the payment on a single person who will derive less benefit from the payment than if it were spread out more broadly.

The choice of the appropriate compensation mechanism can be seen by considering the different decision contexts outlined in Table 1. Three different situations will be considered in terms of the level of safety selected by the producer. In each case, we will assess these with respect to different approaches to determining compensation—the insurance value, the deterrence value, or some compromise between the insurance and deterrence values.

Missing from this list of potential approaches is a strictly justice-based compensation measure. Most considerations of equity and justice involve whether or not the accident victim should be paid. There may, for example, be more than one kind of financial arrangement that could generate efficient accident avoidance incentives. For the purposes of this discussion, however, we will assume that it has been decided from an equity standpoint to actually pay compensation to the accident victim. Justice concerns also enter with respect to the amount of compensation that will be paid. For example, it may appear to be unjust to have identical compensation for two accident victims who experience the same financial loss but where one victim experiences substantial pain and permanent disfigurement. Such notions of justice, however, may simply reflect underlying concerns with deterrence. The main reason we view compensating these individuals the same amount as inequitable is that we would like to establish incentives so that the generators of accidents will have additional incentives to avoid accidents when non-monetary damages are present. This is essentially a deterrence notion, which we will include in the discussion below.

Consider the first situation in Table 1. The firm makes no effort whatsoever to provide safety for the particular product. In this situation, setting compen-
sation based on the appropriate insurance value will provide an optimal level of insurance, as it will in all other situations listed in Table 1. However, insurance-based compensation will not generate adequate incentives to promote product safety. The deterrence value of compensation remedies the incentive inadequacy problem, but since the deterrence amount is paid to a single accident victim, too much insurance will be provided, and we will be in a situation of over-insurance.

To retain the deterrence incentives but avoid overinsurance, one can envision mechanisms in which the deterrence value of compensation was not provided by victim compensation. Instead, courts might levy a fine to be paid to the government rather than to the accident victim. However, this approach would immediately be undermined by out-of-court settlements. Firms would attempt to limit their losses, and plaintiffs would attempt to seek a share of the fine by settling out-of-court for their compensable losses as well as a portion of the fine that would be received by the government.

In general, one must strike a balance between the competing objectives of compensation and insurance. Thus, we must sacrifice some of our deterrence objective to limit the degree of over-insurance. The degree to which we compromise between the insurance and deterrence objectives depends both on the responsiveness of product safety decisions to such financial incentives as well as the ability of the accident victim to derive benefits from the compensation that will be paid. The more sensitive the safety decision is to financial incentives and the greater the ability of the accident victim to reap welfare benefits from additional expenditures, the closer the compensation level should be to the deterrence value.

The second situation considered in Table 1 is that in which the firm makes moderate safety investments, but these investments are not sufficient to raise the safety level to the standard of care required under product liability law. In this situation, insurance values of compensation will probably provide inadequate safety incentives, unless the safety level selected is already close to the appropriate amount. Compensation based only on the deterrence value will provide excessive safety incentives since the firm is already engaged in the process of promoting safety. The ideal will typically be some compromise between the insurance and deterrence values.

In the final situation, the firm has made safety investments that are substantial, but they fall just below the level required under the efficient standard of care. In that instance, even the insurance value of compensation may provide for excessive financial incentives for safety since the firm might already have been extremely close to providing the efficient product risk level so that only a minor additional financial incentive was needed.

From the standpoint of the insurance objective, the insurance value of compensation establishes an appropriate level of compensation and can serve as the floor for ascertaining the appropriate compensation levels. As the level of safety selected by the producer departs by more and more from the optimal standard of care, it will be more appropriate to shift the level of compensation from the insurance value to the deterrence value. However, even in the situation in which there are no safety precautions currently being taken, one would generally want to set a compensation level a bit below the deterrence amount to take into account the over-insurance that we are providing through compensation.
The appropriate level of compensation hinges in large part on whether one wants the role of damages to provide insurance and create accident deterrence or whether one wishes to focus on only a single objective. One view is that the role of compensation is to provide for insurance, and it is the task of liability standards to address the incentives issue. However, these functions cannot be divorced. Even if the liability standards are set correctly, if the compensation levels are inadequate, then the deterrent effect of this liability regime will be inadequate. The safety incentives will be too low.

A more sensible long run solution is to establish a division of labor among different social institutions. Appropriate recognition of the role of other institutions, including regulation and social insurance, in providing for the insurance and deterrence objectives of tort liability will partially address the difficult trade-off problems involved.

