

## The Price of Life

### 1 'LIFE' OR 'RISK TO LIFE'?

There are some things in life that cannot be valued in terms of money. One of these is death. It is true that Hamlet did a CBA of staying alive when he weighed up ‘... the whips and scorns of time, the pangs of despized love, the laws delay’, and so on, against the fear of the awful experiences one might have when one has ‘shuffled off this mortal coil’. But he did not try to put a monetary value on the components of his balance sheet.

Yet there is a substantial literature on the monetary valuation of life.<sup>1</sup> For many public agencies, such as those concerned with transport, or medical expenditures, or safety regulations in the workplace, need such an estimate. Some studies of the possible costs of global warming even refer to the monetary value of the lives that could be lost as a result of it. How does one explain this apparent paradox?

To government agencies the answer is simply that the term ‘the value of life’ is just a convenient shorthand for ‘the value of safety or risk to life’. As Sunstein puts it in referring to the extensive use of ‘values of statistical lives’ (VSAs) in the USA, ‘With these values the government is not actually “valuing life.” It is valuing the reduction of mortality risk...’.<sup>2</sup> In other words it is important to distinguish between attaching a monetary value to life and attaching a monetary value to *risk* to life, or safety. The two concepts are entirely distinct and there is very little basis for going from one to the other. The difference corresponds to Kant’s famous statement

that 'In the kingdom of ends everything has either a *price* or a *dignity*. If it has a price something else can be put in its place as an equivalent; if it is exalted above price and so admits of no equivalent, then it has a dignity'.<sup>3</sup> 'Life' is the example, *par excellence*, of something that has a dignity, whereas a given degree of risk to life can have an equivalent and hence can have a 'price'.

Prices are the units in which one can compare the *exchange* value of things. Kilometres are appropriate units for comparing the height of mountains or the distances people are running; kilograms are appropriate units for comparing the weight of baskets of vegetables; hours are appropriate units for measuring how long it takes to read this book. But if prices are the appropriate units for comparing the exchange *value* of things, they are useless if no meaningful comparisons can be made. And no meaningful comparison can be made between being alive with some given amount of money and being dead with a lot more money. In Kant's terms, no 'equivalence' can be established.

For being dead is non-existence, not just an extreme version of existing but with less of something to which one can attach a monetary value, such as an automobile or a certain degree of safety. Being dead is a state in which one can neither have anything to value, nor suffer from being deprived of something, such as the satisfaction of being alive.

If you ask somebody how much he would accept as compensation for giving up his life, his answer would depend on whether or not he is an economist. If he is an economist he would say that the marginal utility to him of money (or anything else for that matter) is zero when he is dead, so that no amount of money, however large, can compensate him for giving up life (for the sake of argument I exclude the bequest option). If he is not an economist he might reasonably answer by saying 'don't ask me stupid questions!'

But if, instead, you ask him how much money he would accept as compensation for an increase in the *risk* to his life from, say, one in a million to one in half a million over the next year, he might very well be prepared to give you a figure. Why not? He expects to go on living with one or other of the two risks to life he is asked to compare. And if he can compare the living in the two situations he can assess the monetary value of their difference. And if you ask him how much he would be prepared to accept in compensation for an increase in the risk to his life from one in 100,000 to one in 50,000 he might again be willing to give

you a figure, which would no doubt be much higher, since most of us will attach more significance to changes in the risk to our lives at high levels of risk than at much lower levels of risk. Thus it does make sense to attach a monetary value to a change in one's safety, because one goes on living with it. Life may be more or less enjoyable with different degrees of safety. And one may be prepared to accept a life that has to be lived with a slightly higher level of risk if one is suitably compensated for it.

This is why risk to life can have a price. And it is this price that is usually the basis of policy decisions that involve risk to life. This is because policy is not generally concerned with attaching a monetary value to the life of an *identified individual*, or group of individuals. Instead, it is concerned with policies or projects that will change the statistical risk to life of unidentified individuals. This is why the central measure used in policy analysis is the '*value of a statistical life*' [VSL]. For example, if it is believed that a particular transport project is likely to reduce deaths from one in 1 million to one in 500,000, the relevant measure of the VSL would be based on an estimate of what monetary value the average person would put on such a reduction in the risk to his life. How this is done is explained in [Section 3](#).

