THE ECONOMIST'S APPROACH TO ASSESSING COMPENSATION FOR ACCIDENT VICTIMS

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Consider a situation in which a careful and prudent individual, having exercised due care, suffers injury in an accident attributable entirely to the negligence of another individual. Granting that the negligence victim is entitled to compensatory damages, what principles are to be invoked in determining appropriate monetary compensation?

This question is addressed by first citing the relevant legal principle, and then outlining the approach to the problem which conforms methodologically to that of orthodox economic theory. Following this, a number of the complexities which beset the application of the legal and economic principles in the real world are considered. Finally, the treatment accorded the victims and their families by the Supreme Court of Canada in four recent landmark cases is reviewed through the critical lenses of an economist.

The Legal Principle for the Determination of Compensation

The legal principle which underpins the assessment of appropriate compensation for victims of accidents who were not contributorily negligent is designated *restitutio in integrum*. The principle is enunciated by Justice Dickson of the Supreme Court of Canada in the unanimous decision of the Court in *Andrews* v. *Grand and Toy Alberta Ltd.* Justice Dickson quotes Lord Dunedin in the case of *Admiralty Commissioners* v. *Valeria:* "[I]n calculating damages you are to consider what is the pecuniary sum which will make good to the sufferer, so far as money can do so, the loss which he has suffered as the natural result of the wrong done to him."[1] Justice Dickson proceeds to make the following observations:

> Obviously, a plaintiff who has been gravely and permanently impaired can never be put in the position he would have been in if the tort had not been committed. To this extent, *restitutio in integrum* is not possible. Money is a barren substitute for health and personal happiness, but to the extent, within reason, that money can be used to sustain or improve the mental or physical health of the injured person it may properly form part of a claim.[2]

Cast in the lucid prose of the learned Judge, the intent of the legal principle of *restitutio in integrum* is to restore the well-being of the victim, in so far as monetary compensation can do so, to the level

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1. *Commissions for Executing the Office of Lord High Admiral of The United Kingdom* v. *Owners of the Steamship Valeria*, [1922] 2 A.C. 242, at 248 (H.L.).
2. *Andrews* v. *Grand & Toy Alberta Ltd.*, [1978] 1 W.W.R. 577, at 586; 3 C.C.L.T. 225, at 235 (S.C.C.).

of well-being which the accident victim experienced prior to the accident. Although it is obvious that the application of this principle must be fraught with difficulties, the principle itself appears unambiguous.

Economists on the Question of Compensation

The economic concept which corresponds exactly to the legal principle of *restitutio in integrum* was formulated by Sir John Hicks in 1944 and denoted "compensating variation in income." It is defined as the sum of money which, if received or paid after the economic change in question, would make the individual no better or worse off than before the change. Thus, in the context of an accident where the victim is not contributorily negligent and the court wishes to fully redress the wrong done the victim by means of a monetary award and, to this end, seeks to ascertain "what is the pecuniary sum which will make good to the sufferer, so far as money can do, the loss which he has suffered as the natural result of the wrong done to him," the court is endeavouring to determine the victim's compensating variation in income.

Let us depict the victim's sense of well-being prior to the accident by U_0 and his diminished sense of well-being following the accident by U_1, where U_i ($i = 0, 1$) denotes points on an ordinal utility scale, where the decline in the individual's sense of well-being is attributable in its entirety to the accident, and where utility depends *inter alia* upon the individual's wealth. Then that sum of money M* which would, when added to the individual's assets following the accident, exactly restore his utility from U_1 to U_0, would correspond to the compensating variation in income and would satisfy fully the legal principle of *restitutio in integrum.*

It might be noted in passing that, in endeavouring to assign a dollar value to the damage caused the accident victim, the economist might have appealed to a symmetrical concept of Hicks, the "equivalent variation in income." The equivalent variation in income is that sum of money which, if received or paid prior to the economic change in question, would render the individual neither better nor worse off than would be the case following the economic change. Applied to our example, the equivalent variation would correspond to the maximum sum the individual would be prepared to pay to avoid the adverse consequences of the accident, which sum we denote M**. Thus, if the individual's utility were U_0 and then his wealth were diminished by M**, his utility would decline to U_1.

