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ECONOMICS AND THE LAW

EDITED BY
PETER NEWMAN

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justification for supporting a political candidate who in their judgment will be capable of carrying out the policy they favour, rather than the candidate who intends to carry it out.

2. Hidden-hand explanations. Robert Nozick proposes to see a hidden-hand explanation as the opposite of an invisible hand explanation. The latter explains what looks to be the product of a person's intentional design. A hidden-hand explanation, conversely, 'explains what looks to be merely a disconnected set of facts that (certainly) is not the product of intentional design, as the product of an individual's or group's intentional design(s) (Nozick 1974: 19). (Recall that the purpose of the series of flat tires discussed above.) He suggests, further, that not only are invisible hand explanations satisfying, but that some people also find hidden-hand explanations satisfying, 'as is evidenced by the popularity of conspiracy theories' (ibid).

3. The hiding-hand principle. In discussing development projects in the third world, Albert O. Hirschman offers the principle of the hiding hand as a general principle of action that beneficially hides difficulties from us and thus helps explain or reinterpret certain aspects of human economic activity:

Since we necessarily underemphasize our creativity, it is desirable that we underestimate to a roughly similar extent the difficulties of the tasks we face so as to be tricked by these two offsetting underemphasizes into undertaking tasks that we can, but otherwise would not dare, tackle (Hirschman 1967: 13).

Edna Ulmann-Marulag

See also ADAM SMITH AND THE LAW, FERGUSON, ADAM; HAYEK, FRIEDRICH von; MENDEZ, CARL; SCOTTISH ENLIGHTENMENT AND THE LAW; SPONTANEOUS ORDER.

Subject classifications: 18(i).

J

joint and several liability. The law and economics analysis of the comparison of joint and several liability with non-joint (several only) liability focuses on the relative incentives for deterrence and for settlement generated by the two rules. Part I provides a brief background of the legal regimes. Parts II and III compare, respectively, the deterrence and settlement effects of the two rules.

1. LEGAL REGIMES. The choice between joint and several liability and non-joint liability arises in situations in which the plaintiff's injury results from the actions of multiple parties. Under joint and several liability, if the plaintiff sues against many defendants and prevails against one, it can recover its full damages from that defendant; if the plaintiff prevails against all defendants but some are insolvent, it can recover its full damages from the solvent defendants; and if the plaintiff prevails against all defendants and all are solvent, it can nonetheless choose to recover its full judgment from any defendant or to recover a portion from each. In contrast, under non-joint liability, the plaintiff can recover from a losing defendant only the share of the damages attributable to that defendant.

For joint and several liability, the legal regime needs to be specified further. As shown in Kornhauser and Revesz (1995), the various choices presented below can affect the economic analysis of the consequences of joint and several liability.

First, a right of contribution permits a defendant that has paid a disproportionately large share of the plaintiff's damages as a result of the application of joint and several liability to obtain compensation from a defendant that has paid a disproportionately small share of these damages. Absent a right of contribution, such reallocation is not possible. Second, contribution shares are usually determined, either pro rata (equal division among the defendants) or by reference to comparative fault.

Third, the question of an appropriate set-off rule arises when the plaintiff settles with one defendant and litigates against the other. Under the pro rata set-off rule, the plaintiff's claim against the non-settling defendant is reduced by the amount of the settlement. In contrast, under the proportional set-off rule (sometimes referred to as a proportional set-off rule), the plaintiff's claim against the non-settling defendant is reduced by the share of the liability attributable to the settling defendant.

Fourth, under the pro rata set-off rule, when one defendant settles and the other litigates and ultimately loses, the question arises whether the settling defendant is protected from contribution actions. Fifth, the legal regime must also specify whether settling defendants are entitled to bring contribution actions against defendants who settled for less than their share of the liability.

Sixth, under the pro rata set-off, if the plaintiff enters into an inadequately low settlement with one defendant, the other defendant is responsible for the shortfall if it litigates and loses. To protect the interests of non-settling defendants, courts sometimes require 'good faith' bearings on the adequacy of settlements.

Seventh, if the plaintiff joins all the joint tortfeasors in a single suit, its claims against all of them will be adjudicated in the same proceeding. If the plaintiff chooses not to join all the tortfeasors as defendants, the question arises whether a named defendant can join another tortfeasor as a third-party defendant. Otherwise, the named defendant would have to file a separate action for contribution after the adjudication of its liability to the plaintiff.

2. DETERMINATION. We compare here the deterrence effects of joint and several liability and non-joint liability, when coupled with both rules of negligence and strict liability. We perform the comparison first for cases in which the defendants are fully solvent (Kornhauser and Revesz 1989) and then consider the effects of limited solvency (Kornhauser and Revesz 1990).