## 2 THE VALUE OF LIFE TO SOCIETY

The fact that life cannot have a monetary value does not mean that it has no value at all, either to a living person or to society as a whole. For while a person is alive his value to society comprises two elements. One is the value of life to himself, insofar as he does find life worth living. The other is his externality value. This is what he contributes to the rest of society. In turn, this externality value has two components. One of them can be monetised. It is what he contributes, while he is alive, to the rest of society from his output (less his own consumption). The other is the intangible value (hopefully) that other people – notably his near and dear – derive from his existence. And if somebody dies the loss experienced by the society that is left behind is this externality value, the second part of which is not measurable.

The non-measurable component of the loss to society from somebody's death will usually be more important – and in many cases incomparably more important – than the loss of his or her measurable economic

contribution to society. But it will be incommensurate with the economic loss. For this component of the value attached to the life of the deceased – like other values identified above such as freedom, integrity, justice and so on – cannot be compared to other values in terms of some relevant metric, such as its price. But society will still have to adopt policy projects that will be judged worthwhile even though they will certainly involve some loss of life, in the same way that many other policy choices will involve conflicts of incommensurate values.<sup>4</sup>

One possible objection to restricting the loss to society of a person's death to this externality value is that this takes no account of the loss of utility by the victim himself. He will usually have wanted to go on living, which means that staying alive gave him utility of one kind or another. Hence, the utility of the society he leaves behind will no longer include the utility he had derived himself when he was alive. Should this not also be included in the loss to society of his death? Most economists would answer 'No'. The society left behind has suffered the 'externality loss' (grief, etc., and possible pecuniary value) resulting from the death. That exhausts its loss. The only other loss of welfare (utility) that society has suffered is the loss suffered by the deceased, assuming that the deceased had enjoyed positive welfare while alive. *But he/she is no longer a member of that post-death society.*

The two components of the externality specified above are clearly recognised in law cases concerning the damages that ought to be paid in the case of an identified individual who has been killed in some accident as a result of somebody's negligence. In such cases judges frequently have to decide what level of compensation should be awarded to the dependants. They may take account of the deceased person's expected lifetime earnings minus his own consumption. This will be the measurable monetary – or 'pecuniary' – component of the externality. For an identified individual the pecuniary effect can be measured in money by his lost income minus his own consumption. Judges also usually add to the pecuniary loss something to compensate for the second component of the externality effect, namely the grief and loss of companionship that the surviving dependants may have to endure.<sup>5</sup> But the judges have recognised that this component of the externality cannot be given a precise monetary value and is largely a matter of social convention. For example, in a representative judgement Lord Diplock stated that

Non-economic loss... is not susceptible of measurement in money. Any figure at which the assessor of damages arrives cannot be other than artificial and, if the aim is that justice be meted out to all litigants should be even-handed instead of depending on idiosyncrasies of the assessor, whether jury or judge, the figure must be 'basically a conventional figure derived from experience and from awards in comparable cases.'<sup>6</sup>

In the same way that the 'net output' of a deceased person can be roughly estimated for an identified individual some estimate could be made of the 'net output' of the average member of society. For society as a whole the counterpart of the measurable component of an identified person's externality effect on the rest of society would be an average person's expected lifetime earnings less his lifetime consumption. This would be the average person's 'net output', which is then a measure of the pecuniary element in the cost to society of a person's death. For this had been what was left over for the rest of society to consume when he was alive and so what measurable loss society will suffer by his death.<sup>7</sup>

But there are several reasons why the average person's 'net output' is not generally used for policy purposes, quite apart from the fact that it does not include the non-pecuniary element in the loss to society from somebody's death. One reason is that it implies that, other things being equal, society ought to make less effort to save the life of old or unemployed people. Indeed, the lives of those who have no *earned* income and actually draw on society's resources have a negative pecuniary value (e.g. retired or incapacitated people who cannot work, or the unemployed).<sup>8</sup> But this would conflict with the main function of society.

