

Negligence Rule: Some Strategic Aspects*

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Abstract

The paper is concerned with strategic aspects of efficient liability rules in general and of negligence rule in particular. It is argued in the paper that the objective of minimization of social costs necessitates defining notion of negligence in a way so that individuals with superior abilities are induced to take greater levels of care. Consequently, it is possible that individuals who are better at taking precaution compared to others are saddled with greater burden compared to those with lesser abilities for taking precaution. It is in the context of such situations that strategic considerations become relevant. Strategic manipulation by individuals would tend to defeat the very purpose of social costs minimization because of which notions of negligence are defined commensurate with economic logic. In view of these considerations it seems that achieving the objective of minimization of social costs by the use of liability rules may be much more difficult than has been thought to be the case hitherto.

Keywords: Liability Rules, Negligence Rule, Notions of Negligence, Negligence as Shortfall from Due Care, Negligence as Existence of a Cost-Justified Untaken Precaution, Strategic Manipulation.

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Negligence Rule: Some Strategic Aspects

Satish K. Jain

One of the most important liability rules, the rules for apportioning accident loss between victim and injurer, is the negligence rule. Under the negligence rule injurer is liable for the entire accident loss iff he is negligent; and he is not liable for any part of accident loss iff he is nonnegligent. In tort law the notion of negligence is defined in several different but related ways.

One of the most important results of law and economics literature, and one of the earliest, relates to the efficiency of negligence rule.¹ If (i) negligence is defined as failure to take a level of care greater than or equal to a specified level of care, called due care, and (ii) due care is set at a level at which social costs (sum of precaution costs and expected accident loss) are minimized; then under the negligence rule both victim and injurer are induced to take care levels which would minimize social costs.

Notion of negligence at times is defined without any reference to a specified due care level. Injurer is adjudged to be negligent iff there exists a cost-justified untaken precaution; and nonnegligent iff there does not exist any cost-justified untaken precaution.² A precaution is called cost-justified iff taking of it increases cost of care by an amount less than the reduction in expected loss as a result of taking it. Although negligence rule is generally thought to be efficient under this notion of negligence also; it is not so.³

This paper is concerned with some important strategic aspects which the negligence rule gives rise to; and which have been largely neglected in the analysis pertaining to efficiency. When these strategic aspects are brought into consideration explicitly the efficiency analysis changes significantly as these strategic aspects tend to work against the

¹One of the earliest analyses of negligence rule from the efficiency perspective was carried out by Posner (1972). The efficiency of negligence rule was formally established by Brown (1973). On the negligence rule generally see Landes and Posner (1987), Shavell (1987), Cooter (2003) and Posner (2007) among others.

²On the notion of negligence as existence of a cost-justified untaken precaution, see Grady (1983, 1984, 1989).

³See Jain (2006).

objective of minimizing social costs of accidents.

The paper is divided into four sections. The first section contains the preliminaries. Section 2 analyzes the strategic aspects of the negligence rule when the notion of negligence is defined as shortfall from due care level; and due care level is specified from the perspective of minimization of social costs. Next section is concerned with analyzing the strategic aspects of the negligence rule when the notion of negligence is defined as existence of a cost-justified untaken precaution. The concluding section, in addition to containing a summary of the main conclusions, points out that the problem of strategic manipulation is not confined to the negligence rule but extends to all efficient liability rules. The section also contains an intuitive explanation for the strategic vulnerability of efficient liability rules.

1 Preliminaries

We denote by $c \geq 0$ the cost of care taken by victim and by $d \geq 0$ the cost of care taken by injurer. c will be assumed to be a strictly increasing function of care level taken by victim; and d to be a strictly increasing function of care level taken by injurer.

Let

$$C = \{c \mid c \text{ is the cost of some feasible level of care which can be taken by victim}\}$$

and

$$D = \{d \mid d \text{ is the cost of some feasible level of care which can be taken by injurer}\}.$$

We will identify $c = 0$ with victim taking no care; and $d = 0$ with injurer taking no care.

