



AN ANALYSIS OF INTERSECTION BETWEEN TORT LAW AND ECONOMICS

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Introduction

There had been many people whose interest had been developed for the analysis of the intersection of the "Law and Economics". Some Scholars of this group of persons had advanced the hypothesis that the judges which sets down precedents as law or best interpretation of the exiting law for the coming cases in courts of common law tries best to promote efficient resource allocation. This would be discussed in the following paper, applied to tort law, as the positive economic theory of the tort law, of which no rival had yet appeared.

The scholarly tradition from which the positive economic theory of tort law comes could be said to have begun with Jeremy Bentham, who first applied economics to laws regulating nonmarket behavior or even with Adam Smith.¹ In the publication of Holmes's *The Common Law* in 1881² it is possible to find chapters on trespass and negligence and later in the articles by Ames and Terry on tort law, consisted of economic approach. Holmes suggested that the only difference between negligence and strict liability as tort standards was that the latter provided a form of accident insurance.

Next comes the phase of legal realists in 1920s and 1930s, they were called so as they believed that only realistically attainable function of tort law to be the provision of insurance. On this basis they recommended the assignment of liability regardless of fault to injurers having "deep pockets" and the abolition of defenses such as contributory negligence and assumption of risk that reduced the scope of liability.³

And then began in 1961, third wave of tort scholarship with Ronald Coase's article on social cost and Guido Calabresi's first article on tort law.⁴ The ideas of the scholars were generally based on the Bentham proposition that people drew utility in almost all the areas of life, this implies that liability rules can be used to affect the level of accidents, although Bentham himself never drew this implication.

I. The Model of Efficient Tort Law

For this we would see formal model which that underlies the positive economic theory of tort law.⁵

1) A Model of Accidents

- a) Choice under uncertainty: there lies a basic assumption of the model that an individual ranks uncertain prospects by their expected utility and chooses that prospect with the highest expected utility. So to study expected-utility model, it become convenient to assume that the individual's utility depends

¹ Richard A. Posner & William M. Landes, "The Positive Economic Theory of Tort Law," 15 *Georgia Law Review* 851 (1980).

² O.W. Holmes, *THE COMMON LAW* (1881).

³ See Douglas, *Vicarious Liability and the Administration of Risk I*, 38 *YALE L.J.* 584 (1929).

⁴ Coase, *The Problem of Social Cost*, 3 *J.L. & ECON.* 1 (1960); Calabresi, *Some Thoughts on Risk Distribution and the Law of Torts*, 70 *YALE L.J.* 499 (1961).

⁵ *Supra* Note 1.



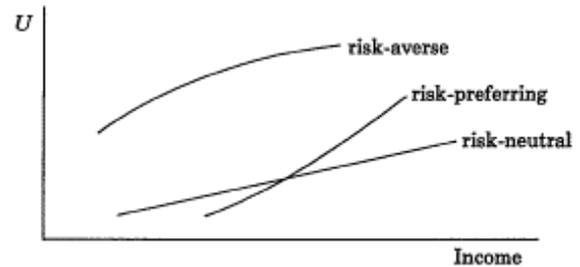
upon a single composite good called "income" (or "wealth"), as in $U = U(I)$, where I is income.

For example, if injury of a person, by an accident, can be expressed in terms of a loss in units of the composite good, I . We assume that the individual prefers more to less income or, in other words, that the marginal utility of income is positive. Hence, $U(\$1000) > U(\$500) > U(\$499)$, therefore given the choice among these incomes, \$1000 would be chosen. We can extend the analysis to uncertainty by defining the expected utility of a prospect as

$$U = \sum_{i=1}^n p_i U(I_i)$$

Where there are n mutually exclusive states of the world or outcomes, $U(I_i)$ is the utility associated with the income in state i ($i=1, \dots, n$), p_i is the subjective probability of each state i , $0 < p_i < 1$, and $\sum p_i = 1$. The assumption of expected utility maximization implies that the individual will select that prospect with the greatest expected utility.

