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An Analysis of the Rules of Contribution and No Contribution for Joint and Several Liability in Conspiracy Cases

Timothy James Stanley

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AN ANALYSIS OF THE RULES OF CONTRIBUTION AND NO CONTRIBUTION FOR JOINT AND SEVERAL LIABILITY IN CONSPIRACY CASES

Timothy James Stanley*

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I. Introduction

Joint and several liability presents itself in a variety of situations where actors cause damage. Tort, antitrust, ERISA, environmental, and securities laws must all be applied in instances where multiple parties cause an injury. Under joint and several liability laws, an injured plaintiff may seek damages from any or all of the defendants that cause the injury. Whether a defendant who pays more than its share of the damages has a right to seek contribution from other wrongdoers depends on the particular law or statute that has been violated. Three rules which have been applied regarding a right to contribution include the no contribution rule, the contribution with claim reduction rule and the contribution with settlement reduction rule.

At common law there was no right to contribution among joint tortfeasors for intentional torts. Many American jurisdictions applied this common law rule to negligent tort cases

2. "Contribution refers to a cause of action whereby one who has discharged a common liability or obligation, typically by satisfying a judgment, may recover from others who are jointly liable for their respective shares of that liability or obligation." Contribution and Claim Reduction in Antitrust Litigation, 11 A.B.A. SEC. ANTITRUST L. MONOGRAPH 4-5 (1986) [hereinafter Contribution and Claim Reduction] (paraphrasing the definition given in Fidelity & Casualty Ins. Co. v. Sears, Roebuck & Co., 199 A. 93 (Conn. 1938)). See generally KEETON ET AL., supra note 1, § 50, at 336-41.
3. Under the no contribution rule, if the plaintiff settles with a defendant, then the amount of damages that the plaintiff can seek from the remaining non-settled defendants is reduced by the settling defendant's settlement amount. A defendant who pays more than its share of the liability cannot seek contribution from other defendants.
4. Under the contribution with claim reduction rule, if the plaintiff settles with a defendant, then the amount of damages that the plaintiff can seek from the remaining non-settled defendants is reduced by the settling defendant's attributable share of the damages. A defendant who pays more than its share of the liability can only seek contribution from defendants that have not previously settled. This rule has also been referred to as claim reduction.
5. Under the contribution with settlement reduction rule, if the plaintiff settles with a defendant, then the amount of damages that the plaintiff can seek from the remaining non-settled defendants is reduced by the settling defendant's settlement amount. A defendant who pays more than its share of the liability can seek contribution from all defendants, including those that have previously settled. This rule has also been referred to simply as contribution.
as well. Currently, most states provide for some sort of contribution among negligent, but not intentional, tortfeasors. Most federal laws also allow for contribution. Some federal laws, however, do not provide for a right to contribu-

---

7. Reath noted the expandability of the no contribution rule, stating: It is singularly unfortunate, and has led to misunderstanding, that Merryweather v. Nixan should have been continually treated as stating the "general rule." As a matter of fact that case states not the rule, but the exception. The general rule is that among persons jointly liable the law implies an assumpsit either for indemnity or contribution, and the exception is that no assumpsit, either express or implied, will be enforced among willful tort-feasors or wrongdoers.

Reath, supra note 6, at 177.

Prosser and Keeton, in discussing the application by American courts of Merryweather v. Nixan, note that its holding was extended to negligent torts. They explain:

The early American cases applied the rule against contribution to cases of willful misconduct, but refused to recognize it where the tort committed by the claimant was a matter of negligence or mistake. But once the door was thrown open to joinder in one action of those who had merely caused the same damage, the origin of the rule and the reason for it were lost to sight. The great majority of our courts proceeded to apply it generally, and refused to permit contribution even where independent, although concurrent, negligence had contributed to a single result.

Keeton et al., supra note 1, § 50.


In several legislative and judicial contexts, the questions of whether a right of contribution should exist among joint tortfeasors, and if so, whether claim reduction or settlement reduction is preferable, remain unanswered.

