

CONTRIBUTION AMONG ANTITRUST DEFENDANTS: A LEGAL AND ECONOMIC ANALYSIS*

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INTRODUCTION

FOR purposes of remedy, a private damages action under the federal anti-trust laws is a tort action. Accordingly, when defendants are found to have conspired to fix prices, or to have engaged in other unlawful joint action, they are joint tortfeasors.

At common law there was no contribution among joint tortfeasors. This meant that the plaintiff could proceed against a single wrongdoer, leaving the others to pay nothing. If he obtained a judgment against several wrongdoers, he could elect how much to collect from each one; a defendant who paid more than an equal or "fair" share of the judgment had no recourse against either the plaintiff or the favored defendants. The common law rule was especially well established in the case of intentional tortfeasors, and although the rule has been modified by statute (and occasionally by judicial decision) in most states, intentional tortfeasors usually are excepted from the modification and thus have no right to contribution.

Lately the application of the no-contribution rule to federal antitrust cases has been sharply challenged. The circuits have split on the question, and there is a movement in Congress to provide explicitly for a right of contribution in price-fixing cases. This article uses economics to analyze whether contribution would retard or advance the deterrent and compensatory objectives of anti-trust law and encourage or discourage the settlement of antitrust suits.

Part II is the economic analysis. Much of our analysis concerns the effects of contribution and no-contribution rules on settlement, because the strongest challenge to the traditional approach is its allegedly unfair effect on nonsettling defendants. Our analysis of the effect of different approaches to contribu-

* We thank Dennis W. Carlton, Hammond E. Chaffetz, Daniel M. Friedman, Douglas H. Ginsburg, Timothy Muris, and Steven Shavell for their helpful comments. We hope they will forgive our occasional disagreement with some of their suggestions.

tion extends the recent analysis by two of the authors of this article of the economics of contribution in conventional tort cases.¹

Part I discusses the threshold issue whether an appeal to economics is the proper way to resolve the controversy about antitrust contribution. Conceivably, history or legislative intent show that the relevant antitrust statutes, or precedents involving other federal rules, lay down a rule to govern without regard to the economics of the problem. (Of course, arguments based on statutory purpose or on precedent would not decide the question whether Congress should enact a rule of contribution to govern antitrust cases.) Perhaps, also, "fairness" rather than economic analysis should determine the outcome of the contribution controversy. We argue in Part I that the question of antitrust contribution is an open one in the courts as well as Congress and that economic analysis supplies the correct framework within which to answer the question.

Part III gathers together the strands of the earlier parts and makes concrete policy recommendations. We make clear that a rule of no contribution provides greater deterrence to violations of the antitrust laws than any rule of contribution. Whether the rule of no contribution is efficient from an overall social standpoint is a more difficult question. Considerations of risk aversion and of legal error make it impossible to conclude, on the basis of existing knowledge concerning the operation of the no-contribution rule, which rule is preferable.

I. COMMON LAW, CONTRIBUTION, AND FAIRNESS

A. *History of the Question*

The principle that one tortfeasor has no right to contribution from another was first stated in 1799, in the English case of *Merryweather v. Nixan*,² which involved an intentional tort. The principle was adopted by the state courts in the United States and extended to nonintentional torts (accident cases). There is some question whether the rule became firmly established in accident cases in the United States until the early years of this century,³ but there was never any doubt about the position of the U.S. Supreme Court. In a series of cases decided between 1830 and 1905, the Court made clear that, so far as the federal common law was concerned (that is, the law applied in diversity cases

¹ See William M. Landes & Richard A. Posner, *Joint and Multiple Tortfeasors: An Economic Analysis*, 9 J. Legal Stud. 517 (1980).

² 8 Term. Rep. 186, 101 Eng. Rep. 1337 (K.B. 1799). The report of the case is spare, but the implication was not missed. Compare *Everet v. Williams*, 9 L.Q. Rev. 197 (Ex. 1725) (refusing to adjudicate a bill of account between two highwaymen).

³ See William L. Prosser, *The Law of Torts* 306 (4th ed. 1971); Landes & Posner, *supra* note 1, at 519 & n.4.

before *Erie*), there was no right of contribution among joint tortfeasors for either intentional or nonintentional torts.⁴ The rule was so firmly established that in 1952, in declining to allow contribution in an admiralty case, the Court could state: "[i]n the absence of legislation, courts exercising a common-law jurisdiction have generally held that they cannot on their own initiative create an enforceable right of contribution as between joint tortfeasors."⁵

The rule of no contribution interacted with the settlement of litigation in the following way. A release of one joint tortfeasor discharged the liability of all joint tortfeasors, so a settlement with one tortfeasor in which a release was given would prevent the plaintiff from going after other joint tortfeasors.⁶ If, however, the plaintiff was careful to avoid giving a release, he could settle with one or more of the defendants out of court and pursue the remaining defendants for the rest of his loss. How did a settling defendant escape further liability if he was not released? The plaintiff could covenant as part of the settlement agreement not to collect from the settling defendant any part of the judgment that he might obtain in an action against other defendants.⁷ Through the covenant device a plaintiff could settle for small amounts with all but one defendant and then "go after" that defendant for the remaining joint liability.⁸ (The plaintiff could not, however, collect a total of settlements and

⁴ See *Bartle v. Nutt*, 29 U.S. (4 Pet.) 184, 187-88 (1830); *Chicago City v. Robbins*, 67 U.S. (2 Black) 418, 424-25 (1862) (dictum; case actually involved indemnity); *Selz v. Unna*, 73 U.S. (6 Wall.) 327, 336 (1867) (dictum; case enforced an agreement among defendants to share liability); *Washington Gas Light Co. v. Lansden*, 172 U.S. 534, 552 (1899); *Union Stock Yards Co. v. Chicago B & Q R.R.*, 196 U.S. 217, 224 (1905) (dictum; case involved indemnity); *Halcyon Lines v. Haenn Ship Ceiling & Refitting Corp.*, 342 U.S. 282 (1952). *Bartle* is closer to *Everet* than to *Merryweather*, but it has been understood since as adopting the *Merryweather* approach. *Selz* and *Washington* cited *Merryweather* with approval.

⁵ *Halcyon Lines v. Haenn Ship Ceiling & Refitting Corp.*, 342 U.S. 285 (1952).

⁶ See, e.g., *Chicago & Alton R.R. v. Wagner*, 239 U.S. 452, 456-57 (1915); *Hunt v. Rhodes*, 26 U.S. (1 Pet.) 1, 16 (1828); *Barret v. Third Ave. R.R.*, 45 N.Y. 628, 635 (1871).

⁷ An attempt to collect such a judgment (for which the settling defendant would be technically liable as a nonreleased joint tortfeasor) would be a breach of the covenant, and the damages for the breach would equal the amount of the judgment. See Prosser, *supra* note 3, at 303.

⁸ The common law rule on releases, though still in force in some states (see, for example, *Cooper v. Robert Hall Clothes, Inc.*, 390 N.E.2d 155 (Ind. 1979) (a "release" of one defendant extinguishes the claim against all defendants even if it explicitly reserves claims against those not released)), has been replaced in several states by a rule that the release of one joint tortfeasor does not release the others if the plaintiff expressly reserves his rights, and in other states by the principle that the effect of a release depends on the intent of the parties. Under the latter principle a release usually does not extinguish the claim against all joint tortfeasors unless it so states. See ALI, Restatement (2d) of Torts § 885(1) and comment d (T.D. No. 16, 1970). The Supreme Court has adopted the intent-of-the-parties approach for antitrust cases. *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 342-49 (1971). Accordingly the covenant-not-to-sue device is generally no longer necessary to preserve a plaintiff's right against nonsettling joint tortfeasors—certainly not in antitrust cases.

judgments in excess of his total loss.) This pattern, as we shall see, is the focus of the complaints against the application of the no-contribution rule in anti-trust cases.

So matters stood in what may be called the classical era of the no-contribution rule. Beginning in 1925 states began enacting statutes providing for contribution among joint tortfeasors.⁹ (A few states had abrogated the common law rule by judicial decision even earlier.) Later Congress adopted a contribution rule for certain securities offenses.¹⁰ Generally, under a contribution statute, a settling defendant has the right to seek contribution from the other joint tortfeasors, but he must prove that the settlement was reasonable; less frequently, a defendant found liable after a trial can recover from a settling defendant a share of the damages awarded at trial.¹¹

⁹ See Landes & Posner, *supra* note 1, at 550-52; Robin Stone Sellers, Contribution in Antitrust Damage Actions, 24 Villanova L. Rev. 829, 856-63 (1979). The 37 state statutes are collected in S. Rep. No. 96-428, 96th Cong., 1st Sess. 12 (1979). Nineteen are based on the Uniform Contribution among Tortfeasors Act, 12 U.L.A. 57 (1975 & 1980 Supp.), which establishes a "pro rata" division of damages among all joint tortfeasors. The 1939 version of the act, which was adopted in some states, permitted division of damages according to relative fault (12 U.L.A. 57 § 2 note); that option was deleted from the 1955 version of the act (12 U.L.A. 87 § 2). Most of the statutes, and the cases in states that allow contribution by virtue of judicial revision of the common law, exclude intentional torts. See § 1(c) of the Uniform Act, 12 U.L.A. 63; Prosser, *supra* note 3, at 267 & nn. 65-67. See also ALL, Restatement (2d) of Torts § 886A(3) (T.D. No. 16, 1970), which provides that "[t]here is no right of contribution in favor of any tortfeasor who has intentionally or recklessly caused the harm." Only the New York statute, N.Y. Civ. Prac. § 1401 (McKinney 1977), explicitly allows contribution among intentional tortfeasors.

England abandoned the common law no-contribution rule in 1935. Law Reform (Married Women and Tort-feasors) Act, 25 and 26 Geo. 5, c. 30. The English statute apparently allows contribution even in the case of intentional torts.

¹⁰ Three of the seven private rights of action created by the Securities Act of 1933 and the Securities Exchange Act of 1934 provide for contribution. Section 11 of the 1933 act creates liability for all signers of, and persons named in, a registration statement containing false statements or material omissions. Section 11(f), 15 U.S.C. § 77k(f) (1976), provides that all signers, persons named, accountants, and underwriters are jointly and severally liable but that they may have "contribution as in cases of contract from any person who, if sued separately, would have been liable to make the same payment, unless the person who has become liable was, and the other not, guilty of fraudulent misrepresentation." This contribution provision—so far as we can determine, the first ever enacted by Congress—evidently was designed to ameliorate the astounding sweep of the liability-creating provision. The other two provisions, which are part of the 1934 act, allow contribution in a variety of situations (including price manipulation) in which the liability provision does not sweep up apparently guiltless persons. See Section 9(e), 15 U.S.C. § 78i(e) (1976), and § 18(b), 15 U.S.C. § 78r(b) (1976). It is interesting, however, that Congress chose not to insert contribution provisions in the other four explicit private remedy sections of the securities acts and that it has inserted a contribution provision in only one statute since then—15 U.S.C. § 1709 (1976), which bans misleading statements or material omissions in papers concerning interstate land transactions.

¹¹ There are four distinct questions concerning the relationship between contribution and settlement. First, may a nonsettling defendant recover contribution from a person who settled? Second, may a settling party obtain contribution from a nonsettler? Third, if one party

The statutory movement toward contribution, and the scholarly criticisms of the no-contribution rule that fed the movement, had by 1974 spilled over into the Supreme Court. In that year the Court adopted a rule requiring contribution in noncollision admiralty cases. It justified the decision on two grounds:

settles, how does this affect the maximum liability of the remaining parties? Fourth, if a settling party has paid more than the share he would have been called on to contribute had he litigated and lost, does this affect the liability of litigating parties? All four have been answered in different ways in different states.

(1) Under section 5 of the 1939 version of the Uniform Contribution among Tortfeasors Act, 12 U.L.A. 58, the release by the plaintiff of one party did not extinguish that party's liability for contribution to other tortfeasors unless the release provided for a pro rata reduction of the maximum liability of the other parties. This became the rule in many states, perhaps most (see, for example, *State Farm Mut. Auto. Ins. v. Continental Cas. Co.*, 264 Wis. 493, 59 N.W. 2d 425 (1953)), but was the object of considerable attack on the ground that it was unfair and discouraged settlements because no party could buy peace. It was "one of the chief causes of complaint where the Act [was] adopted, and one of the main objections to its adoption." 12 U.L.A. 99 (1975). "The idea underlying the 1939 provision was that the plaintiff should not be permitted to release one tortfeasor from his fair share of liability and mulct another instead . . . and that the release from contribution affords too much opportunity for collusion between the plaintiff and the released tortfeasor against the one not released. Reports . . . appear to agree that it has accomplished nothing in preventing collusion. . . . 'Gentlemen's agreements' are still made among lawyers, and the formal release is not essential to them. If the plaintiff wishes to discriminate as to the defendants, the 1939 provision does not prevent him from doing so." *Id.* In 1955 the act was amended so that a settlement with one party discharges that party absolutely. Section 4(b), 12 U.L.A. 98 (1975). See, for example, *Smith v. Fenner*, 399 Pa. 633, 161 A.2d 150 (1960). See also *Judson v. Peoples Bank Trust Co.*, 25 N.J. 17, 134 A.2d 761 (1957) (expressing dissatisfaction with claim reduction as a result of settlement).

(2) A party who settles before judgment is entitled to obtain contribution from other wrongdoers if (a) the settlement releases all joint tortfeasors, (b) the settlement was reasonable, and (c) the settling party establishes that the persons from whom contribution is sought would have been liable. This is the position of the 1955 version of the Uniform Act (see 12 U.L.A. 63, § 1(d) (1975)), and it is followed by all states whether or not they have adopted the Uniform Act. See, for example, *Farmers Mut. Auto. Ins. Co. v. Milwaukee Auto Ins. Co.*, 8 Wis. 2d 512, 99 N.W. 2d 746 (1959).