Risk-averse, Risk-neutral, and risk-preferring were three major classes of utility function in expected-utility model. Although Marginal Utility of income for all the three cases is positive, it is diminishing, constant and increasing for Risk-averse, Risk-neutral, and risk-preferring functions respectively.



Generally people are assumed to be risk-averse but in analysis of the economics of tort law we assume that the utility functions of both injurers and victims are risk-neutral rather than risk-averse. The reason for that is, it would yield more definite production as compared to the risk aversion. As risk aversion would give too much freedom to explain common law rules and it would then get hard to confirm efficiency theory.

This reason would be inadequate to justify risk neutrality for institutions like of insurance which tends to reduce risks. But no compelling reason to assume that common-law judges in formulating efficient rules of accident control think it important to try to reduce risk as well as accident and accident-avoidance costs. Both accident and liability insurance have long been available to prospective victims of accidents and prospective injurers alike,⁶ and before there was market insurance there was informal insurance provided through the family.⁷ Therefore injuries and the victims can be treated by torts system if they were risk-neutral.

- b) Optimal or Due Care: Now question arises that what should be done, to minimize the social costs of accidents, by the prospective parties? Now to have utility function in terms

⁶ Supra Note 2.

⁷ The role of the family as an insurance mechanism is emphasized in Posner, A Theory of Primitive Society,

with Special Reference to Law, 23 J.L. & EcON. 1, 10-18 (1980).



of above fig. it should be linear as we had assumed parties to be risk-neutral, i.e. $U = a + bI$ where $a > 0$ and $b > 0$. Now to assume that $a=0$ and $b=1$, would be expedient as a person's expenditure on care or insurance will be the same for all values of a and b , provided $b > 0$. Assuming $U=I$, then by letting social welfare as sum of all utilities would advantage of allowing to measure social welfare as the sum of all income, thus equating efficiency with income or wealth maximization. This does not mean that social welfare actually is, or should be, simply the sum of all incomes, or even that there is such a thing as a social welfare function. The purpose of assuming a particular social welfare function is to enable us to define the term "social costs of accidents" and then to test the hypothesis that the rules governing tort liability are best explained as efforts to minimize these costs.⁸

Suppose that two people A (plaintiff) and B (defendant) had an accident. If we let x and y be the input care of A and B respectively, the probability of the accident would be:

$$P = (x, y)$$

Let the marginal products of care, p_x and p_y , be negative and diminishing and D denote the dollar equivalent of the injury to A if the accident occurs, and $A(x)$ and $B(y)$ the costs of care to A and B respectively. Then expected utilities would be expressed as
 $U^a = p(I^a - D - A(x)) + (1 - p)(I^a - A(x)) = I^a - pD - A(x)$
 $U^b = p(I^b - B(y)) + (1 - p)(I^b - B(y)) = I^b - pD - B(y)$
 and the sum of their expected utilities (or expected income) as
 $U^a + U^b = I^a + I^b - pD - A(x) - B(y)$.

Now social welfare would maximize when $U^a + U^b$ maximized. Now as I^a and I^b fixed, that level of the x and y be picked which minimize social cost.

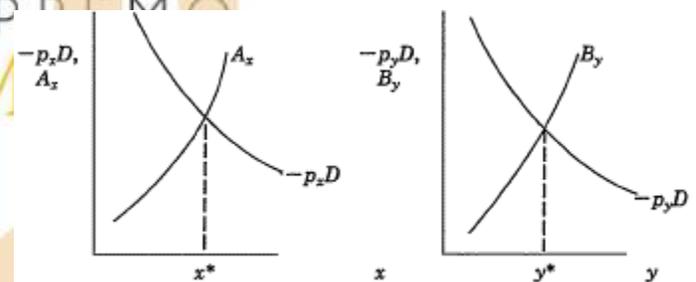
$$L(x, y) = p(x, y)D + A(x) + B(y)$$

Where $L(x, y)$ is social cost of accidents. Letting x^* and y^* be values that minimize $L(x, y)$, and marginal costs of care, A_x and B_y , be positive and non-decreasing. Then x^* and y^* can be found by taking first partial derivatives of L w.r.t. x and y and setting resulting expression equal to zero. Which require x^* and y^* to satisfy:

$$A_x = -p_x D$$

$$B_y = -p_y D$$

A's optimal care would be when reduction in expected damages equal to marginal costs of last unit of care, as till that A would keep on adding input of care. The analysis of B's optimal care is parallel. Graphically:



In both diagrams, demand curve shows reduction in victim's damages and is downward sloping because of decreasing marginal products of care, and supply curve show marginal costs of taking care and is upward sloping showing increasing marginal costs of care. Situation as one of joint care arises when both x^* and y^* are positive, meaning that it is optimal for both A

⁸ Supra Note 1.



and B to take some care. In case of either A or B to take care the situation would be of “alternative care”.

Assumptions of formal analysis to be noted briefly, is that the parties' inputs of care affect only probability of an accident and not the cost of the accident (D) if it occurs. The model could easily, indeed trivially, be expanded to allow x and y to affect D as well as p - to deal. At last, assumption that A and B are complete strangers and that costs of voluntary negotiation between them are prohibitive, as without this liability rules would not affect level of care; the Coase theorem implies that parties would agree to use x^* and y^* inputs of care, because these are levels of care that maximize their joint incomes.

2) Model of Liability Rules

- a) No-Liability: This rule (Optimal rule) affects the incentives of parties. In example of A and B, A would have incentive to spend in care till the point where $Ax = -pxD$ given $y=0$. But B would have no incentive for care as he is not liable for A's accident costs. The x^* and y^* both would be positive in case of joint care, and a no-liability rule is inefficient. However, in case care of both is substitutable, the A's care level under rule of no-liability will be greater than x^* . Taking example, that if some care by drivers is optimal, probably a pedestrian would take more care than x^* if driver have no liability for running down pedestrians.
- b) Strict Liability: This is moreover symmetrical to no-liability. Under this A, Victim, would now have no incentive to take care as he would be fully compensated for his injury, D. Similar to above now B has incentive to invest in care up to point where

$By = -pyD$ given $x = 0$, as D would be cost borne by B under strict liability after accident.

So, no liability is efficient where the case is one of alternative care and $y^*=0$ and strict liability is efficient where the case is one of alternative care and $x^* = 0$.

Now, relaxing the assumption that there are no costs of operating legal system: no-liability would be cheaper to administer than strict liability as in this every accident empowers victim for legal claim for compensation and thus a lawsuit.

- c) Negligence Under this rule, B would be liable for A's damages only if he fails to take due care, assuming failure to use y^* inputs of care. So it provides incentive to B to use optimal care y^* .

Putting one side the problem of contributory negligence by assuming $x^*=0$, L is minimized when $L(O,y^*) = p(O,y^*) + B(y^*)$.

This negligence can be stated as: if an accident occurs, B need to pay A the damages if inputs of care(y) are less that y^* , but no need if $y \geq y^*$.

- d) Strict Liability and Negligence compared: Generally assuming $x^*=0$, B will choose y^* doesn't matter he is strictly liable or liable only if negligent. Under strict liability, A has no incentive to take care as he compensated for his injury occurred. In negligence, A does not expect to be compensated for injury but still he has no incentive to take care as costs of care are greater than the resulting reduction in expected damages.



e) Negligence plus Contributory Negligence: contributory negligence defined as x less than x^* , barring victim to recover damages from injurer. Under negligence plus contributory negligence so defined, denoting s^a = share of damages falling on A and s^b = share of damages on B, the care and liability would have following relation:

Care	Lit
x^*, y^*	$s^a = 1; s^b$
$x < x^*, y^*$	$s^a = 1; s^b$
$x < x^*, y < y^*$	$s^a = 1; s^b$
$x^*, y < y^*$	$s^a = 0; s^b$

II. The Model Applied

After studying models, in this we are going to apply same to actual tort law. This was done in an empirical study by the Richard A. Posner and William M. Landes⁹ by examining (1) basic negligence standard, encapsulated in Hand formula; (2) contributory negligence (3) common law's choice between strict liability and negligence as the liability standard in particular classes of case.