This article will examine the three rules that have been applied in joint and several liability situations: no contribution, contribution with claim reduction, and contribution with settlement reduction. The rule selected affects a party’s expected liability, and thus the level of deterrence a party faces ex ante an activity. Moreover, after detection of the activity has occurred, the rule affects the likelihood of settlement between parties.

This article focuses on conspiracies that cause joint harm. Much of the analysis in the article applies to both conspiracy and non-conspiracy joint and several liability situations. Nevertheless, some analysis that is particular to conspiratorial acts by parties will be presented. Conspiracies raise a special case of harm caused by multiple actors. Conspirators are likely to have information on the activities of the other conspirators. This information may be of value to


11. For example, proposed legislation to change the antitrust laws to allow contribution has been periodically debated. See, e.g., Contribution and Claim Reduction in Antitrust Litigation, supra note 2, at 71-85; Edward D. Cavanagh, Contribution, Claim Reduction, and Individual Treble Damage Responsibility: Which Path to Reform of Antitrust Remedies?, 40 VAND. L. REV. 1277, 1314-22 (1987).

12. Many of the laws providing a right of contribution have not explicitly stated whether claim reduction or settlement reduction should be applied. Courts have not interpreted legislative silence on the issue consistently.

For example, the circuit courts are currently split as to whether claim reduction or settlement reduction should be used for securities violations. The Ninth Circuit uses the claim reduction approach, whereas the Second Circuit uses the settlement reduction rule. Compare Franklin v. Kaypro Corp., 884 F.2d 1222 (9th Cir. 1989) (applying contribution with claim reduction), cert. denied sub nom. Franklin v. Peat Marwick Main & Co., 498 U.S. 890 (1990) with Singer v. Olympia Brewing Co., 878 F.2d 596 (2d Cir. 1989), cert. denied, 493 U.S. 1024 (1990) (applying contribution with settlement reduction).

13. On the difference between joint torts and joint tortfeasors see Keeton et al., supra note 1, § 46. In this article, the focus is on joint tortfeasors, where multiple parties jointly perform the act.

14. See infra part VI.
the plaintiff, and thus could be exchanged by a defendant for a lower monetary settlement. Conspirators can also take into account the different liability rules in negotiating a division of the conspiracy's benefits. Furthermore, the plaintiff's likelihood of winning at trial against one conspirator will often correlate with the likelihood of winning its case against another conspirator.

Whether a right to contribution should exist in joint and several liability situations for conspirators was analyzed in the early 1980's by Professors Easterbrook, Landes and Posner, and Professors Polinsky and Shavell. They examined conspiracies in the context of antitrust violations. Easterbrook, Landes and Posner concluded that the no contribution rule would lead to more settlement and at least as much deterrence as the contribution rules. Polinsky and Shavell showed that if an organization's decisionmaker is insulated from the full amount of an organization's damages, then the no contribution rules might lead to less deterrence than the contribution rules.

This article will build on previous analyses in examining the deterrent and settlement effects of the different contribution rules. The above authors assumed symmetric information and beliefs in reaching their conclusions and recommendations. Yet it is often the case that conspirators will not have symmetric information and beliefs. This article explores the effects of asymmetric information and beliefs on the decisionmaking of the defendants and the plaintiff. When the analysis is expanded to allow for asymmetric information, previous conclusions do not always hold.

After providing a basic introduction to the rules and the model's assumptions, this article examines the deterrent ef-

15. This contrasts with the case of a non-conspirator, whose participation in a multiparty tort may result from some unfortunate event.
20. See infra part III.B.
fects of the different rules under asymmetric information. It then shows that neither the no contribution rule nor the contribution rules always lead to more deterrence, even where the decisionmaker is not insulated from the full amount of damages.21

The article then explores the conspiratorial defendants’ incentives to give and the plaintiff’s incentives to accept information and evidence about the conspiracy in lieu of monetary compensation in settlements.22 Because of the settlement-bar to contribution under the no contribution rule and the contribution with claim reduction rule, a defendant will be willing to provide the plaintiff with information about the conspiracy at settlement. However, while the plaintiff will have an incentive to accept information in lieu of monetary compensation from any defendant under the no contribution rule, under the contribution with claim reduction rule the plaintiff will have a disincentive to cheaply settle with defendants who are liable for a high proportion of the damage. Additionally, the article demonstrates that the defendants that appear most culpable, in that they are aware of the wrongfulness of their actions, are more likely to expend effort collecting conspiracy information against others and hiding conspiracy information about themselves.23 As a consequence, these defendants may be likely to obtain a low monetary settlement by providing conspiracy information to the plaintiff.24