We develop our argument by reference to a model in which two firms, Row and Column, dump hazardous wastes at a single landfill. The actors benefit from this dumping because the wastes are the byproduct of profitable economic activities. At some time in the future, these wastes may leak into the environment and cause serious damage; we think of this damage as the cost of cleaning up the landfill and the surrounding area affected by the release. We take the damage function to be convex (the additional damage caused by one unit of waste increases with increasing amounts of waste in the landfill).

The expected damage of a release is a 'social' loss because it does not fall directly on the dumpers absent a legal provision shifting the liability to them. Instead, it falls on the victim who would have legal responsibility for the cleanup, or, alternatively, that would suffer the consequences if the problem were left unattended. Under our model, each dumper chooses the amount of waste that it will dump.

The socially desirable amount of waste is that which maximizes the social objective function: the sum of the benefits deriving from the actor minus the social loss. An economically rational firm, however, does not make its decision based on the social objective function. Instead, it seeks to maximize its private objective function: the benefit that it derives from the activity that leads to the production of the waste minus whatever share of the social loss the legal regime allocates to it. We model a joint and several liability regime with
joint and several liability

contribution shares determined by reference to the amount of such negligence. (Other rules are discussed in Landa and Pouer 1989; Kornhauser and Revesz 1989; Tennenbaum 1989; and Wright 1989: 1169-78.) We assume that a plaintiff, say for example, is a government, suits both defendants in the same proceeding, and we exclude the requiremenent to submit to double liability. The effects of joint and several liability when settlement is possible are analyzed in Kahn 1994 and Spier 1994.

A. FULL SOLVENTY. (1) Negligence. We assume in the case of negligence that the standard of care will be chosen at the level that maximizes social welfare; departures from the social optimum in setting the standard of care are considered in Kornhauser and Revesz 1989: 956-70.

For expositional convenience, we assume that negligent actors liable only for the losses that would have been prevented through due care (in this example, for the additional losses that result in a firm dumping more than the socially optimal amount, rather than the social optimum amount). We show in Kornhauser and Revesz (1989) that the essentially the same results hold if negligent actors are responsible for the full losses (even those that would have occurred anyway).

Under these circumstances, joint and several liability will produce the socially optimal result. If one of the actors, say, A, is not negligent, it would not be rational for Column to be negligent. If this actor was contemplating dumping more than the standard of care, it would be in B's interest for Column to dump less than the standard of care if B's dumping has a higher social utility than that of Column. If Column did not have a reason to be negligent, Column would, in turn, be liable for a larger share of the damage, as it would be in B's interest to dump more than the socially optimal amount. Such a decision on the part of Column would, of course, increase the damage to the victim. Column would, in turn, be liable for a larger share of the damage, as it would pay in proportion to the amount of waste that is dumped. As long as the damage function is convex, however, the increase in Column's liability is less than the increase in the social welfare, which demonstrates that dumping more than the socially optimal amount has the effect of increasing Row's liability as well. As a result of this externality, strict liability leads to under-derection of whether it is coupled with joint and several liability or not.

McIntyre and Segerson (1991) consider a modification of the strict liability rule that does in fact lead to efficient dumping. In this case, dumping has the same marginal cost as the activity. Under their formulation, each actor is responsible for the marginal damage that it causes. This rule, which admits to the social optimum, is efficient, but it is not clear whether the total payments from the two defendants would exceed the plaintiff's actual damages.

B. LIMITED SOLVENTY. Here, each defendant is defined not only by its benefit function (the rate at which its generation of costs is reduced) but also by its ability to pay. This ability to pay the defendant's share of the liability leads to the same conclusion that two defendants are liable for the full social welfare as if only one defendant is responsible. The additional losses that result in a firm dumping more than the socially optimal amount, rather than the social optimum amount. We show in Kornhauser and Revesz (1989) that the essentially the same results hold if negligent actors are responsible for the full losses (even those that would have occurred anyway).

The analysis is different for a non-joint liability rule, under which the negligent defendant would be liable for the full social welfare as if only one defendant is responsible. The additional losses that result in a firm dumping more than the socially optimal amount, rather than the social optimum amount. We show in Kornhauser and Revesz (1989) that the essentially the same results hold if negligent actors are responsible for the full losses (even those that would have occurred anyway).