(3) Sums received by the plaintiff in a settlement with one defendant are subtracted from the plaintiff's damages, thus reducing to the extent of the settlement the maximum recovery from other defendants. 1939 Uniform Act § 4, 12 U.L.A. 57-58 (1975); 1955 Uniform Act § 4(a), 12 U.L.A. 98 (1975); *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 348 (1971); *American Motorcycle Ass'n v. Superior Court*, 20 Cal. 3d 578, 578 P.2d 899 (1978). The plaintiff's claim will be reduced by a greater amount if the release or settlement so provides.

(4) In some states (3) does not hold when the settling party has paid more than the share of the liability that he would have been called on to pay after trial. Suppose there are three defendants, A, B, and C; A settles for \$8,000, B and C go to trial, and the jury determines that plaintiff's damages are \$12,000 and that A, B, and C, are each liable for one-third. In most states the \$8,000 obtained from A is subtracted from the \$12,000, and B and C thus must pay \$2,000 each. In Texas and some other states, however, B and C must pay \$4,000 regardless of the settlement with A, so that the plaintiff receives \$16,000. *Vernon's Tex. Civ. Stat. art. 2212a, § 2(e)* (1975). *Daugherty v. Hershberger*, 386 Pa. 367, 126 A.2d 730 (1956) (Mussmanno, J., dissenting). See also *Sellers, supra* note 9, at 856-63, for a further description of the state rules.

The interests of safety dictate that where two parties "are both in fault, they should bear the damages equally, to make them more careful." And a "more equal distribution of justice" can best be achieved by ameliorating the common-law rule against contribution which permits a plaintiff to force one of two wrongdoers to bear the entire loss, though the other may have been equally or more to blame.¹²

The next year, in holding that damages in collision cases in admiralty should be divided according to the degree of fault, the Court again stated that a rule of contribution would promote deterrence, fairness, and settlements.¹³

The Court's break with its traditional view on contribution was not so abrupt, or far-reaching in its implications, as it may have seemed, for there is a long tradition in admiralty of allowing contribution in collision cases.¹⁴ Moreover, both of the admiralty decisions, and the statutory contribution movement that provided a background to them, recognized a right of contribution only for nonintentional torts. Therefore, the relevance of these developments to the antitrust field may be questioned. The passage quoted above, however, advanced arguments that are not obviously limited to admiralty or nonintentional torts. The movement toward contribution in some areas thus was bound to raise the question whether there should be contribution among antitrust defendants.

Recently one court of appeals, citing the admiralty cases, adopted a principle of "pro rata" contribution for antitrust cases.¹⁵ A bill pending in Congress would establish for price-fixing cases a rule of contribution according to the ratio of sales made by the participants in the conspiracy. The report accompanying the bill adopts the reasoning of the admiralty cases and adds that

¹² *Cooper Stevedoring Co. v. Fritz Kopke, Inc.*, 417 U.S. 106, 111 (1974) (citations omitted).

¹³ *United States v. Reliable Transfer Co.*, 421 U.S. 397, 405 n.11 (1975). See also *Edmonds v. Compagnie Générale Transatlantique*, 443 U.S. 256, 271-72 n.30 (1979) (contribution "remedies the unjust enrichment of the concurrent tortfeasor").

¹⁴ See, for example, *The North Star*, 106 U.S. 17 (1882) (tracing the history back several centuries).

¹⁵ *Professional Beauty Supply, Inc. v. National Beauty Supply, Inc.*, 594 F.2d 1179 (8th Cir. 1979). A district court, interpreting the *Professional Beauty* opinion, has held that any settlement "must release non-settling defendants from liability for the settling defendant's actions and also release the settling defendant from any liability for contribution." *Little Rock School District v. Borden, Inc.*, 1980-1 CCH Trade Cas. ¶ 63,059 (E.D. Ark. 1979). The rule thus allows contribution among all defendants found liable after trial, and it reduces the maximum liability for nonsettling defendants if any party settles.

Another court of appeals has adopted pro rata contribution under the securities laws. See *Heizer Corp. v. Ross*, 601 F.2d 330 (7th Cir. 1979) (collecting district court decisions to the same effect). Still a third court, relying on *Cooper Stevedoring*, has held that there is a general federal common law right of contribution. *Glus v. G.C. Murphy Co.*, 629 F.2d 248, 252-53 (3d Cir. 1980) (applying contribution principles to an employment discrimination case).

contribution would reduce the number of coerced or inequitable settlements.¹⁶ Two courts of appeals, however, have refused to abandon the common law rule. One concluded that contribution is neither fairer nor more adequate as a deterrent;¹⁷ the other thought the decision to adopt a contribution rule one for Congress to make rather than the courts.¹⁸

B. Noneconomic Considerations Relating to Antitrust Contribution

Before turning to the economics of contribution among antitrust defendants, we consider whether there are noneconomic reasons why contribution should or should not be allowed among antitrust defendants—reasons that should persuade either the Supreme Court (which has been asked to resolve the conflict among the circuits on the question) or Congress (which has been asked to create an explicit statutory right of contribution). These reasons have to do with the text and history of the Sherman and Clayton Acts, the Supreme Court's recent admiralty precedents, and the fairness considerations that are constantly advanced in debates about contribution.

The provision of the federal antitrust laws that authorizes damages awards

¹⁶ S. 1468, 96th Cong., 1st Sess. (1979); S. Rep. No. 96-428, 96th Cong., 1st Sess. (1979). Under S. 1468, if any conspirator should settle, the maximum liability of the remaining parties would be reduced by the maximum of the amount actually paid in settlement, the amount stipulated by the settlement, or treble the damages attributable to the settling person's sales or purchases. It is thus similar to section 5 of the 1939 version of the Uniform Contribution among Tortfeasors Act. See note 11 *supra*. The bill does not specify what would happen if, after one person settled, the plaintiff denied that the settling party had been a member of the conspiracy and, consequently, that the damages payable by the remaining parties should not be reduced.

No comparable bill has been introduced in the House of Representatives.

The Section of Antitrust Law of the American Bar Association supports contribution among antitrust defendants and has proposed legislation that would authorize contribution in all antitrust cases. See 2 Antitrust 7, 18 (Fall 1979). Like S. 1468, the proposed legislation would "reduce any judgment by the amount for which each settling defendant would have been liable for contribution had there been no settlement" (subsection (f)) and would prohibit claims against settling persons by defendants held liable after trial. Unlike S. 1468, the proposal would apportion damages by relative fault as well as by market share.

¹⁷ *Wilson P. Abraham Construction Corp. v. Texas Industries, Inc.* 604 F.2d 897 (5th Cir. 1979), cert. granted sub nom. *Texas Industries, Inc. v. Radcliff Materials, Inc.*, 49 U.S.L.W. 3332 (No. 79-1144, Nov. 3, 1980). *Abraham* was followed in a memorandum decision in *Adams Extract Co. v. Alton Box Board Co.*, 606 F.2d 319 (5th Cir. 1979), cert. dismissed sub nom. *Westvaco Corp. v. Adams Extract Co.*, 49 U.S.L.W. 3288 (Oct. 20, 1980). See also *In re Beef Industry Antitrust Litigation*, 607 F.2d 167, 183 (5th Cir. 1979), cert. pending sub nom. *Iowa Beef Processors, Inc. v. Meat Price Investigators Ass'n*, 48 U.S.L.W. 3538 (No. 79-1214, filed Feb. 1980).

¹⁸ *Olson Farms, Inc. v. Safeway Stores, Inc.*, 1979-2 Trade Cas. ¶ 62,995 (10 Cir. 1979), rehearing en banc granted Dec. 27, 1979. See also *Goldlaw, Inc. v. Shubert*, 276 F.2d 614, 616 (3d Cir. 1960) (rejecting contribution, in dictum, without stating reasons). *Glus v. G.C. Murphy Co.*, 629 F.2d 248 (3d Cir. 1980) appears to have overruled *Goldlaw sub silentio*; *Glus* explicitly rejected the reasoning and result of *Olson Farms*.

to private plaintiffs was part of the original Sherman Act of 1890, though the current provision was enacted in 1914 as part of the Clayton Act.¹⁹ Neither the text nor the legislative history of either statute refers to contribution. The common law rule against contribution among intentional tortfeasors was well established in both 1890 and 1914. Should one infer that the antitrust statutes incorporate the common law rule of no contribution, on the theory that, given the common law background against which these statutes were enacted, if Congress had wanted another rule to apply it would have said so?

This type of argument has been found persuasive for some statutes, and it is consistent with the Supreme Court's statement in 1952 that courts have not felt free to abandon the no-contribution rule without a legislative directive.²⁰ Contribution may entail a private right of action against settling parties, and the Supreme Court has become reluctant to imply such a right when the statute is silent.²¹ On the other hand, the Court has felt free in other areas to alter the rules of antitrust to reflect changes elsewhere in the law. For example, it has relied on the expanding interpretation of the scope of the Commerce Clause to give the antitrust laws a broader reach than Congress could have contemplated in 1890 or 1914.²² And it abandoned the

¹⁹ 15 U.S.C. § 15 (1976). The enacted versions are 38 Stat. 731 (1914) and 26 Stat. 210 (1890).

²⁰ See, for example, *United States v. Kubrick*, 444 U.S. 111, 119-22 & n.7 (1979) (construing the Federal Tort Claims Act in accordance with the rule prevailing in decided cases in the year of its enactment); *Halycon Lines v. Haenn Ship Ceiling & Refitting Corp.*, 342 U.S. 282, 285 (1952) (asserting that courts exercising a common law jurisdiction have not felt at liberty to create a right of contribution); *Northwest Airlines, Inc. v. Transport Workers Union*, 606 F.2d 1350 (D.C. Cir. 1979), *cert. granted*, 100 S. Ct. 3008 (1980) (concluding that a right of contribution against a union in an Equal Pay Act case would conflict with congressional intent).

²¹ "The question whether a statute creates a cause of action, either expressly or by implication, is basically a matter of statutory construction. While some opinions of the Court have placed considerable emphasis on the desirability of implying private rights of action thought to effectuate the purposes of a given statute, what must ultimately be determined is whether Congress intended to create the private remedy asserted, as our recent decisions have made clear." *Transamerica Mortgage Advisors, Inc. v. Lewis*, 444 U.S. 11, 15-16 (1979) (citations omitted). Any right of contribution from defendants who have settled is closely akin to a separate civil suit, and under the analysis of *Transamerica* and *Touche Ross & Co. v. Redington*, 442 U.S. 560 (1979), would not be available because the Congresses of 1890 and 1914 could not have intended to authorize contribution. Even under the approach of *Cort v. Ash*, 422 U.S. 66, 78 (1975), there could be no contribution from settling defendants, because the antitrust laws are not designed for the especial benefit of nonsettling defendants. This does not dispose of all contribution questions, however, because not all claims to contribution involve separate litigation commenced by disgruntled nonsettling defendants. As we describe below, contribution also could be implemented by reducing the amounts plaintiffs may recover from nonsettling defendants or by apportioning recoveries among all litigating defendants. Neither of these approaches requires the recognition of an implied right of action.

²² See, for example, *McLain v. Real Estate Board of New Orleans, Inc.*, 444 U.S. 232 (1980) (price fixing by real estate brokers); *United States v. South-Eastern Underwriters*

common law rules in force in 1890 and 1914 concerning both the release of joint tortfeasors and the defense of *in pari delicto* when it concluded that they stood in the way of effective enforcement.²³ The Court has modified the rules inherited from the common law in many other ways as well.²⁴ The rules can be modified once again if there is a good reason to do so.

Is there a good reason? The admiralty cases have not settled that question in favor of modification. When it adopted a rule of contribution among defendants in certain admiralty cases, the Court recognized that admiralty cases traditionally have followed a separate path from common law cases.²⁵ The admiralty cases therefore cannot be taken as settling the issue of contribution in antitrust cases as a matter of authority. Conceivably, however, the reasoning of the admiralty cases is applicable to antitrust. The Court has given two reasons for contribution in admiralty. They are typical of the reasons offered in support of contribution. The first reason is that contribution makes the parties more careful than if there were no right of contribution. The second reason is that it is more fair or just that wrongdoers should pay damages proportional to their fault. The counterpart to the first reason in the antitrust context is that violations would be more effectively deterred by a rule of contribution than by one of no contribution. This is an economic argument, which we discuss in Part II. The second reason is not economic, and we discuss it here.

The first thing to be noted about the fairness issue is that the party claiming to have been unfairly treated is himself an intentional wrongdoer. He does not make a strong appeal to our moral sense. Suppose *A* and *B* conspire to murder *C*, *C*'s heirs sue *A* for *C*'s wrongful death, and *A* then sues *B* seeking contribution to help him pay the judgment to *C*. *A*'s "plight" if the

Ass'n, 322 U.S. 533 (1944) (overruling *Paul v. Virginia*, 75 U.S. (8 Wall.) 168 (1868), and applying the Sherman Act to the insurance business).

²³ *Zenith Radio Corp. v. Hazeltine Research, Inc.* 401 U.S. 321, 342-49 (1971) (releases); *Perma Life Mufflers, Inc. v. International Parts Corp.*, 392 U.S. 134 (1968) (*in pari delicto* defense).

²⁴ For example, *United States v. Glaxo Group Ltd.*, 410 U.S. 52, 57-60 (1973) (establishing right of the United States to attack the validity of a patent in antitrust litigation); *Lear, Inc. v. Adkins*, 395 U.S. 653 (1969) (abolishing the defense of licensee estoppel); *Sola Electric Co. v. Jefferson Electric Co.*, 317 U.S. 173 (1942) (allowing a patent licensee to raise an antitrust defense to a contract action for unpaid royalties).