Both the compensating and equivalent variations in income are measures of the monetary value of the change in the individual's utility as between pre-accident level U_0 and post-accident level U_1.

The compensating variation M* depicts the sum needed to restore U_1 to U_0 while the equivalent variation M** represents the sum which must be withdrawn from the individual in order to lower U_0 to U_1. In general, M* exceeds M**. Although both concepts are valid monetary measures of the damage arising from the accident, albeit from different temporal perspectives, only the compensating variation concept accords with the principle of *restitutio in integrum.*

The Economics of Valuation

The principle upon which valuation is based in orthodox economic theory is that of "willingness to pay." Where a market for a commodity exists, economists infer from the fact that consumers voluntarily part with their money to effect a purchase at an established market price that the commodity must be valued at least at this price. By transacting at the market price, consumers have demonstrated their willingness (backed by financial ability) to pay such a price.

In the absence of a market for a commodity or service, for example environmental services, economists have shown considerable ingenuity in imputing consumer valuations based upon indirect indicators of willingness to pay. Since an accident is an involuntary transaction between a perpetrator and a victim in consequence of which the latter "acquires" damages, the approach to the valuation of these damages which suggests itself to the orthodox economic theorist would be reflected by the following question: "What is the maximum sum the victim would have been willing to pay prior to the accident if such payment could have spared him all the damages arising from the accident, *i.e.*, could have prevented the accident?" As already noted, this question corresponds to the "equivalent variation in income" concept for evaluating damages.

Now if the accident in question causes the victim grievous bodily harm, he might have been willing to pay all his current and prospective wealth (save sufficient funds for subsistence existence if he could not otherwise rely upon the state for welfare support); but he could obviously afford no more. Thus, on the willingness (and ability) to pay valuation principle, the individual's wealth could constrain his valuation of the damages. As between a victim of moderate means and one of substantial wealth, if it is supposed that both suffer equally, (although subjective pain levels are, in the present state of medical technology, incomparable), their respective valuations might differ markedly.

If the willingness to pay principle could be implemented by the courts in awarding compensation to accident victims, then especially in cases involving serious injury, extreme inequality in society's ex-

isting distribution of wealth would be perpetuated if not exacerbated in discriminatory treatment of rich and poor accident victims. Moreover the hallowed principle of "equality before the law" might, with justification, be called into question.

Such difficulties are circumvented by adopting the "compensating variation in income" valuation principle, as embodied in the following question: "What is the minimum sum the victim would have been willing to accept prior to the accident which would have just sufficed to offset all the damaging consequences of the accident?" Formulated alternatively, "If the prospective victim had the power to veto the occurrence of the accident, what is the minimum price he would demand in exchange for his consent to undergo the accident?" It is obvious that the "compensating variation in income" principle for evaluating accident damage is in no way constrained by the wealth of the victim.

The foregoing discussion of valuation principles was in the nature of a ground-clearing operation to clarify the appropriate approach to accident compensation. Some of the practical problems in applying the "compensating variation in income" concept in assessing accident damage are examined next.

Practical Problems in Determining Damages

Although the economist's concept of "compensating variation in income" accords perfectly with the legal principle of *restitutio in integrum*, the difficulties in its application are formidable indeed. The most obvious problem is that any procedure which seeks to establish the appropriate award for damages by asking the accident victim to disclose his true "compensating variation in income" provides him with an enormous temptation to overstate the damages. While a victim might well be truthful, it would be extremely naive for the courts to proceed solely on the basis of his alleged subjective valuation without at least endeavouring to establish an independent estimate of the damage.

To this end, the courts have quite properly proceeded to scrutinize damage claims by decomposing them into several distinct components which fall broadly into an objective and subjective category. The objective category would include medical expenses (past, present, and anticipated) attributable to the accident and loss in earnings arising from the accident. In the subjective category would appear compensation for pain and suffering.