Under joint and several liability, Column has no incentive to dump a smaller amount than Column (x*), which is the optimal dumping amount of Column conditional on Row's dumping. Column's optimal amount of dumping is then (x*, a). If Column is not infinitely solvent, there are two possible equilibria: (x*, a), if Column's solvency is greater than Column's critical solvency (x*<a), or (x*, a) if Column's solvency is lower. In column j under non-joint liability, Column is not responsible for the whole liability, but only for its proportion. If Column has infinite solvency, it will dump a, an amount larger than x, though smaller than x*.

Table 1

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<th>Region</th>
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In region C in Table I, joint and several liability is therefore preferable to non-joint liability. From a social welfare perspective, the joint and several liability is preferable to any of the equilibria at (x*, a). When one actor is generating x, joint and several liability makes the other actor see the full social opportunity cost of dumping as if he were non-infinitely solvent. Non-infinitely solvent liability does not. Thus, a is the optimal response by Column to Row's choice of x.*

In region B, however, the reverse is true. Joint and several liability induces Column to act in the same manner that it would if it were wholly insolvent, dumping (x*), whereas non-infinitely solvent induces Column to act in the same manner that it would if it were infinitely solvent, dumping (a). In this region, non-joint liability has the advantage of better social welfare properties. (Of course, in region A, both rules have the same properties.)

Consider a situation under which Row's solvency is x, and Column's solvency is infinite, and that both firms are socially optimal. We assume that Row's solvency creates a deterrence incentive to Row. Row will therefore dump up to the point at which any additional benefit (in terms of reduced costs of production) from additional dumping becomes zero. This amount, which we call (x*), is greater than zero. It means that if it would have dumped an amount (x* smaller than x, which is the socially optimal amount of dumping by Row.

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In the last two cases, the results are perfectly correlated. Thus, if the plaintiff litigates against both defendants, it either prevails against both (with a probability of 50%) or loses to both (also with a probability of 50%).

The plaintiffs may either litigate or settle the claim. Settlement negotiations have the following structure. The plaintiff makes settlement offers to the two defendants. Row and Column accept or reject the offers. If these offers are not accepted, the plaintiffs may either litigate or settle the claim.
As a result of the surplus that the plaintiff obtains from litigating against both defendants, the plaintiff is not independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. As a result of the extraordinary likely independent. 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both and recovers $40 from Row and $60 from Column; and a perfect equivalence prevails only against Row and recovers $40. In turn, Row’s expected loss is $20 and Column’s expected loss is $30.

If the plaintiff offered Row a settlement of $20, its expected recovery from Column is $40 (a 50% probability of recovering its damages of $100 minus Row’s settlement of $20), and Column would be willing to settle for this amount. In turn, if the plaintiff offered Column a settlement of $40, its expected recovery from Row is $20 (a 50% probability of recovering its solvency of $40), and Row would be willing to settle for this amount. Thus, as in the case of non-liability, where the solvency of one of the defendants is sufficiently low and litigation costs are zero, the parties are indifferent between settling and litigating.

In summary, the result that joint and several liability discourages settlements when the plaintiff’s probabilities of success are independent holds over a range of solvences. A similar analysis (Komnouras and Revesz 1998b) establishes that, when the plaintiff’s probabilities of success are perfectly correlated, joint and several liability promotes settlements over a range of solvences. For solvences below a given threshold, however, joint and several liability into two probabilities of success against non-joint liability. The relevant results are summarized in Table II.

Table II

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<tr>
<th>Independent probabilities</th>
<th>Joint-and-several liability</th>
<th>Neutrality effect</th>
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<tr>
<td>Probability of success</td>
<td>Settlement</td>
<td>Neutrality effect</td>
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<td>Diverges</td>
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<td>Encourages prob.</td>
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<td>Probabilities</td>
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In summary, from the perspective of both inducing deterrent and inducing settlements, there is no dominant relationship between joint and several liability and joint liability. From a deterrence perspective, the joint-and-several liability rules turn the levels of solvency of the defendants. In contrast, from a settlement perspective, the comparison turns on the correlations of the plaintiff’s probabilities of success against the defendants.

Lewis A. Komnouras and Richard L. Revesz

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BIBLIOGRAPHY


#### Joint Ventures

Joint ventures are a type of firm that is owned and managed by independent firms that pool resources for a specific objective. Firms enter into joint ventures for some of the same reasons they combine in other ways (Boudreau 1991; de Jonge and Terz 1996). Joint ventures differ from transactions with third parties in that shareholders and co-managers may be more likely independent partners to a conventional long-term contract than co-owners of a firm. As a result, ventures may not want to hold a firm or an equity claim before its debts or financial liabilities to the firm. They may therefore contract for other terms or explicitly adopt a non-partnership standard for joint ventures. In particular, they may incorporate in order to limit their liability. However, corporate definitions (Cowan 1972; Williamson 1979b) may be less appropriate for joint ventures than partnership rules because they are designed for larger firms with passive owners. Even incorporated joint ventures may take some of the attributes and rules of partnership other than personal liability. Alternatively, joint ventures may organize as a limited liability company or a stock corporation, or use partnership-type governance rules with limited liability.