We assume:

$$0 \in C \wedge 0 \in D. \tag{A1}$$

Assumption (A1) merely says that, for each party, taking no care is always a feasible option.

In view of the assumption that costs of care are strictly increasing functions of care levels it follows that:

$(\forall c_1, c_2 \in C) [c_1 > c_2 \leftrightarrow \text{the care level whose cost is } c_1 \text{ is higher than the care level whose cost is } c_2]$ and

$(\forall d_1, d_2 \in D) [d_1 > d_2 \leftrightarrow \text{the care level whose cost is } d_1 \text{ is higher than the care level whose cost is } d_2]$.

Let Π denote the probability of occurrence of accident and $H \geq 0$ the loss in case of occurrence of accident. Both Π and H will be assumed to be functions of c and d ; $\Pi = \Pi(c, d)$, $H = H(c, d)$. Let $L = \Pi H$. L is thus expected loss due to accident.

We assume:

$$(\forall c, c' \in C)(\forall d, d' \in D)[[c > c' \rightarrow \Pi(c, d) \leq \Pi(c', d)] \wedge [d > d' \rightarrow \Pi(c, d) \leq \Pi(c, d')]]. \quad (\text{A2})$$

and

$$(\forall c, c' \in C)(\forall d, d' \in D)[[c > c' \rightarrow H(c, d) \leq H(c', d)] \wedge [d > d' \rightarrow H(c, d) \leq H(c, d')]]. \quad (\text{A3})$$

In other words, it is assumed that a larger expenditure on care by either party, given the expenditure on care by the other party, does not result in greater probability of occurrence of accident or in greater accident loss.

From (A2) and (A3) it follows that:

$$(\forall c, c' \in C)(\forall d, d' \in D)[[c > c' \rightarrow L(c, d) \leq L(c', d)] \wedge [d > d' \rightarrow L(c, d) \leq L(c, d')]].$$

That is to say: a larger expenditure on care by either party, given the expenditure on care by the other party, results in lesser or equal expected accident loss.

Let $M = \{(c', d') \in C \times D \mid c' + d' + L(c', d') \text{ is minimum of } \{c + d + L(c, d) \mid c \in C \wedge d \in D\}\}$. Thus M is the set of all costs of care configurations (c', d') which minimize sum of costs of care (also called costs of precaution) and expected accident loss. It will be assumed that:

$$C, D \text{ and } L \text{ are such that } M \text{ is nonempty.} \quad (\text{A4})$$

In this paper we will consider two different ways of defining the notion of negligence. One way of defining negligence is to compare the actual care level with a specified level of care, called the due care level. Let $\bar{d} \in D$ be the due care level. Injurer is defined to be negligent iff the care level taken by him is less than \bar{d} ; and to be nonnegligent iff the care level taken by him is greater than or equal to \bar{d} . This notion of negligence will be referred to as negligence(sf).

Another way to define the notion of negligence is to determine whether there exists a cost-justified untaken precaution. That is to say, whether there exists a care level taking of which would have increased costs less than the reduction in expected loss. Under this notion of negligence, injurer is defined to be negligent iff there exists a cost-justified untaken precaution; and nonnegligent iff there does not exist a cost-justified untaken precaution. This notion of negligence will be referred to as negligence(up).

The rule of negligence is defined by: The injurer is liable for the entire loss iff he is negligent; and he is not liable for any part of the loss iff he is nonnegligent.

It should be noted that, under the negligence rule, when the notion of negligence which is used is negligence(sf) then the accident context is completely determined if C, D, L and \bar{d} are specified; and when the notion of negligence which is used is negligence(up) then the accident context is completely determined if C, D and L are specified. $\langle C, D, L, \bar{d} \in D \rangle$ will be called an application if the notion of negligence which is used is negligence(sf); and $\langle C, D, L \rangle$ will be called an application if the notion of negligence which is used is negligence(up).