This is to protect the lives of its citizens irrespective of their age, let alone their personal situation and net output. This is why the sentence handed out to a person who has been convicted of murder takes no account of the age of the victim, or his expected net output. This primary duty is also why society is concerned with reducing the risk of terrorist activities. Not to do so would be like arguing that the danger of a few dozen people out of many millions being killed in some terrorist outrage would not matter much since it would merely mean a minute reduction in the average expectation of life of citizens as a whole. The prime obligation of society is to protect the lives of its members, not just to prevent a minute reduction in their average expected longevity. This

obligation applies to individual identified lives as well as to unidentified lives. But no obligations or counterpart rights are unqualified or unlimited, so that, like any other incommensurate value, one cannot preclude the adoption of policies that have other values even if they involve certain deaths to some members of society.

### 3 MEASURES OF THE VALUE OF RISK TO LIFE

There are two main methods. One, referred to as the ‘contingent valuation’ method, consists basically of asking people how much they are willing to pay for some specific policy to reduce risk to life,<sup>9</sup> such as by reducing local air pollution, or how much they would receive as compensation for some policy or project that might increase risk to life, such as certain transport projects.

The second method, referred to as the ‘revealed preference’ method, consists of observing how much people spend in order to increase safety, such as by spending more on an automobile on account of its extra safety devices, or by observing how much extra salary is required in order to undertake a more dangerous job.

The justification for these methods follows from the seminal articles by Schelling (1968) and Mishan (1971a). They emphasised that we are not concerned with trying to estimate how much it would take to compensate a person for the loss of his life, which would be absurd, but how much people value some change in *risk to life*. This would provide the basis for applying the Hicks/Kaldor compensation test of what would constitute a potential Pareto-optimising move. For if everybody is exposed to some extra risk but is adequately compensated for it, and there is something left over as well, somebody is better off and nobody is worse off. As Mishan put it ‘...the relevant sums to be subtracted from the benefit side are no longer those which compensate a specific number of persons for their certain death but are those sums which compensate each person in the community for *the additional risk* to which they are to be exposed’.<sup>10</sup>

For example, consider a project that will increase GNP by, say £20 million, but at a cost of some specified increase in risk to lives. And suppose that one can estimate by one means or another that the average person would accept £10 in compensation for the additional risk to his life and that there are one million people in the society in question who face a roughly equal risk. Hence, the total amount of compensation that

would be required to pay everybody for this increased risk to their lives would be only £10 million. So the project would satisfy the Hicks/Kaldor compensation test, namely that those who gain from the project could compensate the losers and still remain better off. If everybody shared equally in the gain in national income and in the extra risk, the project would constitute an *actual* Pareto-optimising move without the necessity of any redistribution.

Or consider a project that will reduce risk to life. Consider, for example, a country with a population of five million, all of whom are exposed to an equal risk of being killed in a railway accident. And suppose that a sample survey shows that, on average, people are willing to pay £10 to reduce the annual deaths from rail accidents by one person (e.g. from ten people per year to only nine people per year). If five million people are, on average, prepared to pay £10 to save one life in this manner one can say that the total amount that whole society is willing to pay for the specified reduction in risk to life £50 million. Hence, if the project costs only £40 million it appears to pass a compensation test.<sup>11</sup> It will have cost £40 million but the benefits are worth £50 million in terms of increased safety.

Thus if people can indicate one way or another – for example, in answer to a questionnaire or in their personal expenditure habits – how much they are prepared to accept as compensation for a specific increase in the risk to their lives – that is all one needs to know, as in the above examples. In that case if some policy is adopted that would, indeed, lead to the specified increase in the risk to their lives and if they received the corresponding compensation the policy would be justified on conventional welfare economics grounds. It will satisfy the Hicks/Kaldor criterion of a *potential* Pareto-optimising move. Similarly, suppose that people indicated, one way or another, how much they would be willing to pay in return for some project that would lead to a specific reduction in the risk to their lives. Again, in that case carrying out the project at a cost that did not exceed the indicated amount would also be a good idea and satisfy the Hicks/Kaldor compensation test.

Advocates of this approach emphasise that the estimates are only estimates of how much people are willing to pay for given small marginal changes in risk or safety *in specified circumstances*, and nothing more. Nothing should be read into them as estimates of some ‘value of life’ in spite of this convenient term being used throughout much of the literature on the subject.