Items in the objective category would seem to lend themselves to more reliable estimation than the subjective components, since they are at least based upon some "hard" data. Yet for accidents whose deleterious consequences stretch into the future, the estimates of ob-

jective elements necessarily contain a considerable dosage of conjecture about an uncertain future.

The courts are plagued by two varieties of uncertainty in their pursuit of accurate estimates of the objective components of damages. First, there is uncertainty about the future course of events which bear directly upon the magnitude of the damages. The expected length of the accident victim's working life, the time path of his future earnings, and the pattern of future medical expenses would be included in this class of uncertainty. The second variety of uncertainty involves a still higher order of speculation: the courts must form a conjecture about the probable course of events in the victim's life had he not suffered the accident. In other words, the courts must endeavour to formulate reasonable assumptions concerning *what might have occurred* to the victim in the *absence* of the accident in the domain of his career and his normal medical expenses.

The difference between the court's assumptions about the actual future course of events and about what might have resulted without the occurrence of the accident constitutes the basis for its assessment of the loss of earnings and of medical expenses attributable to the accident. The paucity of the factual support for estimates of the objective components is transparent. Moreover, whereas the passage of time will confirm or disconfirm the court's predictions about the future course of events, the accuracy of the court's counter-factual conjecture concerning what might have been must always remain a matter of speculation. It might be noted that in cases involving accidents which totally disable the victim from working, the courts are at least spared the guesswork in deriving an estimate of actual future earnings since these would clearly be zero.

Estimating the Loss in Earnings

The process of estimating the loss of earnings consequent upon an accident can be examined by considering a case involving a serious injury which has rendered the victim incapable of working for the rest of his life. Suppose the victim's life expectancy is unaltered by the accident. Then to establish the loss in the victim's earnings which can be ascribed to the accident, the courts must endeavour to determine what the pattern of the victim's lifetime earnings would have been without the accident. Beginning with the victim's annual earnings at the time of the accident, the court must project these earnings into the future for the balance of victim's normal (*i.e.*, pre-accident) working life. For example, if a thirty year old worker earning fifteen thousand dollars per year is completely incapacitated by an accident, the courts must predict what his annual income would have been until his retirement at age sixty-five. Upon what basis can the courts undertake such long-term predictions?

If we provisionally disregard career progress (as reflected in promotions), adjustments in annual wage contracts appear to be governed largely by both gains in productivity and increases in the cost of living. This was certainly the case until the recent advent of wage controls. The reasonableness of the assumption that future wage settlements will follow this pattern is, of course, debatable. However, even if it could be asserted with confidence that wage settlements will keep pace with inflation and productivity gains, the courts would still confront the arduous task of estimating these variables well into the future.

Once the court forms a view of the entire stream of earnings to be foregone by the accident victim, it could order that restitution be paid annually or monthly until the victim reaches normal retirement age. Indeed, to cope with variations in earnings linked to unanticipated inflation or productivity gains, the courts might permit periodic reviews and adjustments, as in alimony cases. Actual practice has been to award a lump sum, perhaps to economize on costs of administration and enforcement and to provide a greater incentive to the victim to overcome his disability. In the realm of compensation for loss in earnings, prior to his accident, the victim is regarded as an income-generating "machine"; the accident impairs this "machine's" capacity to generate income, thereby lowering "its" capital value. The lump sum awarded in compensation for this is simply the capitalized value of the stream of future earnings thereby foregone. The lump sum award should equal the price that would be charged by a financial institution in exchange for the stream of periodic (*i.e.*, annual or monthly) payments which, in the court's judgement, would have been earned by the plaintiff had he not fallen victim to the accident, with due allowance being made for the actuarial probability of premature death, in which event payments would cease.[3]

Some of the thorniest problems in estimating the loss in earnings have not yet been tackled. Among these is the issue of the likely

