Supramonetary Values, The Value Of Life, And The Utility Theory Meanings Of Tort Recovery

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I. Introduction

Economists often take it for granted that any finite utility value to an individual can always be measured by a dollar equivalent. This presumption has led to the error of assuming that the utility value of life of an individual is ordinarily infinite. In this paper, we offer both logical proof and practical demonstration that the utility value of life of an individual cannot be infinite. At the same time, however, the finiteness of the utility value of life does not necessarily imply that an individual would give up his life for a very large monetary payment, no matter how large. Except under extraordinary circumstances, which we will discuss below, most individuals would not give up their lives for monetary payments. The apparent contradiction between the finiteness of the value of life and the nonexistence of a monetary equivalent for the value of life lies in clearly understanding the implications of modern utility theory. There is a class of values to an individual, which we will call supramonetary values, for which there are finite utility values, but no monetary equivalents. In this paper, we provide a definition for supramonetary values (following Arrow, 1997), but also explore issues relating to the reliability of market values for measuring utility losses of tort victims even in cases that do not involve supramonetary values.

We employ the ordinary utility theory definition of “utility value” as the value an individual would attach to the good, service or asset in question. The utility value of each unit of a good service or asset is unique to an individual and not directly measurable. Interpersonal utility comparisons cannot be made except in terms of what individuals reveal about their preferences in actual market transactions. If two individuals pay the same amount of money for two identical units of a good, they reveal that they each value that unit of the good at least as much as the amount of money they paid to obtain it. Differences in value might arise either from different capacities of the individuals for converting goods into utility (including possible differences in time requirements for utility production) and from possible differences in consumer surplus between the individuals. Each individual would have some amount of “consumer surplus,” which also might vary from individual to individual. Given these sources of differentiation, the conclusion cannot be drawn that the two individuals value a given unit of the good equally even though they each pay the same amount to obtain it. Economics makes no assumption that utility has the same magnitude for all individuals. Further, if the marginal utility of income declines, different income levels would imply different marginal utilities even for individuals who had identical utility functions. All that can be established is that each individual, as a lower bound, was willing to pay the amount actually paid for the good.

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Our analysis depends on three conceptual distinctions that we will carefully maintain throughout the paper: (1) Supramonetary Value, which will be defined as a value for which the utility value is so high relative to the value of money that a monetary equivalent does not exist for a particular individual; (2) Monetary Equivalent Value, which will be defined as the amount of money necessary to make an individual as well off as if an injury had not occurred; and (3) Market Value, which will be defined as the sum of money necessary to provide an individual with the closest possible comparable replacement available in the market for the loss suffered by the individual. We argue that it is logically impossible to develop monetary equivalents for supramonetary values and practically impossible to measure monetary equivalent values (given moral hazard problems), so that tort recoveries are normally based on market values. Differences between monetary equivalent values (henceforth “ME values”) and market values (henceforth MK values) pose problems for tort recoveries even when supramonetary values are not involved, but more attention is devoted to its implications for tort recoveries involving the loss of human life. Supramonetary values almost always involve human lives.

The paper begins with both a practical explanation and theoretical development of the proposition that the value of an individual’s own life or the lives of loved ones of the individual cannot be infinite. It then explores the meaning of supramonetary values in utility theory, showing that the finiteness of the value of life does not imply the existence of monetary equivalents. The next step is to consider the differences between ME values and MK values for losses that do not involve supramonetary values. Finally, it considers the implications of supramonetary values for valuation of loss of human life within the controversy over the measurability of hedonic damages.

II. The Finiteness of the Value of Life

Within the literature relating to tort compensation for wrongful deaths, the error of assuming that the value of life is infinite is relatively commonplace, including one of the authors of this paper (Friedman 1982; Ireland 1995, 1996; Ciecka 1995). This error arises from the implicit misconception that a value must be infinite if a monetary equivalent value does not exist. On the surface, the assumption that the value of an individual’s own life to the individual must be infinite seems quite reasonable. If an individual with a twenty year life expectancy were offered a billion dollars to agree to die one hour from now, it seems quite clear that the individual would reject the offer. Under ordinary circumstances, nothing that could be done with the billion dollars in the one remaining hour of life would generate enough utility to compensate the individual for giving up twenty years of remaining life expectancy. However, this conclusion fails to consider “market evidence” that clearly indicates that the value of life cannot be infinite.