The expected costs of victim and injurer will be denoted by EC_1 and EC_2 respectively. Under the negligence rule, if the injurer is nonnegligent then we have:

$$EC_1 = c + L(c, d) \text{ and } EC_2 = d;$$

and if the injurer is negligent then we have:

$$EC_1 = c \text{ and } EC_2 = d + L(c, d).$$

Both victim and injurer will be assumed to prefer smaller expected costs to larger expected costs and be indifferent between alternatives with equal expected costs.

If the only costs of interaction between victim and injurer are costs of care and expected accident loss then total social costs of harmful interaction are simply the sum of them; and therefore the concept of efficiency of negligence rule can be defined as follows: The negligence rule is efficient for a given application satisfying (A1)-(A4) iff $(\forall(\bar{c}, \bar{d}) \in C \times D)[(\bar{c}, \bar{d}) \text{ is a Nash equilibrium} \rightarrow (\bar{c}, \bar{d}) \in M]$ and $(\exists(\bar{c}, \bar{d}) \in C \times D)[(\bar{c}, \bar{d}) \text{ is a Nash equilibrium}]$.⁴ In other words, the negligence rule is efficient for a particular application satisfying (A1)-(A4) iff (i) every Nash equilibrium is total social costs minimizing, and (ii) there exists at least one Nash equilibrium. The negligence rule is defined to be efficient for a set of applications satisfying (A1)-(A4) iff it is efficient for every application belonging to the set.

If other costs⁵ like the costs of using the legal system are also taken into account then the notion of efficiency would have to be modified appropriately by taking into consideration all costs of harmful interaction, not merely the costs of care and expected accident loss.

2 Strategic Considerations When Negligence is Defined as Shortfall from Due Care

If we consider a simplified accident context in which only costs of interaction between

⁴Throughout this paper we consider only pure-strategy Nash equilibria.

⁵On various categories of costs of accidents see Calabresi (1970).

victim and injurer are costs of care and expected accident loss then the negligence rule can be used to minimize these costs provided the due care level is set appropriately. If \bar{d} is set equal to d^* , where for some c^* , $(c^*, d^*) \in M$, then under the negligence rule both victim and injurer are induced to take care levels which result in minimization of sum of costs of care and expected accident loss. In fact the following proposition holds⁶:

Proposition 1 *Let $\langle C, D, L, \bar{d} \in D \rangle$ be an application satisfying Assumptions (A1)-(A4). If $\bar{d} = d^*$, such that $(\exists c^* \in C)[(c^*, d^*) \in M]$ then negligence rule is efficient for $\langle C, D, L, \bar{d} \rangle$.*

Thus negligence rule is efficient for all applications satisfying (A1)-(A4) provided the due care level is set at a level, which, for an appropriately chosen victim's care level, minimizes the sum of precaution costs and expected accident loss $(c + d + L)$. If the due care level is not $(c + d + L)$ - minimizing then it is no longer the case that negligence rule is efficient for every application satisfying (A1)-(A4).

From the perspective of minimization of social costs it is clearly desirable that those who are in a position to undertake reduction of expected loss at a lower cost than others are the ones who take care rather than those who can do so only at a higher cost. As negligence rule under the conditions of Proposition 1 is an efficient rule it follows that if victim's costs of taking care remain the same but injurer's costs of taking care vary one would expect due care level for the injurer to tend to increase as his costs of taking various levels of care decrease as is illustrated by the following example:

Example 1

Suppose both victim and injurer have three alternatives: no care, moderate care, high care; and let these three alternative levels of care cost each of them 0, 1 and 2 respectively.

Thus,

$$C = D = \{0, 1, 2\}.$$

For $(c, d) \in C \times D$, let $L(c, d)$ be as given in the following array:

		d		
		0	1	2
c	0	10.00	8.50	7.75
	1	8.50	7.00	6.25
	2	7.75	6.25	5.50

⁶See Brown (1973).

Social costs $[c + d + L(c, d)]$, $(c, d) \in C \times D$, therefore are as given in the following array:

		d		
		0	1	2
c	0	10.00	9.50	9.75
	1	9.50	9.00	9.25
	2	9.75	9.25	9.50

Thus $(1, 1)$ is the unique social costs minimizing configuration of costs of care. If $\bar{d} = 1$ then under the negligence rule $c + d + L(c, d)$ is minimized; injurer and victim having expected costs of 1 and 8 respectively.