The article then focuses on settlement. First, the article examines the disincentive for defendants to settle individually under the contribution with settlement reduction rule.25

21. See infra part III.B.
22. See Jong-Goo Yi, Essays in the Economics of Litigation with Multiple Parties; Essay 3 Litigation with Multiple Defendants: How to Settle under Different Apportionment Rules 92-94 (1991) (unpublished Ph.D. dissertation, Stanford University). I will extend his analysis of information exchange between the defendant and the plaintiff to include situations where a defendant will not be willing to provide the plaintiff with information until after they settle.
23. See infra part III.C.3.
24. Compare Easterbrook et al., supra note 16, at 360 (defining the most culpable defendants as the defendants most likely to lose at trial) with Yi, supra note 22, at 79 (defining the most culpable defendants as the defendants causing the most damage).
25. This analysis is shown both by Easterbrook, Landes and Posner, and by Polinsky and Shavell. See Easterbrook et al., supra note 16, at 362; Polinsky & Shavell, supra note 17, at 458-59.
Then it demonstrates that, although the no contribution rule may lead to more defendants settling with the plaintiff, neither the no contribution rule, nor the contribution with claim reduction rule always leads to an increased likelihood of complete settlement between all parties and the avoidance of trial.\textsuperscript{26}

The analysis does not give a clear cut choice for a best rule, as the informational settings and types of defendants will often determine outcomes under the different rules. However, I recommend that the contribution with claim reduction rule be applied to conspiratorial joint and several liability situations because, while placing greater liability, and thus deterrence, on defendants liable for larger proportions of the damage, the rule will not discourage settlement.\textsuperscript{27} Since the no contribution rule does not discourage settlement, it is my second choice. The contribution with settlement reduction rule is the least desirable because it tends to discourage settlement by furnishing a disincentive to the defendant to provide the plaintiff with information at settlement, as the defendant may have to pay contribution to later trial-losing defendants.

The article also examines the apportionment of damages under the contribution rules. Professors Kornhauser and Revesz extensively analyzed the allocation of damages under the contribution rules for joint and several liability.\textsuperscript{28} However, they did not examine situations where bargaining by the conspirators over the benefit of the conspiracy can occur and situations where one party is able to control the actions of another. This article examines these situations. It shows that if conspirators are able to bargain about the division of the conspiratorial benefit, then the per capita liability allocation rule may be more efficient than either the comparative

\begin{footnotesize}
\begin{itemize}
    \item \textsuperscript{26} Yi showed that where the plaintiff and defendants have asymmetric information about the amount of damage the plaintiff has suffered, the different contribution rules will affect settlement behavior and provide the above-mentioned result. \textit{See Yi, supra} note 22, at 82-90. The article explores the case where the defendants and the plaintiff disagree about the probability of the plaintiff succeeding at trial and concludes that the results are the same.
    \item \textsuperscript{27} An alternative would be to use the contribution with settlement reduction rule and allow Mary Carter agreements. Mary Carter agreements limit a settling defendant's liability, and thus do not create a disincentive for the defendant to settle or to give information to the plaintiff. \textit{See infra} part V.B.
\end{itemize}
\end{footnotesize}
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fault or comparative benefit liability allocation rules. However, the comparative fault liability allocation rule should be applied in situations where one conspirator, through the use of a "bad" threat, is able to coerce another conspirator into the conspiracy. Other exceptions to the per capita liability allocation under the contribution rules are explored as well.

Finally, the article recommends that in most conspiratorial situations the contribution with claim reduction rule should be applied where harm is caused by conspiracies; and that liability be allocated per capita. The recommendations are quite general, and apply to antitrust law in the same manner as tort law.