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3. In our example, the present value of the loss of earnings by the completely incapacitated worker of 30 earning $15,000 per annum, who would have retired on his 65th birthday, can be calculated as follows. First, assume for simplicity that wages are paid annually on the workday immediately preceding his birthday. Assume further that the accident occurred on the victim's 30th birthday; that the court projects future earnings which exactly keep pace with inflation and productivity gains, and the court undertakes a forecast of these; that the court makes no allowance for the career progress which the victim might have realized in the absence of the accident; and finally, that in formulating the price of a temporary life annuity of up to 35 years duration (unless preceded by the death of the victim in his pre-accident state of health), the payments of which correspond to the court's projections of the victim's expected earnings foregone for this period, financial institutions deploy the discount factor r.

Then setting A_t = the probability (derived from actuarial life tables) of the worker being alive t years hence,

i_t = inflation projected t years hence, and

p_t = productivity gains projected t years hence,

course of career progress that the victim might have achieved but for the accident. If the victim evinces qualities which suggest that he would have advanced in his career, the courts would seriously understate the magnitude of the lifetime earnings foregone by the victim if such probable career progress is not given due weight in calculating the loss in earnings.

Another aspect of the loss in earnings is related to the victim's diminished productivity of his non-market time; for example, household repairs and projects (such as construction of a recreation room or of furniture). Although the loss involved may be significant, the absence of data upon which to construct an estimate undermines any effort to include it in the overall assessment of damages.

There is, finally, the almost insuperable task of determining the loss in earnings in cases where the victim has not established a pattern of earnings upon which estimates can be constructed. Foremost examples would include situations where the victims were children or youths who have not entered the labour market, or housewives whose services are not sold in the marketplace. For the former group, courts could examine such evidence as performance in school, I.Q. scores, results of aptitude tests administered in schools, and the testimony of teachers who might rank the victim in relation to other students. Yet the factual foundation for drawing inferences about the victim's pre-accident career prospects would necessarily be quite flimsy. For the latter group, housewives possessing marketable skills, there would be some warrant for the courts imputing a market value to their service in the home equal at least to the earnings the housewife had voluntarily opted to forego. Yet whatever approach is adopted for the valuation of unmarketed services, a considerable element of guesswork and arbitrariness appears inescapable. Thus, the subjective judgements of the courts cannot be avoided even for the assessment of the objective components of the damage.

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the lump sum award should be:

$$\sum_{t=1}^{t=35} A_t \{\$15,000 (1 + i_t + p_t)^t (1 + r)^{-t}\}.$$

The generality of this formula, permitting projections of inflation and productivity to differ from year to year, belies the calculations by the courts which in practice are of a rough and ready variety. It is interesting to note that if the courts project a constant rate of inflation of 8%, a constant productivity increment of 2% per annum, and a discount rate for long-term annuities of 10%, then if we ignore the A_t term, the above formula collapses into the *simple summation* of $15,000 per annum for a thirty-five year period.

Viewing r as the rate of return on a risk-free long-term investment, if r contains an inflationary component i, then (r-i) is the real rate of return; if thi[illegible]uals p, a constant annual percentage gain in productivity, and if wages rise annually by (i + p), then the crude summation of annual wages suffices to calculate the total present value of the loss in earnings. This obviously follows from the fact that in this special case, wages compound forward at the same rate as the rate at which they are discounted backward to the present value, *i.e.*, at the rate (i + p) which here equals r.

Estimating Medical Expenses

It would appear, at first blush, that the least controversial element among the various types of damages wrought by the accident is medical expenses. But even this item is not devoid of controversy stemming from several sources. As already noted, in order to estimate the magnitude of this item, the court must develop a view of the nature and duration of future medical services arising from the accident, and must ascertain their associated costs. Once the court accepts a particular scenario of the time path of future medical expenses, this must be translated into present value terms by utilizing the appropriate discount rate.

However, there is likely to be a considerable range of choice with respect to the *nature* of future treatment. The question of private or institutionalized care for seriously disabled accident victims is often in the forefront of items of disagreement. (This issue will be considered at greater length when the recent decisions by the Supreme Court of Canada are examined below).