Suppose there is no change in costs of taking alternative levels of care by the victim; but for the injurer the cost of taking any particular level of care now is only .7 of what it was earlier. Then we have:

$$C = \{0, 1, 2\}, D = \{0, .7, 1.4\}.$$

Social costs $[c + d + L(c, d)]$, $(c, d) \in C \times D$, are as given in the following array:

		d		
		0	.7	1.4
c	0	10.00	9.20	9.15
	1	9.50	8.70	8.65
	2	9.75	8.95	8.90

Thus $(1, 1.4)$ is the unique social costs minimizing configuration of costs of care. If $\bar{d} = 1.4$ then under the negligence rule $c + d + L(c, d)$ is minimized; injurer and victim having expected costs of 1.4 and 7.25 respectively.

Thus negligence rule under the conditions of Proposition 1 achieves minimization of social costs by putting greater burden on the more efficient individuals. The obverse side of this feature of negligence rule is that it tends to punish dexterity and reward incompetence. This perverse feature of the negligence rule is in some ways quite similar to the perversity of utilitarianism which would allocate most of the good things of life to gluttons with a keen sense of enjoyment rather than to those who are industrious but without highly cultivated tastes. Utilitarianism tends to reward investment of time in cultivating taste and punish investment of time in productive activities. The negligence rule tends to reward the class of injurers who are inefficient and punish those who are efficient.

In view of this perverse feature of the negligence rule if an injurer is in a position to bring about a reduction in his cost of care by expending an amount which is cost-justified, there is no guarantee that such a reduction would be undertaken. In the context of the example discussed above, improved precaution technology is resulting in reduction of social costs from 9.00 to 8.65, a net gain of 0.35. If such an improvement can be brought about at an expense of less than 0.35, then from a social perspective it would be worthwhile. But, the injurer who might be in a position to bring about such an improvement would be a loser if he does so as he will have to not only bear the expenses which would bring about such an improvement in the precaution technology in the first place; but also greater cost of care as it will go up from 1 to 1.4. Needless to say, no rational injurer would undertake such an improvement in precaution technology.

In fact, in general, there would be incentive for individuals with greater dexterity to hide their superior abilities and pretend that they also have similar abilities as the less dexterous ones. If they can successfully misrepresent their abilities of taking care they could end up paying less than otherwise. Thus, it might pay to invest time and effort in misleading the courts regarding one's ability to take care. As an illustration suppose that the actual accident context is that of Example 1 with improved precaution technology. If there is no misrepresentation then injurer's expected costs would be 1.4. If injurer is successful in pretending that his D is $\{0, 1, 2\}$ rather than $\{0, .7, 1.4\}$ then his gain will be .4. Therefore as long as he can successfully misrepresent by expending an amount less than .4 he would so.

Thus we see that the rule of negligence can at times provide disincentives for increasing one's efficiency by undertaking cost-justified expenses for the purpose; and incentives for expending resources for the purpose of misleading courts.

The property of negligence rule of minimizing the sum of precaution costs and expected accident loss crucially depends on the ability of courts to fix due care level on a case-by-case basis. This by itself would require expending of considerable resources. Moreover, as discussed above, parties would normally have incentives to misrepresent their abilities to take precaution for accident prevention, which would tend to further increase the costs of eliciting correct information for the purpose of fixing due care levels on a case-by-case basis.