The “market evidence” is of two varieties. The first variety is evidence that individuals do take substantial risks of losing their own lives when something of sufficient value is at stake. When a mother rushes back into a flaming building to try to save the life of her child, she is taking a very high

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1One of the sources of collaboration on this paper is Ireland’s recognition of his error on this point after extensive discussions with Gilbert. The three citations offered here are casual examples of the error rather than results of an exhaustive search to determine its frequency.
risk of losing her own life. In wartime circumstances, we are also aware of heroic decisions of soldiers to give their lives so that their comrades might live. As a society, we emulate and honor such individuals and probably secretly hope that we would be equally courageous in giving up our own lives if circumstances warranted. It is also not uncommon for individuals inflicted with a terminal illness to forgo life preserving, but very expensive, medical treatment in order to conserve family assets and maintain the economic security of surviving family members. In these examples, not only do we observe a willingness to exchange the high probability of losing one’s life for something of high value to the individual, but in the later case the exchange is for a finite amount of money. This suggests that life has both a finite monetary value and a finite utility value for this individual. If a contingent valuation study were performed in which individuals were asked to identify supramonetary values for which they would be willing to take very large risks of losing their lives or to give up their lives on an outright basis, it is a reasonable suspicion that most individuals could identify values for which they would do so. Whether, in an actual crisis, they would live up to their contingent valuation responses might be another matter, but the point here is that for most individuals there probably is some configuration of values external to themselves for which they would give up their lives.

In a recent paper, Arrow (1997) defended economic analysis from the charge made by Radin (1996) that economics implies that a monetary value can be assigned to any value, however absurd or unreasonable, as follows (at 759):

It is, of course, no part of utility theory that everything has a price. To be sure, when commodities are infinitely divisible and indifference surfaces are convex, then marginal variations in commodity use are commensurable with each other and therefore with money or income, thought of as generalized purchasing power. But the typical examples [that] show the absurdity or immorality of assigning a money value to activities are based on finite changes.

The statement that parents would not sell a child at any price is in no way inconsistent with ordinary economic theory.

A good case for analysis is acceptance of increased risk of death for a price. The study of this relation has become, indeed, a standard way of estimating the value of life for use in benefit-cost analysis. It is not surprising that up to a certain point, an increase in the probability of death will be accepted in exchange for suitable compensation but that when the probability is sufficiently high, no price (the current authors would say “no money price”) is sufficient for the risk to be undertaken. High risks do not have a monetary equivalent. This fact is not only not in contradiction to ordinary economic thinking, but is actually a consequence of standard expected-utility theory.² (Parentheses added.)

²Arrow goes on to add the following parenthetic observation: “The implication (that high risks do not have a monetary equivalent) requires that utility functions be bounded, but that is itself implied in the standard derivations of expected-utility theory” (Parentheses added.) This point is relevant to our discussion of upper and lower bounds for the value of life at the end of this paper.
We concur with Arrow's basic point that economic theory does not imply the ability to assign a monetary value to "everything." We slightly differ from his use of the term "price," by which he means what we have defined here as "monetary equivalent value." Just as one may speak of a "barter price" for tradeoffs in a nonmonetary sector of an economy, if one is willing to give up one's own life to prevent the loss of a child's life, one can refer to the preservation of the child's life as the "barter price" for giving up one's own life. With that minor difference in terminology, we also concur with Arrow's implicit point that most human beings, even the most selfish among us, have nonmonetary "barter prices" for which they would give up their own lives. Assume in the extreme that a very selfish individual has to choose between his or her own survival or the survival of all of the rest of the human beings on the earth. The loss of all other human beings would have the effect of lowering the quality of life to the remaining person so profoundly that even a very self-centered individual might choose the survival of all other human beings. Clearly, if there are "barter prices" for which most individuals would sacrifice their lives, the value of their lives cannot be infinite.