²⁵ *United States v. Reliable Transfer Co.* 421 U.S. 397, 402-04 & n.3 (1975); *Cooper Stevedoring Co. v. Fritz Kopke, Inc.* 417 U.S. 106, 110 (1974); *Halcyon Lines v. Haenn Ship Ceiling & Refitting Corp.*, 342 U.S. 282, 285-86 (1952). See also *Southern Pacific Co. v. Jensen*, 244 U.S. 205, 221 (1917) (Holmes, J. dissenting): "I recognize without hesitation that judges must and do legislate, but that they can do so only interstitially; they are confined from molar to molecular motions. A common-law judge could not say I think the doctrine of consideration a bit of historical nonsense and shall not enforce it in my court. No more could a judge exercising the limited jurisdiction of admiralty say I think well of the common-law rules of master and servant and propose to introduce them here *en bloc*."

courts refuse to lend assistance to his claim is unlikely to engage our moral sympathies. Perhaps there are deterrent reasons for contribution even in this case; we investigate that question in Part II. But the sense of fairness, insofar as it is separate from a policy of deterrence, is not offended by refusing to entertain *A*'s claim. Indeed, the rule of no contribution arose in part from the courts' revulsion from entertaining *A*'s claim. The question then is whether price fixing and other unlawful joint actions under the antitrust laws are so free from moral opprobrium that we are inclined to listen sympathetically to a claim of unfairness raised by a conspirator who has been forced to pay more than his "fair" share of the plaintiff's damages. Those who believe that enforcement of the antitrust laws is as important as the enforcement of other criminal laws will resist this suggestion.

A fairness argument from the mouth of the intentional wrongdoer is unappealing because the wrongdoer can avoid his "predicament" by conforming his conduct to the law's demands. It is doubly unappealing because much of the cost of litigating his claim may fall on innocent third parties. Contribution among defendants is costly, because it requires litigation (or negotiations designed to head off litigation) to determine who should pay what share of the award; and if some defendants have settled, it is necessary to determine how much of the total liability has been discharged by the settlement. The costs of administering a system of contribution reduce the net gains from antitrust enforcement by an equal amount. If contribution improves fairness, nevertheless the benefit of greater fairness inures to those who violated the law while the costs fall on society as a whole.²⁶

Arguments based on fair treatment have been unavailing elsewhere in antitrust law when abstractly fair treatment would have reduced the benefits of enforcement. An example is the principle that indirect purchasers cannot recover for any loss they may have sustained as a result of price increases passed on by direct purchasers.²⁷ The argument that fairness among victims—and the desire to compensate them for loss actually sustained—calls for tracing the reverberations of a price-fixing conspiracy throughout the economy was rejected because the process of tracing would have been costly,

²⁶ The litigation costs of both parties seeking and resisting contribution are a deadweight loss whose burden may fall, in part, on consumers rather than only on the shareholders of the antitrust violators.

²⁷ *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977). Compare *Hawaii v. Standard Oil Co. of California*, 405 U.S. 251 (1972) (no recovery for injuries to the general economy, which cannot be measured at reasonable cost). See generally William M. Landes & Richard A. Posner, Should Indirect Purchasers Have Standing to Sue under the Antitrust Laws? An Economic Analysis of the Rule of *Illinois Brick*, 46 U. Chi. L. Rev. 602 (1979) (arguing that recoveries by indirect purchasers not only are costly to administer but also reduce the deterrent effect of the antitrust laws by giving the wrong people the incentive to search for violations).

yet would not have increased deterrence. The Supreme Court held that deterrence at low cost, with consequent unfairness to some victims, was preferable to an equivalent amount of deterrence at high cost.

A second example where fairness arguments were rejected in favor of efficient antitrust laws is the Supreme Court's sharp curtailment of the *in pari delicto* defense. Courts long had thought it unfair for one participant in an offense to turn around and sue another for damages sustained by the first in the course of the crime. Yet this argument was unavailing against the argument that the deterrent force of the antitrust laws would be greater if one violator were allowed to sue the other.²⁸

In the case of contribution versus no contribution, it is not even clear which of the two alternative rules is fairer. The rule of no contribution, like the *in pari delicto* defense, was originally justified on the ground that it was only fair that a wrongdoer accept what happened as a result of his wrong and not seek relief from the courts. As mentioned earlier, the state statutes allowing contribution in tort suits usually abrogate the common law rule only for negligence; an intentional tortfeasor cannot obtain contribution. The judgment of these states is that an intentional tortfeasor "deserves" to pay the full damages assessed, if that is how the plaintiff chooses to litigate. An antitrust violation is a form of business tort,²⁹ and few antitrust violations are unintentional.³⁰

²⁸ *Perma Life Mufflers, Inc. v. International Parts Corp.*, 392 U.S. 134 (1968). The Court was explicit about its decision to sacrifice fairness between the parties for greater deterrence: "the purposes of the antitrust laws are best served by insuring that the private action will be an ever-present threat to deter anyone contemplating business behavior in violation of the antitrust laws. The plaintiff who reaps the reward of treble damages may be no less morally reprehensible than the defendant, but the law encourages his suit to further the overriding public policy in favor of competition. A more fastidious regard for the relative moral worth of the parties would only result in seriously undermining the usefulness of the private action as a bulwark of antitrust enforcement." *Id.* at 139.

²⁹ See *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 342-49 (1971); *Wilson P. Abraham Construction Corp. v. Texas Industries, Inc.*, 604 F.2d 897, 900 & n.5 (5th Cir. 1979), *cert. granted sub nom. Texas Industries, Inc. v. Radcliff Materials, Inc.*, 49 U.S.L.W. 3332 (No. 79-1144, Nov. 3, 1980). See also Peter G. Corbett, *Apportionment of Damages and Contribution among Coconspirators in Antitrust Treble Damages Actions*, 31 *Fordham L. Rev.* 111, 114 (1962). The contrary argument in Note, *Contribution in Private Antitrust Suits*, 63 *Cornell L. Rev.* 682, 692-97 (1978), which assimilates antitrust violations to interference with contractual rights, overlooks the fact that interference with contractual rights is itself a tort.

³⁰ Although *United States v. United States Gypsum Co.*, 438 U.S. 422, 434-46 (1978), holds that intent to violate the law need be established only in criminal antitrust cases, this does not imply that inadvertent acts can form the basis of civil antitrust prosecutions. The "intent" involved in *Gypsum* was the intent to produce anticompetitive consequences. The separate element of intent—intent to do the acts alleged to be unlawful—was assumed without question. No one fixes prices, exchanges information, enters into a merger, and so on unaware of what he is doing.

We anticipate the argument that in treating the antitrust violator as if he were a common law intentional tortfeasor, we are unrealistically overlooking the enormous vagueness and ever-changing contours of antitrust liability, which make it quite likely that antitrust violations will be committed through inadvertence (or at worst through failure to supervise adequately one of thousands of employees who can by their misconduct affix antitrust liability to a large corporation) or that perfectly innocent conduct will be incorrectly deemed unlawful by a jury naive about business practices. It may be questioned, however, whether a rule of contribution is an apt or adequate response to the justified concern with the currently disordered state of antitrust doctrine and procedure. If liability simply falls upon some innocent defendants, any allocation of that liability will be unfair. Moreover, the considerations we have just discussed do not affect our last and most important doubt about whether there is a substantial fairness objection to the no-contribution rule, once fairness is defined—as it is by the proponents of contribution—as equal treatment.

In discussing equal treatment, it is important to distinguish *ex ante* from *ex post*.³¹ A person who buys a lottery ticket and loses the lottery is unequally treated *ex post* in comparison to the winner; but *ex ante*—that is, when he bought the ticket—there was no inequality. The *ex ante* perspective is the correct one in the antitrust-damages as well as the lottery case. Suppose that two firms, *A* and *B*, are contemplating a course of conduct that violates the antitrust laws. Assume further that the total damages assessed after a trial would be \$100. Finally, assume that one of these firms will be selected at random to stand trial and pay all of the damages. Under this approach each firm bears the same *ex ante* liability: \$50 (less if there is doubt that the conduct is unlawful or will be prosecuted). Firm *A* will expect to be chosen half of the time and will thus compute its expected liability as \$100 times .5 (the probability that it will be chosen), discounted by the probability that the course of conduct will be held unlawful. Firm *B* will make the same computation and reach the same result. The expected liability of the firms is identical.³²

In the *ex ante* perspective, a no-contribution rule would be unfair only if one group of potential defendants were, for inappropriate reasons, more likely than the other to be selected as the defendant called on to pay the full

³¹ See Landes & Posner, *supra* note 1, at 520.

³² Note, Contribution in Private Antitrust Actions, 93 Harv. L. Rev. 1540, 1543-44 (1980), argues that considerations of fairness support a rule of contribution because “*ex ante* equality cannot eliminate *ex post* inequality, for the *ex post* unfairness or a no-contribution rule remains regardless of the state of affairs *ex ante*.” The student author confuses inequality with unfairness. The loser of the lottery is treated unequally *vis-à-vis* the winner, but few would call this inequality “unfair” unless the loser had been defrauded about the odds. The existence of equality *ex ante* is what makes the *ex post* inequality perfectly fair.

damages. Several judges, and a majority of the Senate Judiciary Committee, have asserted that under no contribution plaintiffs are likely to sue relatively smaller firms and leave larger firms alone. Moreover, the argument continues, when plaintiffs sue everyone in sight (the usual pattern), they tend to settle for nominal sums with the larger, more responsible defendants and collect disproportionately large judgments or settlements from the smaller ones.³³ The support for this proposition consists of some cases where small defendants paid large sums.³⁴ But this evidence does not show that small defendants *expect* to pay larger sums—for there have also been cases where small businesses settled for a pittance, leaving the more solvent firms to pay the larger awards after trial.³⁵ Moreover, even if smaller defendants were expected to pay larger awards (relative to market share) than larger defendants, this still would not make the rule unfair. Smaller defendants would take this additional expected liability into account when deciding whether to join a conspiracy. If they elect to participate in the offense, they have concluded that their gains, like their expected liabilities, are disproportionately larger. There is no reason why a smaller firm should decide to join a conspiracy on gain-to-liability terms inferior to those enjoyed by larger firms.

At all events, there is no apparent reason why antitrust plaintiffs should generally seek to obtain disproportionately large recoveries from the smaller or less responsible defendants. If a plaintiff settles for a small amount with the larger defendants and proceeds to trial against the smaller defendants, he increases his risk that any judgment will be unsatisfied. Moreover, smaller defendants may be able to enlist the sympathy of the jury. The majority of the Senate Judiciary Committee argued that a plaintiff would prefer to litigate against small businesses because they cannot afford to mount an adequate defense.³⁶ But the willingness of a party to invest in litigating an antitrust suit depends on the stakes of the case rather than on the total wealth of the party. A defendant will invest in litigating to the point where his last dollar of expenditure decreases the expected judgment by just one dollar. If the expenditures are worthwhile, a firm of any size should be able to borrow to finance their suits. (Often they borrow from their lawyers.) To be sure, a small firm might face bankruptcy if it suffered a substantial judgment, and thus it would not treat the full amount of the judgment as being at stake. This would lead the smaller firm to reduce its expenditures in

³³ *Professional Beauty Supply, Inc. v. National Beauty Supply, Inc.* 594 F.2d 1179, 1185 (8th Cir. 1979); *Olsen Farms, Inc. v. Safeway Stores, Inc.* 1979-2 Trade Cas. ¶ 62,995 at 79,706-07 (Holloway, J., dissenting); S. Rep. No. 96-428, 96th Cong., 1st Sess. 14-17, 19, 25-26 (1979).

³⁴ See S. Rep. No. 96-428, 96th Cong., 1st Sess. 14-17 (1979).

³⁵ See *id.* at 36-41 (separate statement of Senators Metzenbaum and Kennedy).

³⁶ *Id.* at 2.

defense—but it would also make the smaller firm a less attractive defendant to the plaintiff.

Plaintiffs might actually offer bargain settlements to smaller defendants. As we discuss in Part II, an antitrust plaintiff can improve its prospects of recovery under a rule of no contribution by settling with a few defendants for a fraction of the expected recovery. This raises the stakes for the remaining defendants and increases the sum they will pay in settlement (or in damages if the case is tried). Because larger defendants are likely to find it easier to form and enforce a sharing agreement than small ones,³⁷ plaintiffs may turn first to the smaller defendants (the ones outside the agreement) with bargain offers.

In sum, the case for a contribution rule as a means of preventing unfairness is unpersuasive.

II. AN ECONOMIC ANALYSIS OF CONTRIBUTION AND NO CONTRIBUTION AMONG ANTITRUST DEFENDANTS

This part of the article addresses two questions. The first is whether contribution or no contribution results in greater deterrence of antitrust violations. The second is the effect of the choice on the likelihood that an antitrust case will be settled rather than litigated to judgment. The second question bears on the first, because the choice between contribution and no contribution can affect the amount of the settlement and hence the level of antitrust deterrence.

A. *The Deterrent Effect of Contribution Compared to No Contribution*

An earlier article by two of us showed that, under certain assumptions, a rule of no contribution will have the same effect in deterring torts as a rule of contribution, and that this effect is optimal.³⁸ Indeed, any rule of apportioning damages produces adequate deterrence if the aggregate damages are properly selected. In an effort to make the present article self-contained, we undertake a fresh analysis, tailored to cases in which there can be no harm unless two or more wrongdoers collaborate (for example, price-fixing conspiracies). Our analysis is formal, but the underlying intuition is easily stated: so long as antitrust damages exceed the gains to any and all firms contemplating some unlawful action, whichever firm thinks that it will bear the lion's share of the liability under a no-contribution rule will be deterred

³⁷ A sharing agreement is an undertaking of each defendant not to settle unless all do, or to obtain as part of a settlement an agreement by the plaintiff to reduce the recovery sought from the nonsettling defendants by an amount proportional to the settling party's share. It usually entails an arrangement that the funds for any group settlement will be contributed by the defendants in a specified ratio.