As must be the case for any exercise in long-term prediction, practitioners undertaking such forecasts are bedeviled by possibilities of technological innovations (or indeed breakthroughs) in medical treatment procedures, which may also affect the required duration of treatment. Of course, even in the absence of such technological developments, medical expenses are not immune to inflationary pressures and the court must incorporate such inflationary expectations into its estimate of total medical expenses attributable to the accident.

Compensation for Pain and Suffering

Perhaps the most intractable item of accident compensation is that related to pain and suffering which, by its very nature, is entirely subjective. Not only are interpersonal comparisons of pain and suffering infeasible (at present and for the foreseeable future), but valuations of the psychic damage by accident victims cannot be verified independently by others. Thus, despite whatever ingenuity courts might bring to bear in assessing the damages associated with the objective components, there nonetheless remains the unenviable task of endeavouring to establish the veracity of claims related to the completely personal elements of pain and suffering.

Deprived of a scientific framework within which to assess claims of compensation for pain and suffering, the courts must rely solely upon an *empathetic introspection* in judging the reasonableness of the claim. If we imagine an accident which causes the non-negligent victim the loss of a finger, but this results in no loss of earnings and

only negligible medical expenses, then his "compensating variation in income" would reflect his valuation of the pain and suffering. If this amounts to $x, a sum which might initially strike a judge as exorbitant, he might do well to reflect upon "the price he [himself] would have demanded from someone who made a credible offer to purchase [his] finger."[4] For unless the judge would be prepared to part with a finger for less than $x, he would hardly be justified, on the basis of empathetic introspection, in characterizing the plaintiff's claim of this sum as exorbitant.

Unfortunately, even the most consummate exercise in empathetic introspection may, alas, fail to equip a judge with the ability to distinguish between a reasonable and an exaggerated claim for pain and suffering. Given the absence of "markets in mutilation"[5] courts cannot support their awards for the victim's pain and suffering on a factual scaffold, however flimsy such support might be. The award must be a pure offspring of the imaginative and compassionate faculty of the court.

With respect to the standards which obtain at present in awarding compensation for pain and suffering, Professor Richard Posner makes the following observation:

> If anything, awards for pain and suffering probably undercompensate victims seriously crippled by accidents. Since the loss of vision or limbs reduces the amount of pleasure that can be purchased with a dollar, a very large amount of money will frequently be necessary to place the victim in the same position of relative satisfaction that he occupied before the accident.[6]

Should Canadian Courts engage in a serious effort to apply the principle of *restitutio in integrum* to the pain and suffering dimension of accidents, the compensation awards would most likely increase dramatically beyond the order of magnitude which currently prevails. A quantum leap in the size of accident compensation awards would be accompanied by substantial resource reallocation. Discussion of the form this might assume is deferred until the final section.

Compensation For Premature Death

One final dimension of accident damage is a diminution in the life expectancy of the victim. How is this aspect to be treated in assessing compensation? The faithful application of the "compensating variation in income" principle would value the victim's damage from premature death by the sum which would just have sufficed to compensate him for accepting a diminished life expectancy. The loss

4. R. Posner, *Economic Analysis of Law* (2d ed. 1977) 144.
5. *Id.*, at 149.
6. *Id.*, at 149-50.

in earnings which might be occasioned by this occurrence would be irrelevant from the victim's personal viewpoint, but would deprive dependants of their source of financial support for the period which the victim would otherwise have lived and worked; the actual income which dependants would thereby forego would be the victim's earnings expected prior to the accident minus the expenditures on personal consumption that the victim would have incurred. Although the non-financial loss by the victim's close survivors would in general be acute, courts invariably ignore this type of loss.