The second variety of market evidence that individuals do not value their lives infinitely does not require dramatic instances of individuals giving their lives so that others might live. That evidence lies in much more mundane choices that individuals make to put their lives at some small risk in a variety of employments and consumption choices. Everyone makes choices to put his or her life at some very small risk that would not be necessary with an alternative choice. Ultimately, even a decision to take a bath puts one at risk of slipping and falling to one's death. People who choose occupations like police work know that they are taking more than ordinary occupational risks of losing their lives and persons who engage in hang gliding know that they are subjecting themselves to more recreational risk than persons who play golf. Consumers do not always change the batteries in their smoke detectors at every switch between daylight standard time and daylight saving time, as suggested by safety experts. Drivers go through traffic lights on yellow, and so forth. Logically, if someone knowingly takes even the slightest risk of being killed when the risk can be avoided at a finite cost, that person is acting as if the total value of that person's life must be finite. In the strict logical sense, if a value were infinite, so would be any tiny fraction of that infinite value. Thus, taking any risk of losing one's life for a money wage premium or the failure to purchase a device that would slightly reduce fatality risk must imply the finiteness of the value of one's own life. Thus, the market evidence of this variety for the finiteness of human life is overwhelming.

We now rely upon Gilbert's (1995a) presentation of the basic utility theory model to provide formal explanation of the fatality risk level beyond which risks to the loss of one's own life cannot be valued in monetary equivalents. It is beyond that level that further risks to the loss of one's own life have supramonetary value. Figure 1 is reproduced from Gilbert's article, where it is also figure 1, with the addition of the dotted vertical line. Gilbert
points out that in risk wage studies, a hedonic price model is usually used in which the independent variables include some measure of the probability of fatal work injuries and the dependent variable is the compensation level for employment based on all independent variables. An estimate of the risk-compensation tradeoff is derived from the estimated slope coefficient for the risk of death variable. The estimated slope coefficient is then used to estimate the value of life.

In Figure 1, compensation is measured on the vertical axis and the probability of a work related fatal injury is estimated along the horizontal axis in units of 1 in 100,000 chances of such an accident occurring. Point A corresponds to a fatality risk level of 7 in 100,000, for which the average individual in the sample being tested is paid a wage premium. Using the regression coefficient estimate, one can project a $4,000,000 value for the compensation workers in aggregate would have to be paid to accept employment in a workplace in which the probability of a fatal injury for someone among the group equals 1. Gilbert then discusses a second hypothetical study in which the average risk level is slightly greater (8 in 100,000) at point B, showing that even for risk neutral individuals (and one would ordinarily assume that individuals were risk averse), one would obtain a larger risk compensation coefficient, which would translate into an even higher estimated dollar value of life. Gilbert's point is that a life value projected from point B has a value of $6,000,000, which is substantially greater than the $4,000,000 projected from a study based on point A risk levels. It is important to note that the risk preferences of the groups of individuals involved are assumed to be constant, so that the coefficient difference between point A and point B derive from the greater risk level in the employment circumstances involved at B compared with those at A.

Figure 1

$^5$ Posner (p. 196-214) employs a similar diagram. His discussion includes an analysis of many of the properties of what we refer to as a supramonetary good.
Clearly, there would be points to the right of B on the indifference curve, corresponding to greater risk levels, with greater risk-compensation coefficients. Movement to the right is along an indifference curve for an individual who has preferences that are average for each sample. Since preferences in the different sample groups change only in response to greater risk levels at the employments, there is, in effect, only a single preference ordering being reflected along the indifference curve. Moving to the right along the indifference curve produces successively higher value of life estimates based on that single preference ordering. Gilbert's example moves quite dramatically in small increments in order to highlight the point that an estimate based on point A would necessarily be a lower bound estimate for the risks involved at point A. We have added a boundary (the dotted line) at an arbitrary point to the left of the vertical line drawn above the probability of death equal to one. This boundary implies that no wage premium will induce the average individual to take more risk of a chance of a fatal accident per year worked at the job higher than this arbitrary boundary level. The location of the boundary is arbitrary since there are no risk wage studies showing fatality risks this high.6

The existence of this boundary can be explained by a Beckerian utility function showing time and goods as inputs and utility as an output. An individual's benefit from monetary compensation stems from uses of money to acquire goods and services. Since goods and services must be combined with time to produce utility, reductions in the amounts of time available for consumption would require increasingly large amounts of monetary compensation per unit of time that was given up. An individual would require increasing rates of monetary compensation to sacrifice more and more of his or her remaining expected time over which consumption could take place. At some point, it would no longer be possible for monetary compensation to increase utility enough to compensate for the reduction of utility inherently caused by a reduction in time.7 Another way of saying the same thing is that as the amount of time remaining for consumption grows closer to zero, the marginal utility for dollars of compensation must decline significantly. Because the slope of the indifference curve is equal to the marginal rate of substitution between the probability of death and money, the declining marginal utility of dollars of compensation is reflected as an increase in the slope of the indifference curve. That is what is indicated by the increasingly steep slope of the indifference curve showing different tradeoffs between compensation and increasing risks of fatality in Figures 1.