Under the negligence rule there is one further source of strategic manipulation. This arises from the fact that taking care in one context can have beneficial implications in another context. Suppose injurer's taking care not only brings about a reduction in ex-

pected accident loss in the context of victim-injurer interaction under consideration but also in another context. Then, in calculating the optimal amount of care one should take into account not only the context under consideration but also the other context or contexts. In general, more contexts one includes, the greater would be the care which would minimize social costs. Thus, from the perspective of injurer the narrower the scope the better it is for him. From the perspective of minimization of social costs if the net benefit from taking care, taking into consideration all contexts, is positive then care should be taken. Because of limitation of knowledge, in general no injurer would be in a position to take into account all contexts. Given this limitation of knowledge, from the perspective of the society, what is desirable is that as long as the benefit of including a context exceeds the cost of required deliberation, the context should be included. As costs of deliberation are likely to be different for different injurers, what is foreseeable and what is unforeseeable would differ from injurer to injurer. As greater foreseeability would result in general in greater due care, injurers would have incentive to misrepresent their ability to foresee various contingencies.

One possible way that might be considered for eliminating strategic aspects of specification of due care level is to abandon individualized specifications and go in for a uniform specification for all injurers notwithstanding differences in costs of taking care. It is immediately clear that if there is a uniform due care for all injurers then there is no incentive for any injurer to expend resources for misrepresenting his abilities of taking care. Thus the wasteful use of resources discussed above in the context of individualized specification of due care would not arise if there is a uniform due care for all injurers. Also, if an injurer can reduce costs of care by expending resources in a cost-effective manner he would do so as the both the gains and costs would accrue to him. Another advantage of a uniform due care level is that the costs of using the legal system would tend to be smaller compared to the case when for each accident case the due care level has to be determined separately on the basis of effectiveness of the parties in taking various levels of care.

On the minus side, if there is a uniform due care level for all injurers then the property of negligence rule of minimizing the sum of precaution costs and expected accident loss no longer holds. Furthermore, it is not the case that with uniform due care there is no scope for strategic considerations. While, given the fixity of uniform due care, no individual has any incentive to misrepresent his abilities or not to undertake socially beneficial measures for increasing effectiveness of care, the set of injurers as a whole has all the incentives for strategic manipulations which have been discussed above. To see this, first we note that if negligence rule is to play some role in reducing costs of accident, then in fixing a uniform due care the average effectiveness of care-taking by injurers vis-a-vis the

average effectiveness of care-taking by victims has to be taken into account. But then for the set of injurers as a whole all the points, on which individual injurers in the case of individualized due care specification found it beneficial to behave strategically, become relevant. Therefore in most instances one can expect some kind of collective or organization of injurers to emerge which would attempt to do what individuals in a setting of individualized due care can be expected to do.

3 Strategic Considerations When Negligence is Defined as Existence of a Cost-Justified Untaken Precaution

Before we discuss the strategic aspects of the negligence rule when the notion of negligence is defined as existence of a cost-justified untaken precaution, we note that this notion of negligence is logically completely independent of the notion of negligence as shortfall from due care where due care is defined appropriately from the perspective of minimization of social costs. This can be seen from the two examples which follow:

Example 2

Let $C = D = \{0, 1, 2\}$.

For $(c, d) \in C \times D$, let $L(c, d)$ be as given in the following array:

		d		
		0	1	2
c	0	10.0	8.5	7.4
	1	8.5	7.0	6.1
	2	7.4	6.1	5.3

Social costs $[c + d + L(c, d)]$, $(c, d) \in C \times D$, therefore are as given in the following array:

		d		
		0	1	2
c	0	10.0	9.5	9.4
	1	9.5	9.0	9.1
	2	9.4	9.1	9.3

Thus $(1, 1)$ is the unique social costs minimizing configuration of costs of care. If due care level for the injurer has to be set appropriately from the perspective of minimization of

social costs then it has to be $\bar{d} = 1$.

Now, consider the situation when both victim and injurer are taking 0 care. Under the notion of negligence(sf) injurer is negligent because $0 < 1 = \bar{d}$. Injurer is negligent under the notion of negligence(up) as well because if injurer takes care equal to 1 expected loss will decrease by 1.5 and cost of care will increase by 1; thus $d = 1$ is a cost-justified untaken precaution.