There are, of course, innumerable technical problems with these methods. For example, the contingent value method is open to the well-known objection that the answers people give in surveys depend very much on the way that the questions are posed, such as whether one is asking how much people are willing to pay for some advantageous project or how much they are willing to accept as compensation for some undesirable project. Answers to such questions are known to be distorted by what are called ‘endowment effects’. They are also vulnerable to many of the other weaknesses in people’s choices that – as discussed in [Chapter 5](#) – have been fully demonstrated by behavioural psychologists.<sup>12</sup> Some of these weaknesses, such as information gaps, also apply to the ‘revealed preferences’ method. One of the most widely used of these methods is the study of wage differentials between activities that involve different amounts of risk to life. But employees will generally have little knowledge about the risks involved in different potential forms of employment. And even after they have taken some risky job they are under all sorts of pressures not to give up the job and look for something else.

Thus the authorities are faced with the choice between consumer sovereignty and paternalism discussed in [Chapter 5](#). In particular, people are notoriously ill-informed about choices involving some estimate of the risks. In any case risk aversion will vary from one person to another, and hence the amount of compensation for incurring extra risk to life will vary from person to person. To accept that in this respect, as in many others, the value that society as a whole is prepared to pay for some benefit – whether it is a reduction in the risk to life or defence of the realm – is justified, therefore, is perhaps the price one has to pay for living in the society in question.

For it is a problem that is common to all ‘collective goods’ – that is, goods such as clean air, which have to be supplied equally to large numbers of people whether or not they want to spend so much on it (indirectly). In general members of the public will differ with respect to how much money they would accept as compensation for experiencing a greater risk to their lives. Some may have wanted far greater compensation for doing so than the average figure estimated on the basis of surveys or some ‘revealed preference’ method. Not only may some people be more risk-averse than others, they may simply be richer. This leads to a major problem in this area, namely how far one should discriminate between different types of risk or

the valuations placed on them by different groups of people. This is the ‘individuation’ problem, discussed in [Section 5](#).

Thus all such estimates raise the question of how far decisions should respect consumer sovereignty rather than what are probably better estimates that the authorities can make of the relevant risks in different situations. But an even more fundamental aspect of the conflict between consumer sovereignty and paternalism is inherent in a fundamental challenge to this whole approach. This is the major challenge made in various publications by the economist-turned-philosopher, John Broome.

#### 4 THE BROOME CHALLENGE

In his publications, Broome has challenged the ‘compensation’ argument alleged to justify the two main methods used to estimate the value of risk to life. But he explicitly states that he has ‘made no fancy claim that the value of life is infinite, but simply pointed out a difficulty in measuring it in monetary terms’.<sup>13</sup> He points out that although, *on his interpretation of the ‘costs’*, no projects could pass any compensation test this does not mean that such projects have to be rejected. Indeed, if society never accepted projects that involved the slightest risk to life we would probably still be living in the Stone Age.<sup>14</sup> His point is that for projects involving saving or losing life, the compensation test and the Pareto criterion of what is an optimising move are not relevant.

His argument is that it may be perfectly rational for an individual to maximise an expected utility function in which some various small changes in the risk to his life are accompanied by a compensating change in his financial situation. But Broome points out that the expected utility function faced by the authorities is fundamentally different. It is no longer a question of risk. It is a question of certainty. Consider the case of a project that will lead to an increase in national income but will certainly lead to some loss of life. The authorities know that no amount of money could compensate those who will die, since life cannot have a price, for the reasons given at the beginning of this chapter.

From Broome’s perspective the whole object of the operation is not just to give people the compensation for bearing extra risk or to make them pay for some reduction in risk. It is to actually carry out the project

that is expected to lead to some loss of life. And from the point of view of society as a whole none of the possible outcomes can be valued in monetary terms, since every one of them involves a certain loss of lives. Projects involving virtually certain loss of lives have to be evaluated, therefore, in the light of other criteria. This appears to weaken the normative significance of estimates that have been made of the VSL. But it does not completely destroy it, and such estimates are widely used. But it cannot be justified in terms of the Hicks/Kaldor compensation test.

The authorities face a dilemma. To simplify the argument consider just the case where if the policy in question is implemented it is virtually certain to lead to the death of a number of people to which no monetary value can be attached. Should they recognise their democratic obligation to respect the preferences of the citizens, or should they accept that their own decision will depend on incommensurate value judgements between some certain loss of life and some other value? A well-known example originally given by James Griffin is of the practice by French authorities to line many major roads with trees on account of their aesthetic value even though it is known that this regularly causes the deaths of some motorists.