What this suggests is that a typical individual is willing to bear higher fatality risks for higher risk compensations up to some point, but after that

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6 As a practical matter, once there was no longer a possible monetary compensation for bearing more risk, there could no longer be sample groups from which to derive life values. However, there are several very dangerous occupations, including off shore oil well workers, for which compensations are very high, but at which workers work only short periods, but can earn enough in those short periods to become financially set for life. It is likely, however, that the risk preferences of workers in these occupations are not typical of other workers in much less dangerous employments.

7 In the extreme, the vertical boundary could coincide with the risk level at which the probability of death = 1. Even in this case, there must be some tiny amount of time left for the utility to be appreciated. This extreme case seems peculiar until it is realized that compensations sufficiently high to compensate for death must exist in all voluntary decisions to die. A woman who chooses to die so that her child might live must logically receive enough utility from doing so within the very short period between her decision to take a high risk of death and actual death.
point becomes unwilling to bear further risk increases for any monetary compensation. That point is indicated in Figure 1 by the vertical boundary line. Given the assumed boundary value, for risk levels greater than that boundary, there would be no coefficient or risk compensation from which to project a defined value of life. In the terms of this paper, further increases in risk would have become supramonetary. The boundary value in Figure 1 is simply an assumed value for purposes of illustration. The actual boundary value for any given individual would depend both on that individual's unique demographic characteristics, including existing life expectancy, and on that individual's preferences toward wealth and risk. For some persons, being millionaires for a year would be worth more than to others. Likewise, some persons are much more tolerant of risk than others.

Before leaving this subject, we want to be clear that there may be exceptions to the general approach we have taken with respect to supramonetary values. Individuals do take extraordinary high risks of death for finite sums of money. One example would be the decision of an individual inflicted with a terminal illness to forgo life preserving, but very expensive, medical treatment in order to conserve family assets and maintain the economic security of surviving family members. Because this special case entails a finite amount of money, it qualifies as an example of a MK value of life as opposed to ME or supramonetary values. Another example might be an individual willing to accept employment for a short period of time at a very high wage and a corresponding high risk of death in order to provide funds for a medical procedure or operation required to save the life of a family member. Such individuals would not be representative of the usual estimates from risk-wage studies, but these special circumstances do exist. While cases like this are not involved in value of life studies involved with very small risks, they are also not exceptions to the utility theory considerations being explored in this paper.

III. ME Values and MK Values and the "Pecuniary Rule" Without Supramonetary Values

In tort recoveries, the normal standard for recovery is either the replacement cost or the market equivalent opportunity cost for something that

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8This discussion ignores wealth effects. Even though each sample group was presumed to have the same risk preferences in Gilbert's model, each point on the indifference curve was presumed to be determined independently from previous points. The wealth effect issue arises if, as in Ireland's form of the model (1996), an individual is being compensated for accumulating fatality risks via multiple performances of a dangerous task. If a single individual was compensated for repeatedly performing a task with known probability of fatality, repetitions of the task would generate a significant wealth effect over a sufficient number of performances. Increasing wealth would shift an individual's preferences toward risks, presumably reducing a willingness to bear fatality risks for still more wealth. If such wealth effects were included in Gilbert's model, that would imply a leftward shift of the indifference curve and the boundary over time (in Ireland's version of the model, over repeated performance of the task). Alternatively, such wealth effects could be viewed as resulting in movement to a higher indifference curve over time. Our general conclusions would still hold, but wealth effects would need to be accounted for.

9Ciecka and Epstein (1995) also introduce the idea of a boundary. Their boundary is implied by their specific mathematical model which assumes: (1) utility functions are homogeneous of degree one in the probability of survival; and (2) the total utility from money (income) cannot exceed an arbitrary constant. If the total utility that could be derived from money is less than the utility value of life, it is obvious that a rational consumer will not exchange his life for any amount of money.
has been lost due to the tort. However, many harms that are suffered through torts are irreplaceable. If one's home burns down through negligence of someone else, photographs of loved ones that have little monetary value in the commercial marketplace may be lost. The family mixed breed dog, for whose medical needs the family might have spent thousands of dollars might have been killed. In either case, there is a substantial difference between the market value of what was lost and the money equivalent value of that loss. The family suffering the loss of photographs or the family dog might have spent thousands of dollars to prevent their loss or to have some miracle restore these values. At the same time, however, they are not supramonetary values. There may well have been a sum of money for which the family would have parted with the irreplaceable photographs and even the beloved family dog. These are examples of values for which there are substantial differences between the ME value and the MK value of the items involved. It is important to note that MK values lie below the corresponding ME values. Thus, MK values provide a lower bound estimate of the corresponding ME values.