A. The Hand Formula

Whether the owner of a barge owed a duty to keep an attendant on board while the barge was moored in the harbor? This answered by judges in three variables:

P = probability that the barge will break away;

L = gravity of resulting injury, if it does break away;

B = burden of precaution adequate to prevent it from breaking away.¹⁰

Now in Hand formula, there would be negligence if burden of precautions was less

than probability times the gravity, i.e. if $B < PL$.

This now resembles with our economic model of due care in part II, but the question is that how far?

Now if in place of B, we substitute B_y (MC of Care) and PL, we substitute $-p_y D$, marginal reduction in accident damage, than hand formula would be written as $B_y < -p_y D$. Which implies that it there would be negligence if use of care level is less that y^* . This is correct economic standard of negligence. And if it is alleged that it led to altering model then we know courts generally to consider marginal rather than total value in applying the standard.

B. Contributory Negligence

In common Law, doctrine of contributory negligence is to check the victim's care, i.e. restricting A from claiming damages if A_x is less than $-p_x D$. The negligence-contributory negligence both yields optimal results in cases of joint care with assumption that the other party is exercising due care.

This analysis better explained by famous case of LeRoy Fibre, where because of negligence of railroad's employees, spewed large quantity of sparks and live cinders which ignited a pile of flax stacked eighty-five feet from the tracks. Observing which justice Holmes said "as a general proposition people are entitled to assume that their neighbors will conform to the law...and therefore will not be negligent."¹¹

⁹ Richard A. Posner & William M. Landes, "The Positive Economic Theory of Tort Law," 15 Georgia Law Review 851 (1980).

¹⁰ United States v. Carroll Towing Co., 159 F.2d 169 (2d Cir. 1947).

¹¹ LeRoy Fibre Co. v. Chicago, Milwaukee & St. P. Ry. Co., 232 U.S. 340, 352 (1914).



C. The Areas of Strict Liability in Accident Law

Now comes choice that the common law has made between strict liability and negligence to particular cases and that whether is it consistent with economic model?

There had been wide discussion related to owner's liability for domestic animals. But with time it was fixed as strict liability-provided that he had notice of the animal's vicious disposition. As it is said that

“A single incident does not necessarily place the owner on notice the animal is dangerous or vicious. The test is whether the incident was of such a nature as to lead a reasonable person to believe the dog was sufficiently dangerous as to be likely to cause injury to a person at a later date.”¹²

But it is also said that owners of trespassing cattle or other livestock were strictly liable for property damage (though not for personal injury) caused by their animals.¹³

This pattern is consistent with what economic analysis of the choice between strict liability and negligence liability predicts.¹⁴

Conclusion

In this we have seen the positive economic theory of the tort law- according to me it is one of the best economic theories to elucidate best the common law of torts by taking into account the assumption that judges in the court are trying to maximize the efficiency of the law. After studying the economic model that underlies the theory and their consonance with the some basic tort law

doctrines relating to strict liability, negligence and contributory negligence. We have seen that all efficient rules must define negligent behavior and when an individual on his part is negligent, but the other is not, must be held liable. And discussed and studied the rule of strict liability with the defence of the contributory negligent act of the victim or the person who had suffered injury, barring him from claiming the full compensation for the damage suffered. Also, it is looked upon that comparative negligent act of a person can also be efficient under a consistent economic approach.

The study of the economic theory of tort law is basically to provide and create the incentives for the people to increase their input of the care, so as to minimize the social cost, which consists of the costs of the harm produced by different torts and the costs for precautionary measures taken to prevent them.

¹² Rolen v. Maryland Cas. Co., 240 So. 2d 42, 46 (La. App. 1970).

¹³ W. PROSSER, G. WILLIAMS, LIABILITY FOR ANIMALS, at 496-503 (1939).

¹⁴ Supra Note 9.