From an economic standpoint, no single institution can satisfactorily satisfy the competing objectives outlined above without a more elaborate form of intervention than we have implemented at present. By relying on multiple institutions to promote our diverse objectives we can promote all of our diverse interests without compromising the other objectives that may be present. A major legal policy issue for the immediate future is whether we want the tort liability system to provide victim compensation, while doing little to promote safety, or whether we want this institution to assume a more prominent role in deterring risk.

III. The Economics of the Hedonic Damages Approach

Most estimates of the deterrence values for life and injury are based on studies of labor market decisions. In particular, because labor market data on wages and job characteristics are so extensive, it is possible from a statistical basis to ascertain estimates of the quality-adjusted (i.e., hedonic) wage rate, where the key quality component of interest is the risk level faced by the worker. In a competitive market, the extra wage premium that workers receive for risk will reflect their attitudes towards bearing risk. The observed risk-dollar tradeoff can then be used to calculate the implicit value of life or injury.

The most recent evidence using the newly available data on death risks developed by the National Institute of Occupational Safety and Health indicates that the average blue-collar worker receives an extra $600 in wage compensation for bearing an average death risk of 1/10,000. These results correspond to an implicit value per statistical death of $6 million. This compensation includes all aspects of compensation received by the worker. Although hazard pay is sometimes specified in labor market contracts, often it is not, and in general one must utilize statistical techniques to disentangle the relationship.

Since the observed risk-dollar tradeoffs reflect the preferences of the particular sets of workers included in the analysis, one would expect there to be differences across studies in terms of the rates of tradeoffs. In particular, the value of life is not a natural constant such as $ or $%. Rather, it is simply a measure of one’s willingness to bear risk, and this willingness will vary across individuals just as will other individual tastes.

The results in Table 2 summarize a variety of my labor market studies of the
### Table 2

Labor Market Studies of the Value of Life and Health

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Dollar Value*</th>
<th>Study</th>
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<tbody>
<tr>
<td>Value of life</td>
<td>$3.6–$4.8 million</td>
<td>Viscusi (1979)</td>
</tr>
<tr>
<td>Value of life</td>
<td></td>
<td>Moore &amp; Viscusi (1990)</td>
</tr>
<tr>
<td>a) $6.4 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) $6.4 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) $2.4 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) $2.8 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value per discounted life year</td>
<td>$200,000</td>
<td>Moore &amp; Viscusi (1988)</td>
</tr>
<tr>
<td>Value of nonfatal injury</td>
<td>$28,000–$41,000</td>
<td>Viscusi (1979)</td>
</tr>
<tr>
<td>Value of nonfatal injury</td>
<td>$39,000–$44,000</td>
<td>Viscusi (1981)</td>
</tr>
<tr>
<td>Value of nonfatal injury</td>
<td>$12,000–$16,000</td>
<td>Viscusi &amp; O'Connor (1984)</td>
</tr>
<tr>
<td>Value of nonfatal injury</td>
<td>$41,000–$50,000</td>
<td>Viscusi &amp; Moore (1987)</td>
</tr>
</tbody>
</table>

* Figures are in terms of 1989 prices.

valuation of risk, where the first six estimates reported in the third column of the table are estimates of the value of life using different samples of workers and different measures of risk. I have focused on my studies for two reasons. First, a detailed review of the entire literature appears in Moore and Viscusi (1990), and there is no need to replicate that work here. Second, ideally one would like to compare results based on a comparable statistical methodology. Focusing on my individual and joint studies promotes this comparability. It should also be noted that many of these studies broke new ground. The first estimates of the value of life for a representative group of workers appeared in Viscusi (1979). The first estimates of the heterogeneity of the value of life appeared in Viscusi (1981). Moore and Viscusi (1988) present the first estimates using the NIOSH death risk data.

Although these various estimates are reported for the mean level of risk in the sample, in general the value of life varies across the sample. In particular, workers who have selected themselves into high risk jobs with an annual death risk on the order of 1/1,000 have estimated values of life of $1 million or less, whereas workers in very low risk jobs may have implicit values of life on the order of $10 million or more (Viscusi, 1981). The variation in the value of life estimates in Table 2 consequently reflects in part the different mix of workers as well as the different riskiness of the workers in the different samples analyzed. The estimated value of life figure of $6.4 million has been obtained using the most recently available death rate statistics.²

The level of the value of life estimates, even at the low end of the range, is also quite striking in that use of the deterrence values of life in wrongful death cases would all but ensure million dollar damage awards. The extent of the potential impact can be assessed by comparing the present value of the earnings

² In particular, the estimates were generated using information from the National Traumatic Occupational Fatality Survey of the National Institute of Occupational Safety and Health. This survey consisted of a detailed census of all job-related fatalities in the early 1980’s, whereas other measures of death risks were based on Bureau of Labor Statistics surveys that constituted a partial assessment of all death risks.
of the workers with the estimated dollar values of life. In the case of the $6.4 million estimates, the average workers in the sample had annual earnings of $17,826 (1980 dollars) and a remaining potential period of work until age 65 of 28 years. If their earnings were to continue to grow at a rate equal to the rate of interest, then the present value of earnings lost would be just under $500,000. This estimate is an order of magnitude smaller than the implicit value of life figure that was estimated.