The general rule that applies in such cases is the "pecuniary rule," though in some circumstances juries may consider the loss of "intangible" values as well. The legal systems of various states and the federal government frequently make distinctions between "economic" and "non-economic" damages, been "tangible" and "intangible" damages, and between "pecuniary" and "nonpecuniary" losses. All of these distinctions focus on the differences between MK values on the one hand and either ME Values or supramonetary values on the other. Market (MK) values can be measured in the commercial marketplace, using either a replacement cost or an opportunity cost approach. Each approach involves finding market values for types of goods, services or assets that transact within markets. In other words, some sort of recorded market test value is found for the value of the thing being used to measure the loss. If a woman sacrifices a market wage of $20,000 per year to be a homemaker, the MK value is established by finding a market wage rate for a person similar to the homemaker in the commercial marketplace. If an automobile is destroyed, the value is established by finding a market price for a similar automobile. Alternatively, if a woman now needs to hire someone to perform household tasks that she could previously perform herself, the market value for a replacement worker can be used. In either case, a standard value established in the commercial marketplace is used to place a value on what was lost.

Markets imply anonymity in search of self interest. An allegation by one's husband that he would have been willing to pay $40,000 per year for his wife's homemaking services would be seen as self serving and inaccurate. Likewise, a brother's testimony that he would have been willing to pay $20,000 for the family photographs lost by his sister in a fire would be viewed with suspicion. But a signed letter from a stranger offering to purchase those family photographs for $20,000 just before the fire would have great significance. The "pecuniary rule" focuses on the distinction between values established by strangers and values that might be misrepresented by close loved ones. Market based values can be checked for accuracy. Personally based values cannot. The family might well have been willing to pay $20,000 to prevent the loss of the photographs, but there is no reliable external standard for making that determination. A believable offer from a stranger might well be considered a reliable "market" standard.
The essence of the pecuniary rule is that the value being established for a thing can be objectively based on values that would be placed on some equivalent for that thing by strangers. The legal system shows great awareness of money equivalent (ME) values that may be much greater than the MK values of those things. Particularly in wrongful death circumstances, most states provide distinctions between "lost love and affection" (or alternatively "grief and bereavement"), which relate to personal aspects of what was lost by survivors of the decedent, and "lost services" of the decedent, for which there are MK values that can be established in the commercial marketplace. The former are difficult, if not impossible, to evaluate by market standards, while the latter can be established by market standards. In many venues, expert witnesses are limited to testifying about "tangible," or "economic" or "pecuniary" losses, but not about "intangible," "non-economic" or "nonpecuniary" losses. The differences lie in whether market tests for reasonable equivalents to losses can be established. By their very nature, supramonetary values and ME values do not have market equivalents. The point being made here is that items with no market equivalents may be significantly undervalued in terms of losses actually suffered by tort victims, even when monetary MK values for the lost items actually exist. At the same time, accepting victim claims about ME values without a pecuniary standard based on MK values would invite misrepresentation and excessive over compensation.

IV. Are Value of Life Estimates Reliable "Lower Bound Estimates" for Lost Pleasure?

We now turn to the issue that originally motivated the writing of this paper. Do value of life estimates provide reasonable lower bound estimates for the lost pleasure of life that occurs either with death or with disabling injuries.\textsuperscript{10} Value of life estimates are derived from either consumer expenditures to reduce fatality risk or from risk compensations paid to workers for bearing more than ordinary amounts of job related risk. Since both types of estimates derive from market transactions, the ME versus MK value distinction above is relatively unimportant and the requirements of the pecuniary rule would appear to be satisfied.\textsuperscript{11} The controversy centering around

\textsuperscript{10}This question implies measurement of the lost pleasure of life in terms of value to the individual who loses the pleasure of life. The appropriate valuation of life for purposes of deterrence and compensation may not be numerically identical. If the goal of damage awards is primarily to set appropriate incentives for the protection against the loss of human life, analysis of the value of a lost human life would be from an entirely different perspective. Where protection of human life provides the measurement standard, the social loss involved is separate and distinct from losses to a specific decedent. From that perspective, the appropriate valuation issue is the sum of money all individuals in society would be willing to pay to prevent the loss of one human life. Since the life that will be saved has only a very tiny chance of being the individual's own life, the valuation process is entirely different. That issue is addressed in Ireland and Rodgers (1992).