³⁸ See Landes & Posner, *supra* note 1, at 521-28.

from participating in the unlawful action; once he drops out, some other firm now will face a heavy expected liability, causing him to drop out too; and the process will continue until no firm is left in the ring.

Suppose that three firms, *A*, *B*, and *C*, are contemplating whether to fix prices. *A* has 50 per cent, *B* 30 per cent, and *C* 20 per cent of the market. The conspiracy will enable prices to be raised 20 per cent above the competitive level, yielding total profits of \$1 billion which will be divided by the three firms in proportion to their market shares. Total antitrust damages from the price-fixing conspiracy would be \$3 billion. *A* and *B* are sure that if there is a suit, consumers will sue *C* for the entire amount; and suppose there is a 50 per cent chance that the plaintiffs will prevail. It might seem that in these circumstances, given a no-contribution rule, *A* and *B* will not be deterred at all. But this is incorrect. *C* will be deterred because his expected gains from conspiring, \$200 million ($.2 \times \1 billion), are less than his expected judgment costs, \$1.5 billion ($.5 \times \3 billion). Even if the conspiracy can work effectively without *C*, *A* and *B* will not conspire once *C* drops out. *B* (or *A*—it makes no difference) will now figure that he will be the one to be sued for the full amount of the damages; and he will be deterred because his expected judgment costs, also \$1.5 billion, exceed his expected gains from the conspiracy, \$300 million ($.3 \times \1 billion). That is the end of the conspiracy.³⁹

This result is perfectly general, and does not depend on the specific figures chosen for the example. But to reassure doubters, we now proceed to analyze the problem formally.

A firm will choose to comply with or violate the antitrust laws depending on whether its anticipated gain from the violation is greater or less than its expected liability.⁴⁰ Suppose n firms are considering whether to conspire to fix the price of a product above the competitive level (n may be fewer than all of the firms in the industry). Firm i 's decision to join or not join the conspiracy will depend on whether

³⁹ *A*'s market share may be large enough to enable him unilaterally to raise price above the competitive level. The point, however, is that once all but one participant in a conspiracy has dropped out, there is no longer a conspiracy and no problem of contribution.

⁴⁰ We do not suppose that managers actually work through the equations given in the text. Decisions to join a conspiracy undoubtedly are made on the basis of intuitions about the costs and benefits, rather than on the basis of formal computations. This does not, however, undermine our analysis. Firms that do not make decisions in a way that maximizes profits are penalized by the marketplace; the penalty is the amount of profit forgone. Firms that make casual or haphazard decisions to violate the antitrust laws stand to lose large sums whether or not there is a rule of contribution. To the extent firms ignore the incentives created by markets and legal sanctions, there is no need to be concerned about the legal rule. We are convinced, however, that legal sanctions strongly influence behavior. Our analysis is designed to reveal any difference in the influence worked by contribution versus no contribution.

$$g_i G - h_i p X \cong 0, \quad (1)$$

where G equals the aggregate gain in profits to the cartel from fixing prices, g_i is i 's expected share per dollar of this gain, p is the probability that the cartel will be discovered and successfully prosecuted, X is the aggregate damages that will be paid by the cartel if it is discovered and successfully prosecuted, and h_i is i 's share per dollar of damages.⁴¹ Since $g_i G$ and $h_i p X$ are firm i 's expected gain and liability respectively, i will participate in the cartel only if the former exceeds the latter.

The question how X —antitrust damages—is set is obviously critical to deterrence, with or without a contribution rule. Following the numerical example with which we opened this part of the article, we initially assume that the total expected damages of the cartel exceed its total profits (that is, $pX > G$).⁴² As we shall see later, if this assumption is incorrect—if antitrust damages are inadequate—this strengthens the case for retaining the rule of no contribution; and if damages are too great,⁴³ this weakens the case.

Assume that a no-contribution rule is in effect and that expected damages exceed the cartel gain. We define no contribution to mean that if the conspiracy is detected, the plaintiff may proceed against as many of the wrongdoers

⁴¹ We make two other simplifying assumptions. First, we ignore the costs of organizing and enforcing the cartel agreement and the legal costs if the cartel is discovered. The former would tend to reduce G and the latter to increase X ; other things the same, both would reduce the incentive of a firm to engage in price fixing. Second, we assume a fixed value of damages if the cartel is discovered and successfully prosecuted. One could generalize the analysis (without changing the basic results) by allowing for many possible values of X depending on whether the case is settled or litigated, the type of settlement, the behavior of the jury, and so forth.

⁴² Since p (the probability of discovery and successful prosecution of the cartel) is less than one, X should be greater than G ; otherwise the cartel will not be deterred. The treble-damages rule of federal antitrust law has the effect of raising X above G , though whether by the right amount is unknown. (In a period of rampant inflation, there is even a question whether trebling will necessarily raise X above G , since no allowance is made in antitrust damages calculation for inflation between the time when the damages are suffered and when they are collected in a suit.)

⁴³ As a rough first approximation, the optimal damages should at least equal the monopoly profits a firm or cartel expects to make, divided by the probability that the violation will be detected and prosecuted successfully. Damages so computed will deprive the offender of any incentive to violate the law, unless the violation is accompanied by savings in the cost of production. (A cartel, for example, might operate through a common sales agency and thus save on distribution and selling costs.) In order to induce prospective violators to compare these savings with the social costs of monopoly, the damages awarded should include not only the monopoly overcharge but also the welfare, or deadweight, loss. Lesser damages would induce a cartel to violate the law whenever there were any savings in costs (even if the savings were smaller than the welfare loss); higher damages might deter cartels or cartel-like behavior whose social benefits exceed the social costs. Because the prospective damages affect the willingness of private parties to bring suit, it may be necessary to make still further adjustments. We ignore all of these possible adjustments for present purposes. See generally Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 *J. Pol. Econ.* 169, 198-99 (1968); Richard A. Posner & Frank H. Easterbrook, *Antitrust: Cases, Economic Notes, and Other Materials* 549-53 (2d ed. 1980).

as he wants and that, if he prevails, he may collect the damages from the liable firms in whatever proportions he chooses. In other words, under a rule of no contribution, the plaintiff *ex post* controls h_i for every firm, subject only to the limitations that the plaintiff may not collect all of the damages more than once (that is, the sum of the h_i 's *ex post* cannot exceed 1) and, of course, that the plaintiff will attempt to collect his full damages. Under no contribution, then, all but one of the defendants may escape liability, all may pay equal sums, or anything in between. The choice is the plaintiff's.

We have assumed that $G < pX$. Nonetheless, under no contribution any firm i may conclude that:

$$g_i G > h_i pX. \quad (2)$$

That is, i 's expected gain from violating the law may exceed its expected liability—for example, i 's share of the gain may be large compared to its anticipated share of damages. (Firm i may anticipate that the plaintiff will sue someone else.) If this were true not only for i but for all the other firms, there would be an incentive for the firms to fix prices notwithstanding the assumption that $G < pX$. More formally, if it is in the interest of each firm to fix prices, then (2) implies that

$$(g_1 + g_2 + \dots + g_n)G > (h_1 + h_2 + \dots + h_n)pX. \quad (3)$$

Since the cartel's profits are fully distributed among the firms, the sum of their profit shares ($\sum g_i$) will equal one, as in our numerical example. Thus, with three participants, if $g_1 = .50$ and $g_2 = .30$, then g_3 will equal $.20$, perhaps corresponding to their market shares. What about the sum of their damage shares $h_1 + h_2 + \dots + h_n$? Suppose that, if the cartel is discovered, each of the n firms expects an equal probability of being sued for the full damages (that is, $h_i = 1/n$ and $\sum h_i = 1$). If so, (3) implies that $G > pX$, which contradicts our initial assumption that $G < pX$. Stated differently, inequality (2) cannot simultaneously hold for all n firms because in the aggregate that would imply that $G > pX$, which is a contradiction. Thus, at least one of the n firms will decide against participating in the price-fixing agreement. Suppose only one withdraws. Were this the equilibrium outcome (that is, a cartel of $n - 1$ firms), inequality (3) would be rewritten as

$$\sum_{i=1}^{n-1} g_i G > \sum_{i=1}^{n-1} h_i pX.$$

Again this contradicts the assumption that $G < pX$, because the aggregate shares of the $n - 1$ firms will now exhaust both the gains and expected damages from the cartel.⁴⁴ That is,

⁴⁴ As the number of potential firms in the cartel declines, both the gains and expected damages will tend to decline. There is also the possibility that p will change (for example,

$$\sum_1^{n-1} g_i = 1 \text{ and } \sum_1^{n-1} h_i = 1.$$

Therefore, at least one of the $n - 1$ firms will not join the cartel. We could repeat this procedure for cartels of size $n - 2$, $n - 3$, and so forth, and show that at each possible stopping point there would be an incentive for at least one more firm to withdraw from a possible cartel agreement, until only one is left and there is no longer a conspiracy.

We can obtain a more intuitive understanding of the above process if we limit the analysis to an industry of three firms, A , B , and C . Let G , the aggregate gain from price fixing, equal \$100 and X , the aggregate expected damages, \$110 ($= pX$). Assume that under a no-contribution rule each party is equally likely to be sued so that $h_i = 1/3$. Suppose that A and B are larger than C , and both expect to obtain a 40 per cent share of the \$100 overcharge. Since A 's and B 's liability is \$36.67 each ($\$110 \times 1/3$), both would be eager to conspire with C to fix prices. C 's expected gain, though, is only \$20. C has an expected liability of \$36.67 and hence will refuse to collude with A and B . A and B could induce C to cooperate, for example, by offering C an appropriate side payment or more attractive division of the gain. But if A and B each transfer \$8.50 to C , which would give C a gain of \$37 ($\$20 + \17) and induce C 's cooperation, neither A nor B would find cartelization attractive any longer, for each would gain only \$32 compared to a \$36.67 expected liability. No side payment acceptable to C would leave A and B with a profit, and so C would not agree to fix prices. It might seem that A and B would still fix prices even without C . But this is false, because even if C 's participation is unnecessary to make the cartel work A and B each now face an expected liability of \$55 compared to benefits of \$50 (provided that G and pX are unchanged when C withdraws).

The precise values assigned to the h_i 's are not critical to the analysis. Suppose that plaintiffs are apt to sue the firms with the most assets, because these firms can satisfy the largest judgments. Assume that A is the largest, B the next largest, and C the smallest firm, and let $h_a = .7$, $h_b = .2$, and $h_c = .1$. Although B and C would find price fixing attractive, A would not because its expected gain (\$40) is less than its expected liability (\$77). When A withdraws, B 's and C 's shares of the expected liability will increase until their sum exhausts the total liability—that is, $h_b + h_c = 1$. Given that B and C jointly bear the full liability, at least one of them (depending on its relative share of the gain and of the liability) will no longer desire to fix prices. Once again the conspiracy evaporates. In contrast, suppose smaller firms are more

with fewer firms the likelihood of detection may decline). To simplify the notation we continue to use G , p , and X , assuming that for all possible combinations of participants $G < pX$.

inviting targets of suit because they have fewer resources for defense. For example, assume $h_a = .1$, $h_b = .2$, and $h_c = .7$. C 's potential gain from price fixing is swamped by its expected liability (a \$20 gain compared to a \$77 expected liability). Since C is deterred, the expected liability is now thrown fully on A and B and either or both will find it no longer in its (their) interest to fix prices.

Now consider the deterrent effect of a rule of contribution. Assume the rule allows a defendant whose share of the damages paid is greater than $1/n$ to obtain contribution from other defendants (or nondefendant cartel members) whose shares are less than $1/n$.⁴⁵ Under this rule each cartel member would expect to share equally in any damages. In our three-firm example, if A , B , and C agree to fix prices, it follows that $g_i G > h_i pX$ (for $i = A, B$, and C , where $h_i = 1/3$) implying that $G > pX$. Since the latter inequality violates our assumption that the aggregate gain from price fixing is less than the expected penalty, at least one of the firms will not agree to fix prices. When one withdraws, each of the remaining two will have a .5 share of the expected liability, which will be sufficient to deter at least one of the two from fixing prices so that the cartel will unravel.

Thus the deterrent effects of contribution and no contribution are, as a first approximation, identical. That is, provided the aggregate gains from the cartel are smaller than the aggregate expected damages, both rules create incentives for firms not to engage in price fixing.⁴⁶ No contribution has the

⁴⁵ Other contribution rules are possible—for example, one based on payment in proportion to market share. Our analysis of contribution is, as we show below, independent of the method of apportioning damages.

⁴⁶ Note, *Contribution in Private Antitrust Actions*, 93 Harv. L. Rev. 1540, 1545-46 (1980), maintains that contribution will have a greater deterrent effect because middle managers, not upper managers, make the decisions to join antitrust conspiracies. These middle managers, the note contends, seek to promote their own careers by maximizing the firm's short-run profits; because their interests diverge from those of the firm, they will disregard potential damages recoveries. Deterrence can succeed, the argument concludes, only if the firms punish these middle managers, and this will occur only if (as a result of a contribution rule) the firm is held liable.