At first glance, this disparity may seem to be a contradiction. How can individuals value their lives from the standpoint of deterrence by so much more than their total lifetime resources? The explanation is that the deterrence values of life reflects individual attitudes towards small risks. Individuals may be willing to pay $600 to produce a reduction in their lifetime risk of 1/10,000, but this does not mean that we can extrapolate from this rate of tradeoff to assess how much individuals would be willing to pay for more substantial risk reductions. The amount that people will be willing to pay to produce a risk reduction of 1/1,000 will, for example, be less than $6,000 in general, and carrying this process further the amount they would pay to purchase a 1/10 reduction in death risks would be less than $600,000.

The fact that the deterrence values pertain to individual valuations of small changes in risk does not in any way undermine their usefulness from the standpoint of tort liability. Indeed, from a deterrence standpoint this is exactly the valuation that we would want. The product risks that are posed generally are not so high that all users of the product are killed. Fatalities and other serious injuries tend to be rare events, and the question is whether the firm should have made additional expenditures to reduce these already low risk levels. To value small risk reductions, what we want is a measure of how individual consumers of the product themselves would have valued these risk reductions. It is this figure that the deterrence values of life summarized in Table 2 gives us, and if the objective of damages awards is to establish effective deterrence incentives, these are the estimates that should be used.

Another feature that should be noted is that risk reduction policies do not save lives indefinitely. Rather, they simply extend life. Moreover, the lives that are extended will be of different length so that ideally one would want to take the different duration of life into account.

The estimates in the middle of Table 2 reflect workers' implicit valuation per life year, which are on the order of $200,000. These rather high values per life year figures arise in part because labor market studies indicate that workers have a high rate of interest that they use in assessing risks to life. This rate of interest will reduce their assessment of the discounted number of life years saved, so that $6.4 million per life will continue to be a very substantial amount when calculated per discounted life year saved.

The final set of four studies reported at the bottom of Table 2 pertain to nonfatal job injuries. The valuation of nonfatal injuries yields much more modest estimates of the value, where the estimates range from $12,000 to $50,000 per injury. Approximately half of this compensation is for the financial loss associated with the injury. More specifically, one can utilize these findings to derive an estimate of the value of the pain and suffering and noneconomic damage component of the injury, which ranges from $19,000 to $30,000 (Viscusi and Moore,
1987). Thus, approximately half of the injury valuation is for non-economic loss, and the remainder is for the economic loss associated with the accident.

It is useful to put these estimates in perspective by considering the nature of the injuries involved. The average injury reflected in this table has a duration of 17 days so that the value of the noneconomic damages is roughly $1,000 to $2,000 per day of work lost. Job injuries, of course, involve much more than time off the job, as these estimates indicate.

An important variation in the deterrence value estimates is the relationship of these values to individual income. In the case of economic damages as now calculated in personal injury cases, the losses paid are proportional to one's income. Thus, a doubling of income will increase the calculated value of losses by double as well. A similar relationship appears to pertain to the deterrence valuation figures. In particular, statistical estimates indicate that the valuation of health risk reduction increases on a one-to-one basis with one's income level. Although this variation of the deterrence values with income may differ for other types of worker populations, they provide a general index of the extent of the relationship with income, which appears to be similar to that of other economic damage components.

All of the deterrence valuation figures in Table 2 pertain to individual attitudes toward all consequences of the risk, not simply the noneconomic damages. Thus, the deterrence values of life reflect the value that individual has attached to the risk of experiencing the injury, losing one's income, and losing one's ability to enjoy life. Thus, these deterrence values would never be used as an additional component to economic damages but instead would be used in lieu of the economic damage components in situations in which deterrence incentives were viewed as paramount.

Not only are the deterrence values greater than the values from the point of insurance, but the appropriate level of compensation from the standpoint of insurance may also be diminished by the accident. In the extreme case of an individual's death, full income replacement is not desirable since an individual will not be alive to reap the enjoyment from this income. The courts recognize this reduction in value by netting out the consumption share that the deceased would have had when calculating the damages amount.