\textsuperscript{11}This would not apply to contingent valuation studies, which are questionable precisely because they lack true market tests. Contingent valuation studies derive from survey information in which individuals respond to questions about their preferences. Most observers regard them as less reliable than either form of true "hedonic" wage-risk and consumer purchase studies, which involve actual market behavior rather than hypothetical questions asked of consumers about how they would behave if offered various alternatives. This is a different issue than the ME versus MK distinction between the market value of a thing and what a given individual would have paid to prevent its loss, but both issues center around the reliability of information that is not based on actual market transactions. Because contingent valuation stud-
The accuracy of using value of life estimates to measure lost pleasure centers around: (1) the accuracy of the estimates themselves; (2) whether there is a conceptual relationship between what the estimates are trying to measure and how much individuals value their own lives; (3) whether information that supposedly characterized the value of life’s pleasures for an average individual would be specific enough to measure the lost pleasure of a given decedent or injured person; and (4) whether there is any meaningful way to speak of “compensation” for the loss of an individual’s enjoyment of life. The current paper only addresses the last question.

The “lower bound” issue is different from the “benchmark” issue. The “benchmark” issue is involved with determining whether a value of lost pleasure estimate for an average individual would be specific enough to measure the lost pleasure of a specific person. Since value of life estimates are not specific as to demographic characteristics of the lives being saved, the numbers themselves, regardless of other considerations, treat all lives saved as having a single constant value. Various authors, including Smith and Brookshire (1990), Miller (1989) and Viscusi (1988), convert value of life numbers into estimated annual values, a process that is controversial in itself, especially in terms of treating elderly years in the life of an individual as equal in value to years during the prime of life. This process allows figures to be adjusted for life expectancy, but not in the basis of other criteria.

The “benchmark” controversy is over whether whole life values or life year values for an average person for the entire population are specific enough to be relevant to a person of known characteristics. This paper takes no position on the “benchmark” issue, but we do want to be clear that it is a quite different issue than the “lower bound” issue.

The “lower bound” issue focuses entirely on the question of whether estimated MK value of life numbers provide useful estimates for the value an individual would place on the whole of his or her ability to enjoy life even though that whole value is a supramonetary value. Given the arguments developed in this paper, both $4,000,000 and $6,000,000 MK estimates in Figure 1 are lower than the true ME or supramonetary value of the life of the average individual whose indifference curve is shown. Larger and larger figures could be produced projecting estimates from points further along the indifference curve as it approaches the hypothetical vertical boundary. In that sense, either value would be a lower bound estimate. One very important practical factor was pointed out earlier—that none of the studies involve average levels of risk that even approach the one percent, per year range, let alone higher average risks of fatality. Based on our analysis, if studies did exist for much higher average risk levels, we would expect to find higher implied MK value of life estimates for those higher risk levels.13
Thus, at the very least, existing estimates of MK values from the value of life literature would be "lower bound" estimates for MK values that could theoretically be established based on much higher average levels of risk, even within the boundary before supramonetary status is reached. The relevance of one study over other studies would turn on the existence of specific information concerning the decedent. For example, if it were known that the decedent frequently enjoyed sky diving without a backup parachute, one might conclude that the decedent was less risk adverse than the average person. Information that the decedent had not ever received a speeding ticket might lead one to suspect that the individual was more risk adverse than normally is the case.