The student author does not explain, however, why a firm would attempt to control middle management only if actually held liable *ex post*. Deterrence works *ex ante*; once a violation has occurred, it is too late for employee discipline to avert the wrong. Whether the rule is contribution or no contribution, the expected damages of firm i are the same, and the expected damages determine the incentives of upper managers to control others in the organization. Moreover, there is no reason why upper managers would impose sanctions on lower managers only if the firm actually pays a large judgment in a given case. An airline pilot would be disciplined for buzzing the Empire State Building whether or not the plane crashed. A middle manager who exposes his firm to an unnecessary risk of large damages could expect to see his career chances diminished whether or not the firm was compelled to pay damages. See Gary S. Becker & George J. Stigler, *Law Enforcement, Malfeasance, and Compensation of Enforcers*, 3 J. Legal Stud. 1 (1974); Eugene F. Fama, *Agency Problems and the Theory of the Firm*, 88 J. Pol. Econ. 288 (1980).

important advantage, however, of being less costly to administer.⁴⁷ It avoids either the costs of bringing additional defendants into the initial suit or of subsequent litigation in which defendants earlier forced to pay a judgment seek contribution from other parties not sued by the plaintiff. In short, contribution, although costly, has only ex post distributional consequences. There are no offsetting gains in allocative efficiency.

Several qualifications to the analysis should be noted, however.

1. Although the specific values of the individual liability shares (h_i 's) have no bearing on the analysis (which is the reason why no contribution and contribution yield identical effects), it is essential that the sum of these shares, as the conspirators perceive them, be at least one. Only then are we certain that at all times at least one firm will have an incentive to withdraw, leading to the collapse of any cartel. Suppose the contrary were true and firms underestimated their chances of being sued under a no-contribution rule so that $\sum h_i < 1$. If so, price fixing might not be deterred even though $G < pX$. For example, in the three-firm case, if $h_a = h_b = h_c = .10$ each firm will have an expected liability of \$11 ($.10 \times \110), compared to gains of say \$40 each for *A* and *B* and \$20 for *C*. Each, therefore, would join the cartel. The likelihood of excessive optimism may seem less under contribution. There each party assigns a value to h_i of $1/n_i$, and hence the only requirement for $\sum h_i = 1$ is that the firms know the number of participants in the cartel. But if contribution is based on relative fault or market share rather than on number of firms, the problem of estimation will be similar to that under no contribution. Also, a firm may exaggerate its ability to obtain contribution from settling defendants or from parties not named in the initial suit, leading to excessive optimism. Finally, the relevant factors in estimating the h_i 's under no contribution (for example, sales, assets, market shares, and so on) should be available to all firms in their discussions about price fixing. Having access to the same information, firms can generally be expected to converge in their estimates of the h_i 's.⁴⁸

⁴⁷ The existence of potential savings in administrative costs implies, of course, that there is some price fixing or other unlawful joint action leading to claims and litigation; yet our formal model implies that all price fixing is deterred. The inconsistency is superficial. Analyzing the uncertainty or other factors (for example, substantial cost savings in production resulting from cartelization) that would generate a positive amount of price fixing would complicate the model without altering its basic implication of equal deterrence, save in the respects brought into the analysis in the text below.

⁴⁸ If each party underestimates the probability of being sued, implicitly it is assigning a higher probability to the other firms' being sued than these firms assign to themselves. For example, if *A*, *B*, and *C* each believe that its h_i is .10, then *A* believes that *B* and *C* have on average .45 probabilities of being sued, *B* believes that *A* and *C* have .45 probabilities, etc. It is unlikely that such discrepancies will arise when the parties have access to similar information about each other. Note also that for $\sum h_i = 1$ it is not necessary that the parties correctly forecast the plaintiff's probabilities of suing each party. For example, the plaintiff may have a probabil-

If the firms do not converge on estimates in which $h_i = 1$, then it still does not follow that contribution produces less deterrence than no contribution. If any one firm concludes that its h_i is relatively high, so that its share of the damages is likely to exceed its share of the gains, that firm will drop out. A rule of no contribution puts each firm under heavy pressure, because it could have a chance of paying disproportionately large damages; contribution, on the other hand, assures each firm that the sharing of damages awards will not diverge significantly from the sharing of the gains. Under contribution, if any one firm decides that its h_i is out of line, the conspiracy will unravel in the way we have described. That outcome is far less likely under a contribution rule.

2. Our conclusion that no-contribution and contribution rules yield the same deterrence assumes that firms are risk neutral. "Risk neutral" means indifferent between paying (receiving) a certain sum and paying (receiving) its uncertain actuarial equivalent: between, for example, paying \$2 and having a 50 per cent chance of paying \$4. Corporations are normally assumed to be risk neutral because their shareholders (who may be risk averse) can eliminate any risks that are specific to the corporation by holding portfolios of securities of different companies whose risks are independent. If, however, firms are risk averse, a rule of no contribution will have a greater deterrent effect on price fixing than contribution, because no contribution yields a greater variance of expected profits and hence a lower expected utility than does contribution.⁴⁹ With contribution, each firm contemplating

ity of suing *A*, *B*, and *C* of .8, .1, and .1 respectively, while *A*, *B*, and *C*, not knowing the plaintiff's estimates, may assign values of .33 to each of the relevant h_i 's. This makes no difference to the incentive of *A*, *B*, and *C* to collude.

⁴⁹ A formal proof is as follows. Let $U(\pi)$ equal a firm's utility function over profits (π) where greater profits increase utility ($\partial U/\partial \pi > 0$) at a decreasing rate ($\partial^2 U/\partial^2 \pi < 0$). The latter assumption is the mathematical definition of risk aversion. Under no contribution (assuming each firm is equally likely to be sued) firm *i*'s expected utility is

$$\bar{U}_{nc} = (1 - p/n)U(\bar{\pi} + gG) + (p/n)U(\bar{\pi} + gG - X), \quad (1)$$

while under contribution (assuming full contribution) it is

$$\bar{U}_c = (1 - p)U(\bar{\pi} + gG) + pU(\bar{\pi} + gG - X/n), \quad (2)$$

where $\bar{\pi}$ equals the firm's profits under competition (the subscript is deleted to simplify the notation) and n , p , g , G , and X are defined as before. A comparison of (1) with (2) shows that in (1) there is a lower probability of paying damages ($p/n < p$) but a larger potential liability ($X > X/n$). Observe also that expected profits are equal in (1) and (2), and equal to $\bar{\pi} + gG - (p/n)X$.

To show that $\bar{U}_{nc} < \bar{U}_c$ is equivalent to showing that expected utility falls as potential damages (X^*) increase though the probability of paying damages decreases (holding expected profits constant). That is, we must show that $\partial \bar{U}/\partial X^* < 0$ assuming p^*X^* constant. (Note that $X^* = X$ and $p^* = p/n$ under no contribution, and $X^* = X/n$ and $p^* = p$ under contribution though the proof below is based on the less restrictive assumption that damages are greater under no contribution, not that they are n times greater.) For p^*X^* to remain constant as X^*

price fixing knows that its maximum liability is some fraction of the cartel's total liability, the precise fraction depending on the method of contribution. But under no contribution, the firm faces some probability of having to pay the entire damages of the cartel. This possibility makes no contribution a riskier regime than contribution and therefore less attractive to the risk-averse firm.

Diversification is costly, especially for shareholders of smaller corporations whose stock is not publicly traded; and managers, who may be risk averse, may not act as perfect agents of the corporation's (effectively risk-neutral) shareholders because monitoring is costly. There is therefore a good possibility that the risk-averse model is appropriate—especially where the potential liability is very large.⁵⁰ The social welfare implications of the risk-averse model are unfortunately somewhat murky. The greater deterrence produced by a no-contribution rule from any given pX may—or may not—be a good thing, depending on how close the antitrust damages mea-

increases requires that $p^*dX^* + X^*dp^* = 0$ or $\partial p^*/\partial X^* = -p^*/X^*$. We have

$$\begin{aligned} \frac{\partial \bar{U}}{\partial X^*} \Big|_{p^*X^* = \text{constant}} \\ = \frac{p^*}{X^*} [U(\bar{\pi} + gG) - U(\bar{\pi} + gG - X^*)] - p^*U'(\bar{\pi} + gG - X^*). \end{aligned} \quad (3)$$

Thus, $\partial \bar{U}/\partial X^* < 0$ if

$$[U(\bar{\pi} + gG) - U(\bar{\pi} + gG - X^*)]/X^* < U'(\bar{\pi} + gG - X^*). \quad (4)$$

Expanding the left-hand side of (4) yields

$$U'(\bar{\pi} + gG - X^*) + U''(\bar{\pi} + gG - X^*) \frac{X^*}{2} < U'(\bar{\pi} + gG - X^*). \quad (5)$$

Therefore, $\partial \bar{U}/\partial X^* < 0$ if the firm is risk averse ($U'' < 0$).

Since a firm will agree to fix prices if its expected utility is greater than its utility of profits when it does not collude, a no-contribution rule, which yields a lower \bar{U} compared to contribution (assuming risk aversion), reduces the likelihood that a firm will engage in price fixing.

⁵⁰ For a theoretical argument that managers conduct firms in risk-averse ways, see Steven Shavell, *Risk Sharing and Incentives in the Principal and Agent Relationship*, 10 *Bell J. Econ.* 55 (1979).

One article on contribution asserted that all firms are risk averse in fact. Note, *Contribution in Private Antitrust Suits*, 63 *Cornell L. Rev.* 682, 703 (1978). The author relied entirely on Kenneth G. Elzinga & William Breit, *The Antitrust Penalties: A Study in Law and Economics* 120-29 (1976). Elzinga and Breit relied, in turn, on a number of industrial organization studies purporting to show that businesses take fewer risks than they used to do. This, however, does not lead to the conclusion that firms are risk averse. The number of risks taken depends not only on attitude toward risk but also on the odds; if the odds change, risk-taking behavior will change even if all firms are risk neutral. The studies relied on by Elzinga and Breit do not discuss the ability of shareholders to diversify their portfolios, and the consequences of such diversification for firms' attitudes toward risk. We conclude that the extent and intensity of risk aversion among firms is an unsettled empirical question.

sure (X) is to the optimal measure.⁵¹ And a reduction in utility brought about by increasing risk is a real social cost,⁵² some of which can be avoided by a rule of contribution.

3. We have assumed that the antitrust remedial system operates without error: the substantive principles are correctly defined and the amount of damages correctly assessed, where what is meant by "correctly" is given by economic analysis. Yet even if these conditions do not obtain, the choice between contribution and no contribution is not affected, at least as a first approximation, because that choice does not affect the total damages assessed for unlawful joint action but only the distribution of the damages (ex post, and sometimes ex ante) among those who participate in the joint action. Given risk aversion, however, the unequal liability that is possible under a rule of no contribution may deter lawful joint action more than a rule of contribution would do. This is simply an aspect of our previous point. If defendants are risk averse, a rule of no contribution will have a greater deterrent effect, given the same nominal damages level, than a rule of contribution.⁵³ Where there is legal error, some conduct deterred will be lawful conduct—and more lawful conduct will be deterred, along with more unlawful conduct, under a rule of no contribution than under a rule of contribution.⁵⁴

The complicating factors we have introduced make it difficult to choose between contribution and no contribution in the antitrust context, although our analysis clearly refutes the argument that contribution should be favored because it yields more deterrence than no contribution, for the contrary is true. But our analysis is not complete, as we have yet to consider the effect of the rules on the rate and terms of settlement. We now turn to that issue.

B. *The Effect of Contribution (and No Contribution) on Settlement*

The total costs of a rule of contribution or no contribution include the costs of administering the rule, and an important determinant of administrative

⁵¹ The Fifth Circuit's assertion that the risk aversion of firms is an argument in favor of contribution—see *Wilson P. Abraham Construction Corp. v. Texas Industries, Inc.*, 604 F.2d 897, 901 (1979), *cert. granted sub nom. Texas Industries, Inc., v. Radcliff Materials, Inc.*, 49 U.S.L.W. 3332 (No. 79-1144, Nov. 3, 1980)—overlooks this point. The opinion also relied entirely on the student Note, *supra* note 50, which, for reasons stated above, does not offer a dependable conclusion about risk preferences.

⁵² See A. Mitchell Polinsky & Steven Shavell, *The Optimal Tradeoff between the Probability and Magnitude of Fines*, 69 *Am. Econ. Rev.* 880 (1979).

⁵³ Risk aversion by plaintiffs is irrelevant to the choice between contribution and no contribution, since the choice does not affect the plaintiff's rights against the defendants but only the defendants' rights *inter se*.

⁵⁴ On the allocative effects of legal error see Richard A. Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 *J. Legal Stud.* 399 (1973).

costs is the ratio of settled to litigated cases. Also, settlement terms, no less than damages awarded in litigated cases, determine the deterrent effect of antitrust rules. Thus, in evaluating the economic consequences of contribution versus no contribution, it is necessary—quite apart from the emphasis placed on the issue by the proponents of contribution—to consider the effects of the rules on the rate and terms of settlements.

The surprising result of our analysis is that, under the rule of no contribution, defendants have an incentive to settle for an aggregate amount greater than their expected damages (pX) from a trial. Moreover, the difference between the aggregate settlement and pX tends to increase (and the aggregate settlement approaches X) as the number of defendants increases. The reason is that, as more and more defendants settle, the expected liability of each remaining defendant grows; defendants therefore compete not to be left out of the settlement round; and a plaintiff can exploit this competition to obtain a larger aggregate recovery than he would expect to receive if all of the defendants litigated. A contribution rule that would avoid this result can be designed. Thus, if the legal measure of damages in antitrust cases is deemed sufficient (and *a fortiori* if it is excessive), there would be a reason for moving to contribution. The “excess recovery” theorem is simple to state, but difficult to prove. We turn now to the formal analysis.