Particularly severe injuries may also require less than full compensation. In particular, the same kinds of labor market studies used to generate the figures in Table 2 indicate that for the typical job injury, the optimal level of insurance that workers would select with perfect markets would provide for 85 percent replacement of earnings rather than 100 percent. The reason for this less than full replacement is that disabling job injuries diminish the welfare benefits one can derive from insurance, and if workers were forced to pay for this insurance themselves in an otherwise perfectly functioning insurance market they would not choose to purchase full coverage, but rather would obtain somewhat less than full compensation.

What is striking about this result is that for job injuries, as in the case of fatalities, individuals would generally not choose to insure their pain and suffering losses. Indeed, the level of insurance they would provide for themselves would

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3 See Viscusi and Evans (1990), supra note 1.
provide for less than full compensation of economic damages rather than more compensation. For these classes of injuries, any rationale for pain and suffering compensation must be based on the deterrence value of this compensation rather than its insurance function.

The level of insurance compensation that is required and the overall desirability of pain and suffering compensation may of course vary with the nature of the injury. The other situation in which we have firm estimates of the valuation of the health impacts pertains to modest health effects associated with exposure to the risks from household chemical products. In particular, the risks that have been studied are: inhalation, risks from insecticide, poisoning risks from insecticide, risks of chloramine gassing from toilet bowl cleaner, and risks of eye burn from toilet bowl cleaner. These risks pertain to health impacts that are generally temporary in nature. Consumers’ valuation of these effects as determined by surveys eliciting their preferences indicate that the deterrence values of preventing such injuries are on the order of $500–$900 each. Moreover, for these minor injuries there is no evidence that the injuries reduce the welfare benefits one can derive from additional expenditures. In particular, statistical estimates indicate that consumers would choose to fully insure these risks, which they treat as being equivalent to monetary losses. In this situation, the pain and suffering valuations and the deterrence valuations of the minor injuries are identical. This result contrasts with the findings for more severe injuries, where generally it would not be desirable to insure pain and suffering losses at all, and the deterrence values would greatly exceed the insurance values of the injury.

How, if at all, should these estimates be used by the courts? There is a well-established economic methodology for ascertaining the deterrence values associated with the injuries. Indeed, these estimates are used by the Federal government in assessing risk regulations that have far greater consequences than any particular court case. Moreover, these deterrence values are generally substantially in excess of the level of compensation associated with economic losses. For minor injuries, insurance and deterrence values may be quite similar, as the estimated values for poisoning associated with insecticide are of roughly the same magnitude as the pain and suffering awards for poisonings in product liability cases.

The focus of the controversy over deterrence values for injuries and death should not be over the validity of economics but over the objectives of the tort liability system. Not only is the economic literature underlying these estimates well established, but it has also been widely used in deterrence contexts. Agencies throughout the Federal government have adopted this approach to valuing the benefits of risk regulation, and the Office of Management and Budget has indicated that this approach should be applied to assessing all major new Federal regulations (U.S. Office of Management and Budget, 1989). The main question is whether the judicial system will choose to move to this new liability regime in which the function of the damages award will be to establish incentives for safety and not simply to compensate for the economic losses imposed.

IV. Damages Reform Proposals

There seems to be little dissatisfaction with the manner in which economic damages are calculated by the courts since this methodology is relatively non-
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controversial. The complacency with respect to the status of economic damages also indicates an absence of substantial dissatisfaction with the main contributor to the rise in damages amounts in recent years. In particular, inflation, particularly with respect to medical prices, accounts for most of the increase in product liability awards over the past two decades. Since compensation for upward price shifts simply retains the purchasing value of the award, indexing for inflation is in keeping with efforts to make victims “whole” financially. Much of the remainder of the increase in verdicts may be attributable to the change in the case mix due to the surge in asbestos litigation.

The one component that has attracted considerable attention of product liability reformers is that of pain and suffering damages. The court system has no well-established methodology for setting pain and suffering damages, and not surprisingly there have been claims that juries have often been inconsistent in the manner in which they have set these values. Such criticism seems somewhat superficial in the absence of any well-defined criteria by which one could measure the appropriateness of the pain and suffering award. The magnitude of the pain and suffering and noneconomic damage compensation is quite substantial, and it varies in systematic fashion with the character of the injury.

Overall, depending on the injury category, pain and suffering and non-economic damages constitute 30 percent to 50 percent of the total award. In situations in which pain and suffering is awarded, the share is even greater—from 50 percent to 70 percent. This level is not too dissimilar from the normal contingency fee share of one-third of the award. Although legal reform debates may focus on the appropriate levels of pain and suffering compensation, treating such compensation at face value, in practice much of this noneconomic damage component may simply be the mechanism by which juries compensate accident victims for their legal fees. If there are limits imposed on pain and suffering, then juries may provide this compensation in other ways by, for example, increasing the amount of economic damages awarded.