The question is whether these "lower bound" estimates are either meaningful or useful. The issue of "meaningfulness" is captured by the now old saying, "you can't compensate a dead person." But, it is also important to note the ultimate beneficiaries of any court award must be alive. A decedent has lost something of immense value, for which estimates in the $4-$6 million dollar range is clearly a low MK estimate. Saying that one's own life is a supramonetary value is saying that one would not give up one's own life for all of the money in the world being given to one's estate. In the ex post sense, the ability to value any of life's treasures depends on being alive. Since the value of life estimates involve fatality risk and not injury risk, if supramonetary values are not meaningful for dead persons, it is Ireland's opinion they are also not meaningful when applied to the circumstances of living persons in personal injury actions. In tort law, the compensation question being asked of the jury is to find a sum of money which, if awarded, would make the victim of the tort as well off as if the harm had not occurred. This is the "make whole" principle. From that standpoint, it is clear that no sum of money could make a decedent as well off as if the decedent had not died. Gilbert believes this argument does not apply to an injured person who has suffered diminished ability to enjoy some of the pleasures due to differences in functional form and/or independent variables used in the particular study. Interestingly, studies with more independent variables have larger estimated life values. The econometric explanation is that omitted variables give us biased estimates of the risk of fatal injury coefficient which, in turn, appear to result in lower estimates of life values.

The question of whether value of life estimates are "useful" is being assessed in this paper entirely within the context of the compensation issues relevant within law, not the broader social question of whether or not it might be "useful" to have courts award damages for loss of the enjoyment of life. That broader sense of "useful" would also include consideration of the deterrence of potential tort malfeasance. A position that value of life estimates are not useful for the purpose of measuring losses to decedents or injured workers does not necessarily imply that they might not be useful for purposes of assigning correct deterrence values for the protection of human life. Chestnut and Violet (1989), for example, argue that value of life estimates do not accurately measure losses of decedents or injured parties, but suggest that state governments might want to set and even potentially collect damages in death cases based on value of life estimates for the purpose of deterrence of negligent behavior. Viscusi (1992) offers similar arguments relating to product liability wrongful deaths. Since the authors are somewhat in disagreement on these matters, we take no position on this broader sense of "usefulness."
sures of life. Because the injured person is still alive, it may be possible to provide a finite sum of money large enough to fully compensate for any reduction in ability to enjoy the normal pleasures of life due to the injury.

At the same time, however, legal systems sometimes ask juries to answer very difficult questions. In New Mexico, Georgia, Connecticut and perhaps one or two other states, juries are called upon to make awards on the basis of damages for which the decedent could have made recovery if the decedent had not died. Further, some other states, even though they use the standard of recovery by survivors for the losses of survivors, also allow recovery for the "pain and suffering" of decedents. Since those states do allow recovery in some form for lost enjoyment of life, juries will be required to place dollar values on the lost enjoyment of decedents. The New Mexico Supreme Court in *Romero v. Byers* (1992) ruled that trial court judges may, in their discretion, allow economists to develop values for lost enjoyment of life. Ireland would argue that in all circumstances, value of life estimates do not provide meaningful estimates of the loss suffered by either decedents or persons with permanent injuries. Gilbert would argue that there are circumstances in which value of life estimates do provide meaningful lower bound and conservative estimates of this loss.

The remaining issue is usefulness. If it is assumed to be meaningful to estimate lost enjoyment of decedents, how useful are value of life estimates in offering lower bounds for such losses. Ireland would argue that the specific value one obtained is a function of the initial risk level, such that the methodology could be used to produce almost any desired value if high enough risk levels compensations could be found. Further, in a general way, Ireland would argue that using a monetary value for a supramonetary value which, by its nature, has no monetary equivalent, is illogical, even if it is assumed to be meaningful to do so. Gilbert would argue that the value of life estimates are based on market estimates. MK values are commonly used by the courts as conservative lower bound estimates of corresponding unknown ME values. This paper shows that the value of life is finite. Gilbert therefore argues that MK values provide conservative lower bound estimates of the value of life. Therefore, they do provide values that meet the requirements of the pecuniary rule. The persons involved in the transactions underlying the studies are operating in their own best interests and revealing the only market information that is available that gives any insight at all into the value of the enjoyment of life. Even though that consideration is accompanied by the fact that we know analytically that any estimates based on higher average risk levels would be larger, Gilbert argues that a reasonable case can be made for their usefulness when allowed by damage recovery laws.

References


It is useful to note than states which do allow recovery for lost enjoyment of decedents do so in the context of allowing recovery on the basis of what the decedent could recover if the decedent were still alive. In the terms of this paper, this is consistent with the notion that enhanced enjoyment by beneficiaries of the decedent, who are not subject to the supramonetary time limitation, is in lieu of enjoyment by the decedent.