A considerable economic literature analyzes the choice between settlement and litigation in the single plaintiff–single defendant case.⁵⁵ Although this literature readily generalizes to the multi-defendant case with which we are concerned in this article, it may make the analysis clearer to begin with the single plaintiff–single defendant case.

Let the plaintiff and defendant be A and B respectively, and assume that both are risk neutral. The minimum amount that A will accept to settle his claim out of court rather than go to trial is

$$V^a = p^a X - r^a, \quad (4)$$

where p^a equals A 's estimate of the probability of winning at trial, X the damages A will receive if successful at trial, and r^a his costs of litigation.⁵⁶ Since V^a represents the plaintiff's expected gain from litigating his claim, a

⁵⁵ See, for example, John P. Gould, *The Economics of Legal Conflicts*, 2 *J. Legal Stud.* 279 (1973); William M. Landes, *An Economic Analysis of the Courts*, 14 *J. Law & Econ.* 61 (1971); Posner, *supra* note 54.

⁵⁶ Although one could incorporate into the model an analysis of the determination of litigation expenses (r^a) and the costs of settling, these refinements are ignored here (unless stated otherwise) because they are not central to our analysis and because to consider them explicitly would greatly complicate the presentation. We also ignore the right of the successful antitrust plaintiff to recover a reasonable attorney's fee from the defendant. Taking account of the award of fees and costs to successful plaintiffs would convert equation (4) to $V^a = p^a X - (1 - p^a)r^a$ and equation (5) to $V^b = p^b X + r^b + p^b r^a$, which would not affect the subsequent analysis.

risk-neutral plaintiff would be willing to settle for an amount equal to or greater than V^a . By similar reasoning, the maximum amount the defendant will settle for is

$$V^b = p^b X + r^b, \quad (5)$$

where p^b and r^b denote respectively the defendant's estimate of the probability of the plaintiff's winning at trial and the defendant's trial expenses. A settlement will result if $V^b > V^a$, or equivalently if

$$V^b - V^a = (p^b - p^a)X + r^b + r^a > 0 \quad (6)$$

because both parties can be made better off ex ante from an out-of-court settlement compared to their expected outcomes of a trial. For example, if $V^a = 7$ and $V^b = 10$, then a settlement greater than 7 but less than 10 will make *A* and *B* better off than their expected trial outcomes.

Several points about the settlement-trial choice should be noted: (a) As (6) shows, a sufficient condition for a settlement is that both parties agree on the expected trial outcome ($p^a = p^b$) because then a settlement will save litigation costs. (b) Given $V^b > V^a$, the terms of a settlement will lie somewhere between V^b and V^a , though it is impossible to determine where. (c) The larger the litigation costs are in equation (6), other things being equal, the more likely a settlement is. (d) Normally, for litigation to occur, the parties must disagree (for example, each be optimistic about winning) about the likely

⁵⁷ Litigation costs are likely also to rise with an increase in X , and this would tend to offset the greater likelihood of trial as X increases. Thus, for the positive effect of X on trials to dominate, litigation costs must increase by a proportionately smaller amount than X . To consider this factor would complicate the presentation. Litigation expenses affect both settlement and the probable outcome of the case if litigated. A greater investment in litigation by a defendant will reduce p ; a greater investment by a plaintiff will increase p . Each party will invest in litigation to the point where a marginal dollar invested increases or decreases the expected judgment by just one dollar. Consequently, a reduction in the stakes of a case will affect the amount invested in litigation, and in turn have an effect on p . Omitting discussion of the effect of litigation expenses avoids these complications, which we think would not have an important effect on our analysis.

We say this because although successive settlements in the multi-defendant case reduce the stakes of the case (and hence reduce investment in litigation) they do so for both the plaintiff and defendants who have not yet settled. There is thus little reason to think that, as settlements continue, p will rise or fall by a significant amount. The only significant difference between contribution and no-contribution rules with respect to litigation expenses is that, when only one defendant is litigating and it knows that it can recover part of any loss from other parties, it may reduce its investment in litigation. Suppose, for example, there are two conspirators and one is named as a defendant. Under a rule of contribution, it will know that it must pay only 50 cents of each dollar awarded to the plaintiff at trial. (We assume a contribution rule of the simple $1/n$ type.) It will therefore invest in litigation only to the point where a marginal 50-cent investment reduces the expected judgment by a dollar. This reduction of litigation expenses—because the second conspirator is a free rider on the defendant's litigation—will cause p to increase. But the two conspirators may be able to agree to share the defense costs if transacting is not too difficult, and so a rule of contribution need not lead to a systematic increase in p .

outcome of a trial. (e) Given $p^a > p^b$ (that is, relative optimism), a trial is more likely the larger the stakes (X).⁵⁷ (f) In contrast, relative pessimism ($p^b > p^a$) is a sufficient condition for an out-of-court settlement. (g) Risk aversion reduces the minimum amount for which the plaintiff is willing to settle below $p^a X - r^a$ (so that V^a is less than $p^a X - r^a$) and increases the maximum amount the defendant is willing to offer (so that V^b is greater than $p^b X + r^b$), and therefore increases the likelihood of a settlement.

We now extend the analysis to the multi-defendant case. To simplify the presentation without significantly affecting the analysis, we assume litigation expenditures (r^a and r^b) are zero.

1. *No Contribution.* Assume the plaintiff, A , has uncovered a possible violation involving n firms; each firm is potentially liable for X , the full amount of the damages (trebled); a defendant who settles or loses at trial cannot obtain contribution from any of the other $n - 1$ firms; and all parties are risk neutral. To simplify, we assume provisionally that the probability of A 's winning at trial is independent of both the fraction of defendants who settle and of the identity of the particular defendant (or defendants) who go to trial.

Two propositions about the plaintiff can be shown to be true: (1) The plaintiff prefers a larger to a smaller settlement from any given defendant. (2) There is always an incentive for the plaintiff to settle with at least $n - 1$ defendants. The explanation for the first proposition is straightforward. Suppose A is considering whether to settle with one of the n defendants for an additional \$1. Although the settlement will reduce A 's potential damage award by \$1, he is better off receiving an extra \$1 with certainty in exchange for reducing the expected value of his legal claim by \$1 so long as his probability of winning at trial is less than one. Even if A 's estimate of the probability of winning at trial (p^a) is .99, settling for an extra \$1 will mean that a \$1 higher settlement is being exchanged for a \$.99 expected decrease in A 's legal claim. Regardless of risk preference or optimism about prevailing at trial, A will always prefer an additional \$1 with certainty to the prospect of receiving an additional dollar (no more) with a probability of less than one.⁵⁸

The second proposition is a corollary of the first. A prefers to settle with at least one defendant because any positive settlement is equivalent to receiving that amount with certainty in exchange for giving up a claim with an expected value of less than that amount. A will be even better off if he settles with a second defendant (assuming there are at least three defendants) because, again, an amount received with certainty is preferred to an uncer-

⁵⁸ The expected value of A 's legal claim after settling with i defendants (where $1 \leq i < n$) equals $\bar{V}_i^a = \Sigma S^i + p^a(X - \Sigma S^i)$. Since $\partial \bar{V}_i^a / \partial S^i = 1 - p^a > 0$, A prefers a larger to a smaller settlement from i .

tain prospect of receiving the same amount. It is easily shown that A is always better off by settling with one more defendant until all but one have settled.⁵⁹ (We assume here that A picks settlement partners so that the last defendant is able to pay any damages awarded at trial.) At this point the expected value of A 's claim against the remaining defendant would equal

$$V_n^a = p^a \left(X - \sum_{i=1}^{n-1} S^i \right),$$

where $\sum_{i=1}^{n-1} S^i$ is the total settlement received from the settling $n - 1$ defendants. Whether A settles with the n th defendant now depends (as in the single-defendant model) on whether the latter's offer is greater than V_n^a .

In the single-defendant case, a settlement takes place only if $V^b > V^a$, because otherwise it is not possible for the parties to agree on terms that make both better off compared to their expected trial outcomes. In contrast, in the multiple-defendant case, it is always possible to find positive settlement values, no matter how trivial, that make the plaintiff and at least $n - 1$ defendants better off compared to their expected trial outcomes.⁶⁰

Since each defendant believes it may be the n th or left-out defendant after the others have settled, the expected liability of that defendant must equal the average of the $n - 1$ settling defendants. If his expected liability were greater than this average, the n th defendant would have offered a larger settlement (which we know the plaintiff prefers) to avoid being the left-out defendant. Alternatively, if his expected liability were smaller, each firm

⁵⁹ A formal proof is as follows. Without any settlements the value of A 's expected claim is $V^a = p^a X$. If A settles with one defendant for $S^1 > 0$, then the expected value of his legal claim including S^1 is $\bar{V}_1^a = S^1 + p^a(X - S^1)$ which is greater than V^a , provided $p^a < 1$. Suppose A has settled with $j - 1$ defendants (where $1 < j < n$); it follows that he will prefer to settle with j because $\bar{V}_j^a - \bar{V}_{j-1}^a = S^j(1 - p^a) > 0$, provided $S^j > 0$ and $p^a < 1$. Since A has an incentive to settle with the first defendant and j takes all values up to $n - 1$, it follows that A has an incentive to settle with at least $n - 1$ defendants. We are assuming p^a is constant as settlements occur. If p^a were to increase as more defendants settled (because the terms of a settlement may require the settling defendants to provide evidence about nonsettling defendants' participation in the cartel), then A 's incentive to settle with $n - 1$ defendants would increase. If, however, p^a were to fall as settlements occurred, A 's incentive to settle with at least $n - 1$ defendants would be reduced.

⁶⁰ To complete the analysis we must show that at least $n - 1$ defendants are willing to offer positive settlement sums. Let defendant i 's expected liability if he does not settle equal $V^i = (1/(n - k))[p^i(X - kS)]$, where $k (< n)$ denotes the number of defendants already settling, S the average settlement per defendant, and p^i 's estimate of probability that A will win at trial. Since $V^i (> 0)$ is i 's maximum settlement offer (which would leave i indifferent between settling and not), there is a positive settlement less than V^i that would make i better off compared to not settling. Since we have already shown that A is better off with positive settlements (however negligible) from at least $n - 1$ defendants compared to settling with less than $n - 1$, it follows that there is a set of settlements that make A and at least $n - 1$ of the defendants better off than their expected trial costs.

would prefer to be the left-out defendant, which in turn would lower the settlement offers. The only possible equilibrium, therefore, is where the settlement per defendant equals the expected liability of the n th defendant (who ultimately may also settle).⁶¹

A numerical example involving three defendants, B , C , and D , is helpful in illustrating the equilibrium position. Suppose each defendant assumes that, if the case goes to trial, his probability of losing is .5. Prior to any settlement the expected liability of each defendant is \$16.67 ($= (1/3) \cdot 5(\$100)$), because the expected liability at trial is \$50 and the probability of being sued by A is $1/3$. Suppose B attempts to settle for \$16.67. This would leave both C and D with an expected liability of \$20.83 ($= (1/2) \cdot 5(\$100 - \$16.67)$). This is an unstable situation. Both C and D would be willing to offer more than \$16.67 to settle in place of B , and since the plaintiff prefers larger to smaller settlements A would prefer C 's or D 's offer to B 's. Suppose B raises his offer, and now B , C , and D each offer \$20.83. If A tentatively accepted B 's and C 's offers, D would now face an expected liability of \$29.17 ($.5(\$100 - \$20.83 - \$20.83)$). D will not sit back in this instance but instead will approach A with an offer higher than \$20.83. The equilibrium settlement per defendant will be \$25 because if two defendants settle for this amount, the third will face an expected liability of \$25 ($= .5(\$100 - 2(\$25))$). Any lower settlement will make the left-out defendant worse off than those who settle and will induce greater offers by each of the defendants to avoid being left out. Any higher settlement will induce a reduction in the settlement terms because each defendant will prefer to be left out.⁶²

⁶¹ One can also show that each of the $n - 1$ defendants will settle for an identical sum. For example, suppose the contrary were true and the first defendant were able to settle for \$1 but the others for \$2. This would not be an equilibrium because all defendants would compete to be first, simultaneously driving up the terms of the first settlement and driving down the terms of subsequent settlements until the settlements were equal.

⁶² The competition to settle, leading to an increase in the plaintiff's total recovery, has been referred to as the "whipsaw" effect of a no-contribution rule. See S. Rep. No. 96-428, *supra* note 16, at 2. Although we have demonstrated in the text that this competition should reach an equilibrium in which each defendant settles for the same amount, it is a commonplace in antitrust litigation that defendants who settle early obtain "bargains" compared to those who settle later. This whipsaw effect—which is consistent with our argument that the position of left-out defendants steadily deteriorates as others settle—is held up as a source of unfairness. According to the critics of the no-contribution rule, anything that leads to higher and higher recoveries as settlement proceeds is unfair to the later-settling defendants.

But the whipsaw effect of settlement does not produce an *ex ante* difference in the liabilities of defendants; each defendant's expected liability under no contribution is the same and is given by equation (8). The fact that later-settling defendants must pay more than this equilibrium amount may reflect their own inattentiveness to negotiations by other litigants, or perhaps bad advice by attorneys who urge their clients not to settle, rather than any unfairness. Moreover, the steady increase in settlement values could be caused by the erosion of a sharing agreement (see p. 360 *infra*). The defendant's litigation errors, however costly to it, cannot be advanced as proof that the system of rules is unfair.

To bring out some additional implications of our formal analysis, we write the expected liability of the left-out or n th defendant after the other $n - 1$ have settled as

$$V^n = p^n(X - (n - 1)S), \quad (7)$$

where S equals the settlement per defendant. Since each defendant may be the n th defendant, equilibrium requires that $V^n = S$. Solving (7) for S (and deleting superscripts) yields

$$S = pX/(1 + p(n - 1)), \quad (8)$$

noting that p is identical for all defendants.