#### Joint Ventures

Joint ventures are hybrids between firms and long-term contracts such as cross-licensing agreements. A joint venture differs from a conventional contract and resembles a firm in that it submits a governance mechanism allowing the ventures to share control over joint-dealings or ex ante contractual determination of prices and quantities. Under joint venture agreements, each party has ultimate control over its contribution through a veto power. The ventures cooperate or deal at arm’s length outside the limited sphere of their venture. Joint ventures differ from other forms of collaboration in that in which the firms make long-term commitments and save many decisions for later negotiation (MacNeil 1978; Williamson 1975, 1981). The hybrid nature of joint ventures affects both the internal rules governing the venture, which are designed to allocate cooperation results between the ventures’ differing private interests, and the application of the antitrust laws, which are supposed to prevent competitors from inefficiently restricting competition.

**Default Rules.** The joint venture agreement normally governs dealings between the ventures and between the venture and third parties. Default rules of the applicable business association statute fill gaps in the agreement. A contract that the parties designate as a joint venture or that has the characteristics of a joint venture and is not incorporated or formed as any particular type of business association generally is treated as a partnership in most countries (Hechen 1972). Partnership is a basic type of business in which owners, directly participate in management, and are agents of other business, and are personally liable for the firm’s debts. The following discussion focuses on United States, German, and Germanic partnership law similar to the partnership law of many other countries (see Partnership).

Partnership is defined under US law as an "association of two or more persons as co-owners in a business for profit" (UFA § 1), (RUPA § 202). This definition fits joint ventures. Like other co-owners (Grossman and Hart 1986), joint ventures share the residual claim to earnings and rights to control and manage the joint venture property (UFA § 7 and 18, RUPA § 202 and 401). Unlike an association of persons, a joint venture has no single dominant partner that exercises ultimate control and has a right to the entire profits.

**Partnership default rules may be inappropriate for many joint ventures because of the hybrid nature of such firms. As discussed above, joint ventures are more likely independent partners to a conventional long-term contract than co-owners of a firm. As a result, ventures may not want to hold a firm or an equity claim before its debts or financial liabilities to the firm. They may therefore contract for other terms or explicitly adopt a non-partnership standard for joint ventures. In particular, they may incorporate in order to limit their liability. However, corporate definitions (Cowan 1972; Williamson 1979b) may be less appropriate for joint ventures than partnership rules because they are designed for larger firms with passive owners. Even incorporated joint ventures may take some of the attributes and rules of partnership other than personal liability. Alternatively, joint ventures may organize as a limited liability company or a stock corporation, or use partnership-type governance rules with limited liability.**

**MANAGEMENT AND VOTING.** Governance rules for joint ventures are managed by default by directors elected by a majority of the share ownership, subject to majority shareholder vote on important decisions such as amendment of the agreement or charter. These rules are designed for firms that are owned mostly by passive investors who make only financial contributions and who do not want to participate in management. By contrast, joint ventures are active owners who normally would not agree to let a venture that contributes slightly more than half the assets elect the entire board and control all management decisions of the firm. Accordingly, ventures normally vary the corporate rules in their agreement. Even if they do not, a court may apply partnership default rules or hold that a joint venture agreement that anticipated incorporation continues to apply even after incorporation (Bromberg and Ribstein 1988-97, § 7.3(b)(3)).

**The act or consent of one joint venturer may or may not bind the joint venture in transactions with third parties. Under partnership rules, ventures or their agents are co-managers who can bind the firm in ordinary business transactions with third parties (UFA § 103, RUPA § 303-305). Similarly, the chief executive officer of an incorporated joint venture can bind the firm to ordinary transactions, while a director or shareholder vote may be necessary to bind the firm to extraordinary transactions. The limited scope of the venture may restrict the "ordinary" transactions that may bind the firm, in apparent authority to bind the venture.

**Neither a partnership nor corporation default rules may be appropriate for joint ventures. Since a joint venture may resemble a long-term contract in which the parties retain ultimate decision-making power, the parties may require a contract that holds a veto power that permits it effectively to maintain control over its contribution to the venture. As in other long-term contracts, a joint venture agreement often must rely more on renegotiation and reputational incentives than on their contractual governance mechanism (Brody 1982; Halonen 1996).**