Next consider the situation when victim is taking 0 care and injurer is taking care = 1. Under the notion of negligence(sf) injurer is nonnegligent as $1 = \bar{d}$. But injurer is negligent under the notion of negligence(up) because if injurer takes care equal to 2 expected loss will decrease by 1.1 and cost of care will increase by 1; thus $d = 2$ is a cost-justified untaken precaution.⁷

Consider the situation when victim is taking 0 care and injurer is taking care = 2. Under the notion of negligence(sf) injurer is nonnegligent as $2 > \bar{d}$. Injurer is also nonnegligent under the notion of negligence(up) because 2 being the highest feasible level of care the question of there existing a cost-justified untaken precaution does not arise.

Example 3

Let $C = D = \{0, 1\}$.

For $(c, d) \in C \times D$, let $L(c, d)$ be as given in the following array:

		d	
		0	1
0		10.0	8.5
c			
1		8.6	8.0

Social costs $[c + d + L(c, d)]$, $(c, d) \in C \times D$, are as given in the following array:

⁷Grady (1984) proceeds under the assumption that one can infer non-existence of a cost-justified untaken precaution from the fact that injurer is taking care at a level which is greater than or equal to the social costs minimizing level. This example shows that in general such an inference cannot be made. It is only under very restrictive conditions that it would be possible to make this inference.

	d	
	0	1
0	10.0	9.5
c		
1	9.6	10.0

Thus $(0, 1)$ is the unique social costs minimizing configuration of costs of care. If due care level for the injurer has to be set appropriately from the perspective of minimization of social costs then it has to be $\bar{d} = 1$.

Now, consider the situation when victim is taking care $c = 1$ and injurer is taking care $d = 0$. Under the notion of negligence(sf) injurer is negligent because $0 < 1 = \bar{d}$. Injurer is however nonnegligent under the notion of negligence(up) because if injurer takes care equal to 1 expected loss will decrease by .4 only and cost of care will increase by 1; thus there does not exist any cost-justified untaken precaution.

Example 2 shows that it is possible for an injurer to be (i) negligent(sf) as well as negligent(up); (ii) nonnegligent(sf) and negligent(up); and (iii) nonnegligent(sf) and non-negligent(up). Example 3 shows that it is possible for an injurer to be (i) negligent(sf) but nonnegligent(up). Therefore it follows that the following proposition holds:

Proposition 2 *The notion of negligence(sf) is logically independent of the notion of negligence(up).*

We noted earlier that if negligence is defined as shortfall from due care and due care level is set appropriately from the perspective of social costs minimization then the negligence rule is efficient for every application satisfying A(1)-A(4). The corresponding result, however, does not hold if negligence is defined as existence of a cost-justified untaken precaution, as the following example shows.

Example 4

Let C, D and L be as in Example 2.

Defining negligence as existence of a cost-justified untaken precaution, we find injurer to be negligent at (c, d) , $(c, d) \in C \times D$, as given in the following array:

		d		
		0	1	2
c	0	<i>negligent</i>	<i>negligent</i>	<i>nonnegligent</i>
	1	<i>negligent</i>	<i>nonnegligent</i>	<i>nonnegligent</i>
	2	<i>negligent</i>	<i>nonnegligent</i>	<i>nonnegligent</i>

Therefore the configuration of expected costs of victim and injurer $(EC_1(c, d), EC_2(c, d))$ at (c, d) , $(c, d) \in C \times D$, is as given in the following array:

		d		
		0	1	2
c	0	(0, 10)	(0, 9.5)	(7.4, 2)
	1	(1, 8.5)	(8, 1)	(7.1, 2)
	2	(2, 7.4)	(8.1, 1)	(7.3, 2)

Given that the injurer is taking care $d = 1$; if victim takes care $c = 1$ then his expected costs $EC_1(1, 1)$ will be 8, but if he takes care $c = 0$ then his expected costs $EC_1(0, 1)$ will be 0. From this it follows that the the unique social costs minimizing configuration $(1, 1)$ is not a Nash equilibrium.