Although an increase in n reduces the settlement per defendant (S), the proportional reduction in S is less than the proportional increase in n .⁶³ Therefore $(n - 1)S$, the aggregate settlement of all but the left-out defendant, will tend to increase as n increases, holding constant p and X .

The aggregate expected liability of all members of the cartel (nS) is also a positive function of n . Therefore under a rule of no contribution, the likelihood of deterring the formation of a cartel that controls a given share of the market will tend to increase as the number of cartel members increases. Differently stated, if pX is the optimal expected sanction for an alleged antitrust violation, the expected penalty will exceed the optimal expected penalty, creating the possibility of overdeterrence. Moreover, overdeterrence is more likely the greater the number of participants in an alleged violation.

The aggregate expected liability, nS , will approach X as n increases, independent of the level of p .⁶⁴ If one interprets p as an approximate measure of the worthiness of the plaintiff's claim, then as n gets large the aggregate

⁶³ The proportionate reduction in S as n increases (or the elasticity of S with respect to n) is given by

$$-\partial \ln S / \partial \ln n = pn / (pn + 1 - p) < 1.$$

The proportionate change in the aggregate settlement, $(n - 1)S$, as n changes is given by

$$\partial \ln(n - 1)S / \partial \ln n = n / (n - 1) + \partial \ln S / \partial \ln n > 0$$

since $\partial \ln S / \partial \ln n > -1$.

⁶⁴ Rewrite nS from (8) as

$$nS = \frac{pX}{(1/n + p - p/n)}.$$

Therefore,

$$\lim_{n \rightarrow \infty} nS = X.$$

gate settlement will be largely independent of the validity of the plaintiff's claim. In other words, a plaintiff with a spurious claim against a large group of defendants may be able to extract an aggregate settlement comparable to what a plaintiff with a valid claim could obtain.⁶⁵

If defendants can agree to share equally in any trial losses and refuse to settle with the plaintiff unless all others also settle,⁶⁶ then the aggregate expected liability of the n firms will equal pX , and the individual settlement offers will equal pX/n , compared to the greater liability when the firms do not cooperate of $pX/(1 + p(n - 1))$ per firm. Although such cooperation is possible (particularly when all defendants have identical p 's), the plaintiff may be able to prevent it. The plaintiff can induce one defendant to cheat on the agreement by offering to settle with him for an amount less than pX/n . The remaining $n - 1$ defendants now will have to increase their cooperative settlement offers. But if the plaintiff repeats this procedure, those who continue to cooperate will face successively greater liabilities than those who cheat, and eventually the agreement may break down with defendants competing with each other to avoid being the left-out defendant.

Suppose we relax the assumption that the plaintiff's probability of winning is identical for all defendants. Frequently in antitrust litigation the evidence is stronger against some defendants than against others. For example, one group of defendants may have been indicted and pleaded *nolo contendere* in the face of strong evidence, whereas another group was named as unindicted conspirators, and yet a third group apparently exonerated by the grand jury. Critics of the no-contribution rule have argued that the pressure to settle, which we have described above, increases the settlement offers of the less culpable defendants relative to those of the more culpable. For example, the argument runs, if for one class of defendants $p = .9$ and for another $p = .1$, then the settlements will not be in the ratio of 9 to 1, but instead the parties for whom $p = .1$ will pay more. It is possible to show, however, that the reverse is true. The competition to settle will *magnify* the relative payment of the more culpable parties. The appendix to this article contains a proof of this proposition.

2. *Contribution.* A wide variety of contribution rules could be analyzed and compared to no contribution, but two broad classes (and variants within each class) appear to capture the essential features of contribution. The first permits a defendant who goes to trial and loses to obtain (with varying probability of success) contribution from all of the other $n - 1$ firms, includ-

⁶⁵ If, however, X decreases when p does, because a plaintiff with a feeble claim will have difficulty establishing antitrust injury, then such a plaintiff cannot obtain significant settlements no matter how many defendants he names.

⁶⁶ Or if they agree that none will settle unless the plaintiff agrees to reduce the recovery sought from the others, see p. 344 n.37 *supra*.

ing those who previously settled with the plaintiff. The other allows contribution only from defendants who have *not* settled.⁶⁷

Under the first rule, the expected liability of firm i if it settles equals

$$V^s = S + p(cY), \quad (9)$$

where S equals the settlement, p the probability that a nonsettling defendant will lose at trial, Y the contribution that i pays to the losing defendant, and c the probability that the losing defendant will be successful in obtaining contribution from i .⁶⁸ (The superscript i is deleted for notational convenience.) Equation (9) generalizes our earlier analysis of no contribution, where c was implicitly set equal to zero.

The expected liability of i if it does not settle and all the other defendants settle equals

$$V^n = p(X - (n - 1)S - (n - 1)cY). \quad (10)$$

We have limited the nonsettling alternative to the case where the other $n - 1$ defendants (rather than a smaller number) have settled. The reason is that an equilibrium, if one exists, requires $V^s = V^n$, implying that defendants will offer positive settlements. Since the plaintiff has an incentive to settle with at least $n - 1$ defendants, the nonsettling alternative is one where $n - 1$ firms have settled.

If the plaintiff is successful at trial, i 's actual liability, provided that he can obtain contribution from the other $n - 1$ firms, will be only X/n , since any amount in excess of that sum will be reimbursed via contribution. That is,

$$X/n = X - (n - 1)S - (n - 1)Y \quad (11)$$

or

$$Y = X/n - S. \quad (12)$$

Substituting (12) into (9) and (10) yields

$$V^s = S(1 - pc) + (X/n)pc \quad (13)$$

$$V^n = pX(n - (n - 1)c)/n - pS(n - 1)(1 - c) \quad (14)$$

and solving for S (noting that $V^n = V^s$) yields

$$S = pX(1 - c)/(1 + p(n - nc - 1)). \quad (15)$$

⁶⁷ These two approaches correspond roughly to the original and amended versions of the Uniform Contribution among Tortfeasors Act. See note 11 *supra*.

⁶⁸ We make the same set of assumptions as in our analysis of no contribution (that is, all parties are risk neutral, the probability of the plaintiff's winning at trial is independent of the proportion of defendants settling and of the identity of the particular defendant sued, and litigation expenses v) are zero.

If contribution is certain ($c = 1$), S will be zero: that is, no defendant will offer a positive amount to settle if he will subsequently be required to contribute pro rata to the losing defendant. The intuitive explanation is straightforward. Where pro rata contribution is assured, a firm has nothing to lose and everything to gain from refusing to settle and going to trial. If he wins at trial, he pays nothing; if he loses, then—thanks to contribution—he pays no more than he would have paid had he settled. For example, consider two defendants, B and C , and let p and X equal .5 and \$100 respectively. If B were to settle for \$1, his expected liability would not be limited to \$1 because he would have to contribute to C if C litigated and lost. B 's expected liability is thus \$25.50 ($V^B = \$1 + \$49(.5)$) while C 's remains \$25 ($V^C = \$50(.5)$). Therefore, both B and C would prefer to be in C 's position—resulting in a standoff unless both settle simultaneously or each settles conditional on the other's settling. This result is in contrast to no contribution, where the equilibrium result was at least $n - 1$ settlements. The equilibrium here is zero settlements, unless it is possible to agree to a complicated arrangement requiring simultaneous or conditional settlements.

Another important difference between the contribution rule modeled here and a rule of no contribution is the aggregate expected liability of the defendants. Under contribution (assuming $c = 1$), each defendant's expected liability is $V^n = p(X/n)$, and hence the aggregate liability is pX compared to the greater value of $npX/(1 + p(n - 1))$ under no contribution.

When contribution is uncertain ($c < 1$), the difference between it and no contribution becomes less extreme. Assuming $c < 1$, the equilibrium is again one of positive settlements for at least $n - 1$ defendants where the value of S is given by equation (15).⁶⁹ But the settlements will be smaller than under no contribution because the settling defendant may later be required to compensate a defendant who loses at trial. More generally, the size of the individual settlement and the aggregate expected liability of the n firms will tend to rise as c declines. In the limit, as c approaches zero, both the settlement and aggregate liability reach their maximum values and become identical to the values under no contribution.⁷⁰

⁶⁹ One remaining difference is that the n th defendant is more likely to settle under no contribution than contribution. Since the defendant has less to lose in a trial because of the possibility of obtaining contribution, he is less willing to offer terms the plaintiff will accept. A proof is available from the authors.

⁷⁰ From (15) we have

$$\frac{\partial S}{\partial c} =$$

$$pX \left[\frac{-(1 + p(n - nc - 1)) + (1 - c)p^n}{(1 + p(n - nc - 1))^2} \right] < 0,$$

Some numerical examples may be helpful in understanding the differences between contribution and no contribution. Assuming $X = \$100$ and $p = .5$, Table 1 gives the equilibrium settlement per firm and the aggregate expected liability for several different values of c and n . Notice that both the settlement S and the aggregate expected liability (AEL) decline as c increases from 0 to 1, holding n constant. And for a given value of c (except $c = 1$), S falls and AEL increases as n increases. Of further interest is that the difference between no contribution ($c = 0$) and uncertain contribution ($c = .5$) becomes relatively small as n increases.

We turn now to the type of rule that allows contribution only from non-settling defendants. At least as a first approximation, this rule is equivalent in its effect on settlement to a rule of no contribution. Since any future liability to a defendant who goes to trial and loses is eliminated by this rule, V^s in equation (9) equals S . And since each firm may find itself in the position of the n th or left-out defendant, with no possibility of obtaining contribution, the equilibrium settlement in (15) becomes $pX/(1 + p(n - 1))$ —the same value obtained in our analysis of no contribution.

A variant of this rule would be to reduce the potential liability of a defendant who litigates not by the total settlements of the other defendants but by their share of the damages.⁷¹ For example, if $n = 2$ and one defendant settles, the remaining defendant's liability is reduced by 50 per cent. More generally, the n th defendant's expected liability if he is sued is

$$V^n = p[X(n - k)/(n - k - 1)cY], \quad (16)$$

where k is the number of settling defendants. Assuming the plaintiff is equally likely to sue any of the nonsettling defendants, one can show that the expected liability of a nonsettling defendant is pX/n independent of the value of k and c .⁷² Thus, the maximum a defendant will offer to settle for is pX/n .

since the numerator of the bracketed expression simplifies to $-(1 - p)$. Obviously the aggregate expected liability nS is also a negative function of c , since $\partial(nS)/\partial c = n\partial S/\partial c < 0$.

⁷¹ A "carve out" approach, though not exactly the same as the one modeled above, is found in Section 5 of the 1939 Uniform Contribution among Joint Tortfeasors Act and in the pending senate antitrust contribution bill. See notes 11 & 16 *supra*.

⁷² If the defendant does not settle, either he is sued and his expected liability is

$$(i) \quad V^n = p(X(n - k)/n - (n - k - 1)cY)$$

or he is not sued but risks the possibility of paying contribution equal to

$$(ii) \quad Y = X/n.$$

Assuming the plaintiff is equally likely to sue any of the $n - k$ defendants, the expected liability of a nonsettling defendant is

$$(iii) \quad \bar{L} = (1/(n - k))V^n + ((n - k - 1)/(n - k))pCY$$

Substituting (i) and (ii) into (iii) yields $\bar{L} = pX/n$.

TABLE 1
CONTRIBUTION AND NO CONTRIBUTION
($X = \$100, p = .5$)

n	$c = 0$		$c = .5$		$c = 1$	
	S	AEL	S	AEL	S	AEL
2	\$33.33	\$66.67	\$25.00	\$62.50	\$0	\$50.00
5	16.67	83.33	14.28	78.55	0	50.00
10	9.09	90.90	8.33	87.46	0	50.00

Note: AEL = aggregate expected liability.

In contrast to our previous analysis, the plaintiff is now no longer willing to accept just any positive amount to settle, because each time he settles with a given defendant the amount he can obtain from a successful trial is reduced by $(1/n)X$ rather than by the amount of the settlement. The plaintiff will accept a settlement only if the amount offered exceeds $p^a X/n$.⁷³ Thus, a settlement with defendant i will take place only if $(p^i - p^a)X/n > 0$, which is equivalent to the result for the single plaintiff-single defendant case.

There are attractive features to this type of contribution rule. Since it is neutral with respect to the relationship between p and n , it eliminates the possibility of overdeterrence (where the aggregate expected liability exceeds pX) and the related problem of rewarding spurious claims. Moreover, defendants have no incentive to cooperate or engage in strategic behavior for the purpose of developing simultaneous or conditional settlements.

III. SUMMARY AND RECOMMENDATIONS

Part I of this article argued that the question whether to allow contribution among antitrust defendants has not been settled as a matter of authority and cannot be decided as a question of fairness. At least if the antitrust laws are assumed to contain reasonable, and reasonably well-defined, prohibitions, the prospective antitrust violator can avoid the harshness of the no-contribution rule simply by complying with the antitrust laws. Nor is there persuasive evidence that some identifiable class of antitrust violators, such as small firms, are systematically at a disadvantage under the no-contribution rule compared to a contribution rule.

We therefore moved in Part II to an economic analysis of contribution versus no contribution in antitrust cases. We showed first that a rule of no contribution has as much deterrent effect as a rule of contribution. It does

⁷³ If plaintiff A refuses to settle with anyone, the expected value of A 's claim is $p^a X$. If A settles with k defendants ($0 < k \leq n$), then his claim is worth $kS + p^a X(n - k)/n$. Therefore, for A to be indifferent between settling and litigation $p^a X$ must equal $kS + p^a X(n - k)/n$ or $S = p^a X/n$.

not matter that initially some prospective participants in a price-fixing conspiracy or other unlawful joint action may anticipate little likelihood of being made to pay substantial damages because they expect the plaintiff to concentrate on other participants and because the no-contribution rule means that those other participants will have no recourse against defendants let off lightly, or even scot-free, by the plaintiff. That possibility implies only that some other prospective participant will expect the brunt of the damages to fall on him; he will withdraw; his withdrawal will increase the expected liability of other participants; and eventually—so long as the aggregate damages to which the cartel or conspiracy is exposed exceed the cartel gains—all but one of the participants will withdraw and the conspiracy will evaporate.