So here we have a basic clash of value judgements. From the point of view of the authorities the loss of value to society from the certain death of a number of people – the precise number or the identity of the victims makes no difference – is just as incommensurate as that of a certain identified individual. But if the public is quite happy to accept the change in risk given the estimated compensation, is it not the duty of the authorities to respect that expression of preferences? They are not supposed to be maximising any separate expected utility function. The compensation test may – as Broome argued – be totally irrelevant to some expected utility function that could be attributed to the authorities, but it is the relevance of such a function that is debatable.

## 5 THE 'INDIVIDUATION' PROBLEM

With an ordinary private divisible good that is sold on the market, whether by a public or a private institution, people buy the goods up to the point where, roughly speaking, their marginal utility corresponds to the price

they have to pay for them.<sup>15</sup> People will buy different amounts of any particular commodity, even if its price is more or less the same for all of them, on account of their different preference patterns.

But with a 'collective' good this is not possible. These are goods that have to be supplied equally to a body of people, and from which nobody can be excluded. Radio broadcasts are one such example, though nobody is obliged to listen to them. National defence is another, but differs in that everybody is obliged to share equally in it, irrespective of how much the different people want to spend on it. Since nobody can be excluded from the provision of 'collective goods' everybody loses *some* welfare (except, possibly, some very lucky individuals who happen to be getting just their preferred amount of the good in question).

For example, some people would like to spend more on national defence than is actually spent, and some people would like to spend less. Similarly, within any particular city everybody will have to be more or less equally protected by measures to reduce local air pollution. Usually, poorer people would be better off if less were spent on such measures and, perhaps, more on something else. But it is not usually feasible to give them less protection against local air pollution than is given to people living in wealthier parts of the city. The service of law and order is also an obvious example of likely differences in willingness to pay. Honest folk and people with a lot to protect might have liked greater expenditure on law and order than would burglars and other villains.

Thus in all such collective goods there has to be some loss of welfare, by both those who would have liked to spend more and those who would have liked to spend less. In general in a society in which very many different projects and regulations are implemented, it has to be hoped that what some people will lose on some projects will be roughly offset by what they gain on others.

But the inevitable loss of welfare involved in the supply of collective goods can be reduced to some extent insofar as the amount of any particular collective good supplied – such as greater safety on some particular means of transport – can be adjusted to match the preferences of the people who most use it. For example, one should not use the preferences of the whole population of any society when deciding how much to spend on improving local air quality in big cities. People living

in rural areas will not want as much of their money to be spent on improving air quality as those who live in the cities. In the same way, people differ with respect to their fear of different ways of dying. 'All death is one, only the tracks we take to it are different'.<sup>16</sup>

There is a lot of evidence that, even after allowing for income differences, people will be prepared to pay more to reduce risk of dying from cancer or in an aircraft accident than from other causes of death, even when the probability of the former is less than that of the latter. In addition, it is well known that there are racial and cultural differences between different groups of people with respect to their attitudes to different forms of risk to life. In general, therefore, there would be less loss of welfare if the expenditures were to take account of the different values placed on the different forms that risk to life may take and by different groups of people.

And, of course, the most obvious source of differences in how much some groups want to pay for some collective good or service is the difference in their incomes. If the provision of some collective good is based on the average willingness to pay of the whole community poorer people will be buying more of it (if only indirectly, of course) than they would have liked, and richer people will not be getting as much of it as they would have liked.

In some cases, however, the differentiation between groups may be perfectly acceptable and justifiable. For example, should medical resources be concentrated on programmes that save lives of younger rather than older people? If so, should society spend more on child care than on geriatric facilities? If policy were to focus on saving *life years* it would mean that older people would have a lower claim than younger people. For example, consider the case where surgeons are faced with a choice between saving the lives of one or other of two people. Assume that in all other relevant respects – such as chances of the operation being successful, or length of time that the patient has been waiting for the operation, and so on – the patients are equal, but one patient is old and the other is young. In this case it would make sense to give priority to the young person if only because, other things being equal, he can be expected to make a greater contribution to society.

This might look like unfair age discrimination. But insofar as people who live to an old age were also young once, there cannot

be any *net* ‘discrimination’ against them over the whole of their lives, as long as each of their remaining *life years* were valued as much as the *life years* of younger people. The focus on life years would have been in their favour when they were young but against them when they are old. It is true that this argument does not apply if there has been a switch in policy from a focus on *lives* to a focus on *life years*, since older people could complain that they had not had the advantage of the life year focus when they had been young. But since they have survived to old age anyway they do not really have anything to complain about!