If the accident causes the immediate death of the victim, then the concept of "compensating variation in income" breaks down, since there would be no finite sum of money which could compensate a rational individual for surrendering his life in an accident. In cases of this type, the victim's estate or survivors can claim compensation for pecuniary loss; if the victim's death was not immediate, compensation for the pain and suffering sustained by the victim prior to his death might also be claimed. The problems associated with compensation to parents for the loss of a child through an accident caused by the negligence of the defendant are especially vexing. To base an award upon the costs incurred by the parents in rearing the child until the date of its death is clearly an inadequate procedure but alternative approaches are also far from satisfactory.

The Recent Supreme Court Decisions

To a considerable extent, I have been spared the task of providing detailed criticism of the accounting procedures and economic reasoning contained in four recent landmark decisions of the Supreme Court of Canada by the masterly job done by Professor Dale Gibson in his recent article in this journal.[7] To minimize duplication, I restrict myself to a number of observations concerning the treatment accorded various elements by the Supreme Court in rendering its decisions.

The cases involved Andrews (male, age 21 at the time of the accident, apprentice carman with C.N.R. prior to the accident); Thornton (male, age 15 at the time of the accident, high school student; "Prior to the injury the appellant was 6 feet 3 inches in height and described in evidence as being the epitome of the all-round athlete"[8]); Teno (female, age 4½ at the time of the accident); and Keizer (male, age 33 at the time of the accident). Andrews and Thornton were rendered permanently quadraplegic; Teno suffered

7. D. Gibson, "Repairing the Law of Damages" (1978), 8 Man. L.J. 637.
8. *Thornton* v. *Board of School Trustees, Prince George*, [1978] 1 W.W.R. 607, at 608; 3 C.C.L.T. 257, at 258 (S.C.C.).

severe brain damage which completely incapacitated her physically; and Keizer was killed, survived by widow with six-month old child who sued for loss of financial support.

Because of the grievous injuries sustained by Andrews, Thornton and Teno, the dominant item in their awards was the provision for future care. The considerable discrepancy between the costs of private and institutionalized care resulted in differing views with respect to the standard of care to adopt in computing the awards. In the *Andrews* case, the depressing atmosphere of institutional care was emphasized, while in the case of *Thornton*, the diminution in the victim's life-expectancy, should he be relegated to care in an institution, was noted. In keeping with the principle of *restitutio in integrum*, the Supreme Court granted awards in all three cases which provided for private home care, the much greater expense notwithstanding. Indeed, on the question of whether the defendant's economic means should be given any weight in imposing an upper limit on the size of the award, Dickson J., noted that this aspect of the case is not germane to the Court's deliberations:

> [I]t is an error in law to regard the ability of the defendant to pay as a relevant consideration in the assessment of the pecuniary damages. The correct principle is proper compensation for the injuries suffered by the victim. The exact amount in any particular case must be determined from the evidence presented by the parties at trial. *Fairness to the defendant is achieved* not by a reduction for ability to pay, or by an arbitrary slashing of the award, but *by ensuring that the plaintiff's claims are legitimate and justifiable.*[9] [my emphasis]

It is interesting to compare these remarks of Dickson J. to his comments in the *Andrews* case: "An award must be moderate, and fair to both parties. Clearly, compensation must not be determined on the basis of sympathy, or compassion for the plight of the injured person. What is being sought is compensation, not retribution."[10]

If the legitimacy and justifiability of the victim's compensation claim for his pain and suffering cannot be judged without exercising one's faculty for compassionate identification with the plight of the victim, and if fairness in the sense noted by Dickson J. in the *Thornton* case calls for an award which could scarcely be described as "moderate," the task of establishing an award which is simultaneously fair and moderate, yet is not determined on the basis of sympathy and compassion, may not be within the realm of possibility.

Moreover, it appears difficult to reconcile the principle of *restitutio in integrum*, coupled with Dickson J.'s assertion that

9. *Id.*, at 614; 3 C.C.L.T., at 264.
10. *Supra* n. 2.

fairness to the defendant is *not* achieved "by a reduction for ability to pay," with the imposition of an arbitrary ceiling of $100,000 as compensation for the victim's pain and suffering. Although such a convention would undoubtedly make life easier for judges in future cases and might perhaps lend greater consistency to the treatment of similar future cases, the warrant for such a ceiling on other grounds is not at all obvious.