Hence, we found, as a first approximation, that a rule of no contribution is not subject to the objection that it produces less deterrence than a rule of contribution would do. Complicating the analysis with which we began simply strengthened this conclusion. The most important complication was to introduce the possibility that some firms are risk averse. Such firms will be more deterred if the rule is no contribution than if it is contribution, because the former rule involves greater risk and, by definition, risk is a source of disutility to the risk averse.

The conclusion was further strengthened when we examined the interaction between settlement and the choice between contribution and no contribution. A rule of no contribution creates competition among defendants to settle rather than litigate. Each defendant dreads being the last to settle, because every time one defendant settles the expected liability of the remainder increases. The plaintiff can use this fear to obtain a larger aggregate settlement under a no-contribution rule than he could expect to obtain if all of the defendants litigated.

Defendants can avoid this self-destructive competition to settle by entering and enforcing sharing agreements, but these are, in effect, costly settlements. The last portion of Part II suggested a different, and apparently less costly, way of overcoming this competition: a "carve-out" rule whereby settlement with one defendant reduces the damages recoverable from the remaining defendants. We analyzed a carve-out rule under which liability was apportioned equally, so that settlement with any defendant reduced the liability of the remaining defendants by $(1/n)X$. A rule of this sort could be relatively simple to administer. It would require, however, that a defendant with a trivial market share pay as much as a defendant with more substantial sales. As this result affects the "fairness" objectives of contribution, none of the proponents of contribution among antitrust defendants urges the $(1/n)X$ carve-out rule as an alternative to no contribution.

Other carve-out rules, based on market share or relative fault, would have similar effects on settlement as the $(1/n)X$ discussed in Part II. Any carve-out

rule would prevent the competition among defendants to settle. But these carve-out rules would probably be very costly to administer.⁷⁴ One cost of implementing such a carve-out rule would lie in having to ascertain the settling defendants' market shares (fault, or whatever). Establishing a market definition and determining market shares is a difficult business, since market definitions are quite malleable under current antitrust doctrine. A substantial part of the cost of litigation is consumed by market questions. The incremental cost of ascertaining carve-out shares might not be large if the case were tried on the merits, but if all or most of the defendants settled the rule might create a need for a separate trial on shares.

Moreover, the settlement carve-out rule discussed above operates just like a sharing agreement under a no-contribution rule, and just like such an agreement it gives each defendant an incentive to cheat. A plaintiff could offer defendant *A* a settlement-like deal—say, a promise not to collect part of any judgment—in exchange for a payment of less than that defendant's contribution share.⁷⁵ The replacement of settlements with side agreements concerning the collection of damages would resurrect the pressure to settle associated with a no-contribution rule. If such side agreements were banned,⁷⁶ they might be replaced with informal understandings.

Even when the settlement is explicit, and market shares (fault, or whatever) can be determined, that might not end the matter. Plaintiffs would have an incentive to argue that the settlement with *A* did not relate to the conspiracy involving *B* and *C* and so should not reduce the recovery from *B* and *C*. This argument need not involve the self-contradiction of the plaintiff's naming *A* as a defendant and denying after settling with him that *A* had been part of the illegal combination. The plaintiff could elect not to name *A* as a defendant; initial settlement discussions would take place under the plaintiff's promise that a settlement would ensure that the settling person was not named as a party. Settlements with nonparties would operate, just as a no-contribution rule does, to increase the stakes of nonsettling parties. A plaintiff could achieve much the same effect by a "settlement" with a named defendant reciting that it satisfied some other, unrelated claim of the plaintiff's.⁷⁷

⁷⁴ See Note, Contribution in Private Antitrust Actions, *supra* note 46, at 1558-59.

⁷⁵ Such side agreements—often called *Mary Carter* agreements after a case that approved their use—have become common in states that allow contribution among joint tortfeasors. See *Booth v. Mary Carter Paint Co.*, 202 So. 2d 8 (Fla. 1967). Several state courts have expressed distaste for *Mary Carter* agreements, but few have forbidden them. In most states the agreements are lawful if disclosed to the court. See, for example, *Reese v. Chicago, B. & Q. R.R.*, 303 N.E. 2d 382 (Ill. 1973); *Bristol-Myers Co. v. Gonzales*, 561 S.W. 2d 801 (Tex. 1978).

⁷⁶ As they have been in some states. See, for example, *Cox v. Kelsey-Hughes Co.*, 594 P.2d 354 (Okla. 1978); *Lum v. Stinnett*, 488 P.2d 347 (Nev. 1971).

⁷⁷ There are other problems and other ways to evade a "carve out" contribution rule. For

A final point in comparing the effects of contribution and of no contribution on antitrust settlements is that if defendants are risk averse a rule of no contribution, by making litigation riskier, makes settlement relatively more attractive than it would be under a contribution rule. Thus, by increasing the settlement rate, no contribution reduces the costs of administering the antitrust laws, since settlements are less costly than trials.

For those who believe that the existing sanctions for antitrust violations are inadequate, the fact that no contribution encourages settlements, and at terms highly favorable to plaintiffs, should constitute a decisive argument in favor of retaining no contribution, especially since it is probably less costly to administer even apart from the effect on the ratio of settlements to trials.⁷⁸ For those who believe the existing sanctions for antitrust violations are already too harsh, the conclusion that a rule of no contribution makes them still harsher will probably seem a decisive argument in favor of contribution, although the probably higher administrative costs of contribution should be weighed in the balance as well.

If the rule of no contribution operated only in the sphere of price-fixing conspiracies *and* if price fixing were clearly and (from an economic standpoint) correctly defined, we would unreservedly recommend retention of the rule, which we believe to be administratively cheaper. The socially optimal amount of price fixing is very low, and possibly zero. Therefore it is a detail whether the damages obtained in a given case are the optimal sanction or more severe than the optimal sanction. The fact that no contribution operates to increase the severity of the antitrust damages remedy would be at worst a neutral fact (if the severity were already optimal) and at best an improvement (if the damage remedy were insufficiently severe). The complication comes from the fact that price

example, a plaintiff who bought only from firm *A* could sue *A* yet attempt to settle with firm *B*, a seller of the same product, who would be severally liable for the plaintiff's damages if he were named. *A* would be hard pressed to establish that the plaintiff's settlement with *B* should "carve out" any amount of *A*'s liability. What amount would that be?

What would happen, moreover, if there were successive or parallel suits by different plaintiffs against the same groups of defendants? Would amounts carved out of the recovery from nonsettling defendants in suit 1 also be carved out in suit 2? The costs of calculating different contribution ratios in different suits could be substantial. Moreover, there would be significant problems in establishing a contribution ratio in suit 1 while suit 2 was pending; the evidence needed to establish contribution ratios in one case might be admissible to establish liability in the other. Plaintiffs could attempt to litigate cases (or settle them) in sequence, establishing in yet another way the same pressure that exists under no contribution to settle early rather than be left out.

⁷⁸ Despite the observations in the text about the costs of administering a contribution carve-out rule, we cannot be *sure* that it is more costly than the no-contribution rule. The no-contribution rule leads to sharing agreements, which are costly to reach and enforce, and it produces disutility to the risk averse, which is a real economic cost also.

fixing, and *a fortiori* other joint actions which might be attacked under the antitrust laws, is not well defined.⁷⁹ In these circumstances anything—including a rule of no contribution—that increases the antitrust penalties will deter lawful “gray area” conduct as well as unlawful conduct, creating social costs difficult to estimate but impossible to ignore.

Because uncertainty is a fact of life of contemporary antitrust jurisprudence, we are unable to formulate a clear-cut policy recommendation concerning adoption of a rule of contribution in antitrust cases. Our recommendations are complex and conditional. They are as follows:

1. If the current level of antitrust sanctions is deemed inadequate, the rule of no contribution should definitely be retained.
2. If proponents of antitrust contribution have the burden of making a convincing case for changing the status quo, they have not carried that burden and again the rule of no contribution should be retained. We personally incline to this view.
3. If contribution is adopted, it should be limited to nonsettling defendants (that is, a defendant who has settled cannot be sued for contribution) and a litigating defendant's liability should be reduced by the amount the settling defendants would have been required to pay in contribution if no one had settled (that is, X should be reduced to Xk/n where k denotes the number of settling defendants).

APPENDIX

We prove here that a no-contribution rule induces defendants who have a relatively greater chance of being found liable at trial to offer settlements that magnify the amounts they pay relative to defendants who are less likely to be found liable.

Assume that members of the alleged cartel could be placed into two groups, i and j , and that evidence of participation in the cartel is stronger for the i firms than for the j firms. Consequently, $p^i > p^j$, where p^i and p^j denote the probabilities of the plaintiff winning against members of group i and j respectively. Equilibrium requires that the expected liability of the left-out or n th firm in each group equal the settlement offered by other members of the group. More formally, the settlements S^i and S^j are found by solving the following pair of equations:

⁷⁹ See, for example, *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*, 441 U.S. 1, 9, 19 (1979) (“‘price fixing’ is a shorthand way of describing certain categories of business behavior to which the *per se* rule has been held applicable. . . . Literalness is overly simplistic and often overbroad. . . . Our inquiry must focus on whether the effect . . . is to threaten the proper operation of our predominantly free market economy. . . .”); Robert H. Bork, *The Rule of Reason and the Per Se Concept II: Price Fixing and Market Division*, 75 *Yale L.J.* 373 (1966); Richard A. Posner, *The Rule of Reason and the Economic Approach: Reflections on the Sylvania Decision*, 45 *U. Chi. L. Rev.* 1 (1977).

$$S^i = p^i(X - (n^i - 1)S^i - n^i S^j) \quad (\text{A1})$$

$$S^j = p^j(X - n^i S^i - (n^j - 1)S^j), \quad (\text{A2})$$

where n^i and n^j denote the number of firms in each respective group. This yields

$$S^i = \frac{p^i X (1 - p^j)}{(1 - p^i)(1 - p^j) + p^i n^i (1 - p^j) + p^j n^j (1 - p^i)}, \quad (\text{A3})$$

and S^j is obtained by switching the superscripts i and j . Since the ratio of equilibrium settlements can be written as

$$\frac{S^i}{S^j} = \frac{p^i(1 - p^j)}{p^j(1 - p^i)}, \quad (\text{A4})$$

it follows that the ratio S^i to S^j increases as p^i rises relative to p^j , and that the former ratio exceeds the latter. For example, if $p^i = .67$ and $p^j = .33$, then S^i to S^j equals 4, although the ratio of probabilities is 2. Notice also that the ratio of settlements is independent of the size of the two groups. Thus, if n^i increases, holding constant n^j , both S^i and S^j will fall proportionately so that S^i/S^j remains constant.⁸⁰

A numerical example illustrates what this means. Assume there are two firms in each group ($n^i = n^j = 2$), $p^i = .5$ and $p^j = .2$, $X = \$100$, and litigation costs are zero.⁸¹ Substituting the relevant values into (A3) yields $S^i = \$28.57$ and $S^j = \$7.14$. Observe that if one of the n^i firms is the left-out defendant, its expected liability will equal $\$28.57$ ($= .5(100 - \$28.57 - (2)\$7.14)$), a sum identical to the settlement of the other firm in group i . If the settlement had been less than $\$28.57$, the left-out firm would have faced a greater liability than the settling firm and hence would have offered a higher sum to avoid being left out. If the settlement were greater than $\$28.57$, the advantage would lie with the left-out firm, and both members of group i would have reduced their offers to avoid settling. The only equilibrium, therefore, is $\$28.57$. Similar reasoning could be used to show that for

⁸⁰ A general solution to the case of differences in probabilities among n defendants requires one to solve the following system of n simultaneous equations for the n values of S^i (where $i = 1, \dots, n$):

$$\begin{aligned} S^1 &= p^1(X - (S^2 + \dots + S^n)) \\ S^2 &= p^2(X - (S^1 + S^3 + \dots + S^n)) \\ &\vdots \\ S^n &= p^n(X - (S^1 + \dots + S^{n-1})). \end{aligned}$$

⁸¹ We assume here that $p = .2$ for the j defendants whether they go to trial with the i defendants or stand trial by themselves. This may not fully reflect the experience in antitrust cases, because inclusion of an i defendant among those who are tried will affect the admissibility of evidence and may influence the sympathies of the factfinder. If $p < .2$ for a j defendant standing trial alone, the plaintiff would negotiate for settlement first with the j defendants, attempting to ensure that an i defendant is left out. See S. Rep. No. 96-428, *supra* note 16, at 34-40 (statement of Senators Metzenbaum and Kennedy) (arguing that plaintiffs will attempt to settle first with smaller and less culpable defendants).

the j firms the only equilibrium settlement is \$7.14. Finally, notice that the aggregate expected liability of the four firms is \$71.43 ($= (2) \$28.57 + (2) \7.14), which is greater than the corresponding value of \$50 ($= (.5)100$) if the four defendants fully cooperated in their defense.⁸²

⁸² The plaintiff would obviously be better off if he faced four defendants with a probability of .5 each than two with .5 and two with .2 probabilities. In the former instance, the aggregate expected value of the plaintiff's claim would equal \$80 (since S^1 equals \$20 from equation (8) *supra*) compared to \$71.43 in our example.