But, as with most other ethical problems, there can be no simple solution to the question of how far one should differentiate between different risks or different social or income groups. According to Sunstein, ‘Whether the government should use a higher or lower VSL across demographic lines cannot be answered simply. Any judgement about the appropriate VSL, and about individuation, must be heavily pragmatic. It must rest on the human consequences of one or another choice’.<sup>17</sup> For although the limits on how far ‘individuation’ can allow for differences in groups preferences or in attitudes to different kinds of risk to life are usually technical, there are also social considerations. For example, there would be social objections to discrimination between different incomes, racial or social groups according to how much one thinks that the different groups would like to pay for specific collective goods. As Sunstein goes on to say, ‘... the question of individuation should be a central part of the next generation of cost benefit analysis; a step beyond the first generation debate about whether to do such analysis’.<sup>18</sup>

Lack of differentiation in the supply of collective good, such as those affecting risk to life, can also be defended – up to a point – on political grounds. For, as discussed earlier in connection with the ‘Broome challenge’, it may be claimed that people accept that the society in which they live has to make decisions that, in many cases, will not correspond to their preferred optimal allocation of resources, and, in some cases, will affect their life expectancy. Citizens have to decide whether they accept society’s decisions in very many collective goods. It is the price they pay to live in a democratic society. As Sunstein puts it, ‘Well-functioning constitutional systems are deliberative democracies, not maximization machines...’<sup>19</sup>

The individuation problem might also apply to the analysis of global problems, such as the climate change problem. For one of the possible effects of climate change may be a net loss of life, possibly all over the world. And a monetary estimate of this effect has been discussed in the *Third Report of the International Panel on Climate Change*, and in other sources. If such values are based on national estimates of risk to life as expressed as VSL they would be much lower in poor countries than in rich countries. Sunstein quotes estimates of VSL that range from \$1.2 million to \$19 million.<sup>20</sup> But we know that the marginal utility of income in poor countries is likely to be much higher than in rich countries and their average longevity much lower. If an average world valuation of loss of life through climate change was to be used the global expenditure on combating combat climate change would be greater than poor countries would have wanted given the other claims on their resources. This is an inescapable problem in the supply of collective goods.

## 6 CONCLUSIONS

It has been argued at the beginning of this chapter that there is no point in estimating the value of lives lost, since it is inappropriate to put a value on life. Aldred is probably right in asking whether there is much point in such valuations anyway.<sup>21</sup> In many specific instances it may be just as useful to abandon the ambition of welfare maximisation and an attempt to satisfy the criteria of theoretical welfare economics, and to fall back on ‘second-best’ solutions in which a life is a life and it is misleading to pretend that it can be given a monetary value. If for a reasonably similar expenditure on, say, road improvement, one can save ten lives on one project and fifty lives on another one can dispense with putting value on the lives saved. Of course, not all choices are as simple as this. The criteria used in medical interventions, such as chance of success, length of time that a patient has been on a waiting list, as well as expected life years, are examples of second-best solutions that are valid in the absence of any method of putting a monetary value on life. And they also illustrate the unavoidable conflict between the particular values involved, thereby reinforcing the case for appealing to the Aristotelian virtue of practical wisdom, rather than seeking some precise formula.<sup>22</sup>

## 7 ANNEX

7.1 *Sandel's examples of bad CBAs involving value of life*

Some misunderstanding of the way that the valuation of life should be included in a CBA has been highlighted by the two examples of CBA given by Michael Sandel in his lectures on philosophy.

The first example he gives is of some calculations made by the Philip Morris tobacco company concerning the costs and benefits of smoking in Czechoslovakia.