With respect to the treatment by the courts of earnings foregone because of the accident, for a number of reasons a downward bias is, in practice, imparted to the estimate of this component of the damage. First, as noted by Professor Gibson, "the plaintiffs' onus to prove all elements of their claims by a preponderance of evidence, and the grave difficulty of proving that their future income would have been high if they had not been injured"[11] must surely depress the estimate. Further, there is the common but rather mystifying practice of reducing the damages awarded for loss in earnings by an arbitrary amount (such as ten or twenty percent) for so-called "contingencies," the reasoning in support of this being that some ill-fortune might well have befallen the victim, thereby interrupting his future stream of earnings. As Professor Gibson has noted, the presumption (in our ignorance about the future) that detrimental contingencies might have occurred is no more compelling than the opposite presumption. In this connection, it is instructive to consider the approach taken by the trial Judge in the *Thornton* case, as described by Dickson J.:

> The trial judge . . . declined to make any allowances for contingencies. He considered that he had no way of knowing whether the appellant might meet adverse conditions in his life, giving rise to a reduction in prospective future earnings, or whether he might receive promotions and salary increases, which would have the effect of inflating the projected figures.[12]

It is, of course, an empirical question whether the incidence of detrimental contingencies contained in the trial Judge's list is as high as is that of career progress. However, to exclude salary increases which would simply offset anticipated future inflation is to fly in the face of considerable historical evidence about the pattern of wage settlements. Indeed many economists regard wage settlements in excess of productivity gains as the basic cost-push cause of inflation, rather than a "catch-up" consequence. But whether wage increases lead or lag behind and merely offset inflation, they do move in step with inflation. The effect upon the estimate of loss in earnings of disregarding salary increases which protect real income and perhaps allow

11. *Supra* n. 7, at 642.
12. *Supra* n. 8, at 618; 3 C.C.L.T., at 268.

workers to share in the fruits of rising productivity is substantial and may result in an estimate which grossly understates the true damage.

The method adopted by the Supreme Court in establishing the appropriate discount factor to translate the foregone stream of future earnings and the stream of future care expenses into present value terms might also be described as mystifying. The expression of a fond hope, attributed to Dr. John Deutsch in 1967 when he was Chairman of the Economic Council of Canada,[13] that inflation might average 3½% per annum for the following 40 years, somehow became sanctified by the Supreme Court of Canada as a scientifically based prediction and was incorporated in its 1978 judgements, since it served as the basis for the Supreme Court's projection of the real rate of discount, *i.e.*, the rate of return on high quality long-term investments minus the anticipated rate of inflation. By any standard, the Supreme Court's assumption of a *real* rate of interest of 7% exceeds the historical (and current) rate by as much as 5%.

One might well wonder why the Supreme Court is endeavouring to predict the *real* rate of interest, rather than the nominal rate which obtains for high quality long-term investments, for the purpose of discounting to the present the costs of future care and loss in earnings. A rationale for discounting at the real rate of interest would exist if the Supreme Court wished to assume that wages and medical care will escalate at the rate of inflation. If this is indeed the Court's intent, it can avoid compounding forward at the rate of inflation while discounting backward at the nominal rate of interest by simply discounting at the real rate of interest the future stream of earnings and medical expenses, the annual flow from this stream being held constant at current levels. Of course, this summary procedure may seriously depress the level of compensation if the real rate of interest used in discounting is unjustifiably high.

A downward bias in the estimated loss of earnings also results from the omission of compensation for net benefits foregone in an employer's pension plan. Typically, the present value of a life annuity following retirement, amounting to perhaps 50% or 67% of an employee's annual income averaged over his highest five or ten years of earnings would not be a negligible sum, and the net present value of the employer's contribution ought certainly to be included as part of the appropriate award for loss in future earnings. Clearly, private pension benefits are nothing other than a form of deferred wages, and as such there can be no warrant for their exclusion in those cases where the victim's employer provided a pension plan.