Although there is a wide variety of pain and suffering cap proposals, by far the more fundamental reform task is to establish a firm conceptual basis for pain and suffering awards. One such basis is the deterrence value figures. Past studies have indicated a variety of estimates of the valuation of various health outcomes. Moreover, if the courts were to move in this direction, survey methodologies could extend these valuations to other health impacts of interest. The main conceptual approach is how much individuals value small changes in risk, where these risk-dollar tradeoffs would then be used to establish unit prices for the health outcomes.

A second conceptual approach to pain and suffering would be the insurance value. In general, the insurance value would be less, particularly for major injuries. Except for minor injuries, pain and suffering damages are not impacts that individuals would choose to insure, so that the optimal insurance amount for pain and suffering will typically be zero.

The competing objectives of tort liability of deterrence and compensation consequently give a span of pain and suffering numbers that will typically range from zero to the deterrence values associated with the injury. If there were greater emphasis on the deterrence function, juries could be provided with schedules of such deterrence values and descriptions of the health outcomes, and they could then assess where along this schedule the injury would fall. This scheduling
process would assist juries in making these judgments and would also decrease some of the uncertainty now associated with tort liability awards.

Such schedules also could be adopted within the context of a more limited reform effort. One of the major difficulties with pain and suffering awards is their randomness. If juries were provided with a schedule by disease category of the median values of pain and suffering awards associated with different outcomes and a description of the health impacts involved, then they could make a judgment as to where the particular injury in this case fell along the spectrum. These advisory schedules will provide structure with imposing arbitrary limits that do not allow variations with injury severity.

This guideline approach appears preferable to the damages cap proposals that have surfaced. As an assessment using product liability claims data indicates, damages caps generally will affect very few product liability claims and will have little overall financial impact. Some of the most highly publicized awards will, of course, be influenced by a cap. However, the lion's share of the pain and suffering damages are generated by smaller claims, not by the few large claims at the extreme.

Moreover, noneconomic damage caps creates a new class of inequities across injury groups. It is the minor injuries that tend to be overcompensated the most. The truly major injuries with substantial losses tend to be relatively undercompensated. Damages caps would leave the minor injuries unaffected and have a disproportional impact on injuries in only a few categories, such as brain damage and paraplegia.

An intriguing proposal for addressing the minor injuries is to have pain and suffering floors to eliminate the overcompensation of small claims and to limit pain and suffering to truly serious injuries (Weiler, 1989). This approach would limit court awards for pain and suffering and would eliminate the feedback effects of such pain and suffering awards on settlements. What it would not do is eliminate the pain and suffering payments generated by the high litigation costs faced by the defendant. The prospect of such costs makes the firm willing to settle a claim out of court for more than the expected economic damages, and plaintiffs use this extra amount to pay for attorney's fees.

More generally, there is no compelling rationale other than the imposition of discipline to support the utilization of caps, floors, and other devices to limit pain and suffering awards. Rather than binding constraints on pain and suffering compensation, which does not even appear to be the key contributor to the liability crisis, it would be preferable to use suggested damages schedules that can be applied in a non-binding manner based on the relationship of the particular injury to the standardized injuries presented in the schedule.

The greatest need is to rationalize the principles governing the pain and suffering compensation process. In situations in which deterrence objectives are paramount, there is a methodology available for achieving this objective. However, the cost implications of shifting to deterrence values for pain and suffering could potentially be enormous. Moreover, even if one were indifferent to the price tag and solely concerned about creating the correct incentives for safety, then utilization of the deterrence values of injury across the board would be excessive. Nevertheless, the courts should take advantage of the methodology that has been developed in this area and utilize the economic deterrence values
in situations in which it is desired to establish effective deterrence incentives and to promote appropriate recognition of product safety. These award levels would not be punitive in the sense of punishing firms, but they would be designed to redress imbalances in situations in which firms completely ignore the safety objectives at stake.

The most clear-cut area of applicability of the value-of-life concepts is with respect to setting punitive damages. Juries currently have no guidelines for setting the damages needed to establish effective safety incentives, and the value-of-life methodology establishes this basis. For the typical injury case not involving punitive damages and for which insurance is the objective, more traditional calculations of economic losses are pertinent.

The main area of ambiguity is the intermediate range of cases for which establishing greater incentives for deterrence and providing compensation are both matters of concern. Defining the boundaries for determining which compensation concepts are applicable will become the pivotal issue if the adoption of the value-of-life approach becomes more widespread.

References