## (a) Philip Morris' study of costs and benefits of smoking in Czech Republic

<i>Costs</i>	<i>Benefits</i>
Increased health cost for smokers	Tax revenue from sales of tobacco Less health care for those who die prematurely Less pension payments to those who die prematurely Less housing costs for those who die prematurely

## (b) Real costs and benefits to Czech society of smoking

Increased health costs for smokers	Less health care costs for smokers who die prematurely
Loss of output over lives of smokers	
Grief and loss of net output, etc., caused by premature deaths	

The point is that the Philip Morris study is only about the effects of smoking on the expenditures and revenues entering into the government budget. It is nothing to do with a CBA for the society in question. Thus the extra revenue that the government collects from the taxes on tobacco, as well as the savings in pension payments to smokers who die early, are both transfer payments, they do not correspond to change in society's output, they merely transfer claims on that output from some members of society to others.

The real costs and benefits, which are shown in the lower part of the table, include – on the left-hand side – genuine losses of utility to the families and friends of people who die prematurely and who suffer grief, and to society as

a whole, since this is deprived of the net contribution (if any) that the smokers may have made to society's output over the rest of their lives. All these items are related to the question of how to value lives in any CBA.

Sandel says, in his public lecture on this topic, that the Philip Morris calculation purports to be '... a cost-benefit analysis of smoking in the Czech Republic'. But, as he points out, it only showed that there was a 'net public finance gain'. This, of course, has nothing to do with whether there is any net welfare gain to the Czech society.

The well-known Ford automobile company study of the costs and benefits of running the risks of death from the Ford Pinto car did at least include, among the costs, some estimate for the monetary value of the lives that might be lost. But the figure they gave for this seems to have been plucked out of thin air. Anyway, it is an example of the error that I discuss at the beginning of this chapter, namely that one cannot place a monetary value on life. The welfare loss to society resulting from a death is an externality, which in most cases will consist mainly of grief and other non-pecuniary and incommensurate losses, which cannot be measured in monetary terms.

Thus neither of these two examples are valid calculations of the effects on the welfare of society as a whole. One is a calculation of the effect on the Czech national budget and the other is based on an estimate of the monetary value of life that can have no theoretical justification. True, there is room for serious debate about how the boundary lines around the society in which we are interested ought to be drawn. But they certainly do not correspond to the costs and benefits to any government budget or some automobile company.

## NOTES

1. These include, notably, several important publications by Jones-Lee, 1989; Broome 2009; and Sunstein, 2014.
2. Sunstein, 2014:51.
3. Kant, I. 1785/1964.
4. See important discussion of this aspect of the valuation of life in Lukes, S, 'On Trade-Offs Between Values', in Farina, F, Hahn, F, and Vannucci, S, *Ethics, Rationality and Economic Behaviour*, pp. 36–49. Clarendon Press, Oxford, 1996.
5. In *Wright versus British Railway Board*, 1983, quoted in *McGregor on Damages*, 16th edition, 1997:1,696,
6. McGregor, *loc.cit.*

7. I am indebted to my colleague at UCL, Hugh Goodacre, for drawing my attention to the fact that William Petty used a similar calculation for the value of a person's life in the 1670s to 1680s, and even employed a discount rate in his method of calculation of 6% in most cases, a rate that would not be unusual in the contemporary world.
8. Incomes that they may derive from, say, interest or dividends or pensions, do not count since they do not add to national income. They are just transfer payments from some members of society to others that are not in exchange for anything that the people in question currently add to society's output.
9. See a full discussion of these methods and of their weaknesses, as well as of Broome's challenge to the usual justification given for them, in Hargreaves Heap, S., *et al.*, 1992, *The Theory of Choice: A Critical Guide*, Blackwell, Oxford.
10. Mishan, 1971a:694.
11. There are numerous surveys of such estimates, notably those in N. Crafts, 2003:42. See also Jones-Lee, 1989. Estimates ranging from \$0.7 million to \$16.3 million in the USA are reported in Sunstein 2014:131.
12. See, for example, Kahneman, 2011.
13. Broome, 1985:262.
14. Broome, 1978:96. See also Mishan 1981:136, and 1982:82.
15. More accurately, the ratios of the marginal utilities are equal to the ratios of the prices of the goods in question.
16. Satyamurti, 1987:12.
17. Sunstein, *op.cit.*:90.
18. Sunstein, *ibid.*:89.
19. Sunstein, *ibid.*:123.
20. Sunstein, *ibid.*:104. William Petty's estimates in the 1670s to 1680s are that the 'net output' of an Englishman was about £80 as compared with that of an Irishman of about £60 or even lower in some cases.
21. Aldred, 2009:156ff.
22. This case is forcibly argued in Crisp, 2004.