13. Economic Council of Canada, *The Canadian Economy From the 1960's to the 1970's* (Fourth Annual Review) (1967).

Finally, since the broad policy thrust of this paper is in the direction of substantially greater awards to non-negligent accident victims, the implications for resource allocation of a quantum leap in the compensation granted by the courts, an issue which is the special province of the economist, will be considered briefly.

To the extent that an increase in the size of awards would reflect more accurately the actual damage imposed on victims through the negligence of defendants, the probable consequence of significantly raising the level of compensation would be improved resource allocation, since the cost of negligent behaviour would be shifted from the non-negligent victim to the negligent perpetrator of the accident. In effect, the defendant would have to pay a higher price for his negligence — a price which would correspond more closely to the social cost of such negligence — and the effect of this price increase would be to deter negligence, *i.e.*, it would induce potential defendants to indulge their penchant for negligence more sparingly. This point is emphasized by Professor Posner in the following passage:

> The association of negligence with purely compensatory damages has prompted the erroneous impression that liability for negligence is intended solely as a device for compensation. Its economic function is different; it is to deter uneconomical accidents. As it happens, the right amount of deterrence is produced by compelling negligent injurers to make good the victim's losses. Were they forced to pay more (punitive damages), some economical accidents might also be deterred; were they permitted to pay less than compensation, some uneconomical accidents would not be deterred. It is thus essential that the defendant be made to pay damages and that they be equal to the plaintiff's loss. But that the damages are paid to the *plaintiff* is, from an economic standpoint, a detail.[14]

Considerations of economic efficiency dictate that the perpetrator of an accident should be required to bear the entire cost of his negligence, for only thus will his decision calculus, which governs his actions, assign the appropriate weight to the adverse consequences which might arise through his negligence. Since we have considered only cases involving no negligence on the part of accident victims, whether they are compensated or not has no effect on the behaviour of prospective non-negligent victims. Thus, the disposition by the courts of the lump sum tax, imposed on defendants, which equals the damage to non-negligent victims, is discretionary from the point of view of economic efficiency. In the jargon of economics, the "internalization of the externality" will have been achieved regardless of the ultimate disposition of these funds. On the other hand, the legal principle of *restitutio in integrum* finds its source in considerations of equity. Thus, where full compensation is appropriated from the defendant and transferred to the plaintiff, the twin objectives of efficiency and equity would simultaneously be realized.

14. *Supra* n. 4, at 143.

It is interesting to note that in the *Keizer* case, the award to the victim's widow was diminished by the $6,500 she had received under the no-fault provisions of her deceased spouse's insurance policy.[15] While such a deduction avoided providing the plaintiff with double compensation for a portion of the damages, the Supreme Court's failure nonetheless to levy this $6,500 from the defendant, and to dispose of this sum at its discretion, entails that the appropriate level of deterrence to negligence had not been established, *i.e.*, negligence had been underpriced by the Court.

The implications of vast increases in compensation awards could be far-reaching for the rate at which new products are introduced. A substantially larger potential penalty against firms whose unsafe new products cause injuries would constrain firms to allocate more resources to testing the safety of new products prior to their being marketed. The undue haste with which particular drugs (such as thalidomide), automobiles (such as the Pinto) and radial tires (such as Firestone's) were introduced might well have been averted had the standard of compensation awards to non-negligent victims been considerably higher than that which obtains at the present time.

Complications abound in the analysis once alternative schemes of insurance coverage for potential perpetrators and victims of accidents are introduced. Their implications for accident deterrence and for resource allocation are examined in considerable detail by Professor Guido Calibresi.[16] A critical review of the issues must await a subsequent essay.

15. *Keizer* v. *Hanna* (1978), 3 C.C.L.T. 316, at 318 (S.C.C.).
16. G. Calibresi, *The Costs of Accidents, A Legal and Economic Analysis* (1970).