In view of the above example it follows that the following proposition holds:

Proposition 3 *Let the notion of negligence be negligence(up). Let \mathcal{A} be the set of all applications $\langle C, D, L \rangle$ satisfying Assumptions (A1)-(A4). Then negligence rule is not efficient with respect to \mathcal{A} .*

While discussing strategic aspects of negligence rule, negligence being defined as shortfall from due care, we saw that the rule provided incentives for misrepresenting one's abilities to take care. When negligence is defined as existence of a cost-justified untaken precaution, the rule can be manipulated even if there is no misrepresentation of relevant facts having a bearing on the effectiveness of care by the two parties. This is because under this way of defining the idea of negligence whether one is negligent or not depends not only on one's own care level but also on the other party's care level.

This particular strategic aspect is in addition to other aspects which were discussed in the context of negligence as shortfall from due care level, where due care level is set on an individualized basis. Various ways in which the negligence rule gave rise to strategic considerations in the setting of individualized due care levels all emanated from the

fact that individuals possessing greater abilities of taking care are required to undertake greater levels of care in relation to others. This particular feature is present in the notion of negligence as existence of a cost-justified untaken precaution as well.

4 Concluding Remarks

In this paper the negligence rule has been discussed from the perspective of strategic aspects under three different notions of negligence. If the notion of negligence is defined the way it is usually done in the law and economics literature, i.e., as shortfall from due care which is set in an individualized way and at a social costs minimizing level then at least three sources of strategic manipulation arise:

- (i) Individuals may not undertake cost-justified measures to increase effectiveness of their care-taking.
- (ii) Individuals may expend resources for the purpose of misrepresenting their care-taking abilities; such expending of resources being socially wasteful.
- (iii) Individuals may expend resources for socially harmful purpose of misrepresenting their abilities of foreseeing multiple risks.

When due care is set at a uniform level for all injurers, but still with a view to minimize social costs of accidents, then while individuals will have no incentive to manipulate strategically, the set of individuals as a whole will continue to have incentives to manipulate as in (i)-(iii). Whether a collective organization of injurers will emerge or not will of course depend on many factors including potential gains from manipulation and transaction costs involved. When the notion of negligence is defined as existence of a cost-justified untaken precaution then in addition to (i)-(iii) the possibilities of manipulation emerge also on account of the fact that negligence or otherwise of one party now may depend on what the other party does.

Although in this paper only the negligence rule has been analyzed, the strategic considerations which have been discussed are relevant for a wide variety of liability rules. Indeed, the strategic considerations discussed here are relevant for every liability rule which is efficient in the same sense as the negligence rule is. If due care levels are chosen from the perspective of minimizing social costs then it can be shown that a liability rule is efficient iff its structure is such that whenever one party is negligent and the other nonnegligent the entire accident loss is borne by the negligent party.⁸ As the notion of negligence under which this general characterization theorem holds is based on the idea

⁸See Jain and Singh (2002).

of social costs minimization the fundamental feature because of which strategic considerations (i)-(iii) become operative still holds. Thus, it is not just the negligence rule which gives rise to strategic aspects, every efficient rule does.

Another way to state the general manipulability of all efficient liability rules is the following: All the three notions of negligence which have been discussed are such that they give rise to strategic considerations. All the three notions incorporate in some way the objective of minimization of social costs of accidents. Minimization of social costs requires allocating care-taking in such a way that those who are better at it do more of it compared to the others. To induce more able persons to take more care, the negligence standards must be chosen in such a way that more able persons have to take greater care in order to escape from being adjudged negligent compared to the others. Thus notions of negligence having the perverse implication of punishing ability and dexterity is a direct consequence of attempting to use the idea for minimization of social costs. This perverse implication, however, provides inappropriate signals to rational individuals giving rise to possibilities of strategic behaviour which will work in the opposite direction, i.e., against the objective of minimization of social costs. While in the law and economics literature question of efficiency of liability rules has been analyzed extensively and the economic logic of notions of negligence studied in depth, the strategic aspects associated with these notions of negligence have not received the requisite attention. There is need to look at these strategic aspects more closely as from the preliminary analysis carried out in this paper it appears to be the case that achieving the objective of minimization of social costs by the use of liability rules may be much more difficult than has been thought to be the case hitherto.

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