The article proceeds as follows: Section II defines the rules and gives numerical examples to show the differences among the rules as well as assumptions used in the analysis; Section III provides a basic introduction to the model and examines the deterrence effects of the different rules; Section IV explores settlement effects of the different rules; Section V re-examines the model by lifting several of the assumptions and provides additional extensions of the model; Section VI examines the allocation of liability under the contribution rules; Section VII offers a conclusion; and Section VIII provides a technical appendix and a formalized model.

II. DEFINITIONS AND ASSUMPTIONS

This section provides definitions of the three rules being examined as well as assumptions that will be used in the analysis of these rules. These rules are: the no contribution rule; the contribution with claim reduction rule; and the contribution with settlement reduction rule.

A. Definitions of the Rules

1. No Contribution Rule

If a defendant is found liable for damages and pays in excess of the share of damages attributable to it, then the de-

29. One additional rule is similar to the no contribution rule, but allows contribution against non-settled defendants. Under that rule, if a defendant is found liable at trial for damages and pays in excess of its share of damages, then the defendant can seek contribution only from non-prior-settling wrongdoers for their share of this excess amount. If the plaintiff settles with a defendant, then the total damages the plaintiff can seek against other defendants is reduced by the settling defendant's settlement amount.
fendant cannot obtain contribution from any other wrong-
doer. If the plaintiff settles with a defendant, then the total
damages the plaintiff can seek against other defendants is re-
duced by the settling defendant's settlement amount.30

2. Contribution with Claim Reduction Rule

If a defendant is found liable at trial for damages and
pays in excess of the share of damages attributable to it, then
the defendant can seek contribution only from non-prior-set-
tting wrongdoers for their share of this excess amount. The
"with claim reduction" part of the rule means that if the
plaintiff settles with one defendant then the total damages
the plaintiff can seek against other defendants is reduced by
the settling defendant's attributable share of the damages.

3. Contribution with Settlement Reduction Rule

If a defendant is found liable at trial for damages and
pays in excess of the share of damages attributable to it, then
the defendant can seek contribution from any other wrongdo-
ers, including prior-settling defendants, for their share of this

30. In antitrust cases the amount of a settlement is deducted from antitrust
judgments after the damages have been trebled. Thus, suppose there are two
defendants that caused $100 in damages to the plaintiff. If the plaintiff settles
with defendant A for $50 and then the plaintiff wins at trial against defendant
B, defendant B will have to pay the plaintiff $250 in damages. The $250 is
equal to the trebling of the damages of $100 less defendant A's settlement of
$50 ($250 = (3 × $100) − $50). This is known as the Flintkote rule in antitrust
cases. Flintkote Co. v. Lysfjord, 246 F.2d 368, 398 (9th Cir. 1957), cert. denied,
excess amount. The “with settlement reduction” part of the rule means that if the plaintiff settles with one defendant then the total damages the plaintiff can seek against other defendants is reduced by the prior-settling defendant’s settlement amount.

4. Examples

Two examples illustrate the differences among the three rules. The first examines the case where one defendant settles before another defendant loses at trial. The second analyzes the case where one defendant loses at trial before any settlement. For these examples, liability will be allocated under the contribution rules by comparative fault.

For each example, assume that there are two defendants, defendant A and defendant B, and a plaintiff. Assume defendant A caused 70% and defendant B caused 30% of the total damages against the plaintiff; the total damages are $100; and if contribution is allowed under the rule, then a defendant is able to obtain contribution with certainty.

Example 1: Suppose the plaintiff settles with defendant A for $10 and then the plaintiff wins at trial against defendant B.

Under the no contribution rule, the plaintiff can sue defendant B for $90 in damages since $90 is the amount of damages for which the plaintiff has not yet been compensated. If the plaintiff wins at trial against defendant B, and is awarded $90 in damages, then defendant B must pay this full amount and cannot seek any contribution from defendant A.

Under the contribution with claim reduction rule, the plaintiff can sue defendant B for only $30 in damages because the plaintiff’s settlement with defendant A reduces the amount that can be sought against defendant B by defendant A’s attributable share of the damages. In this example, defendant A caused 70% of the damages, which will make defendant A’s attributable share $70. Thus, the amount of damages that the plaintiff can seek against defendant B is only $30. If the plaintiff wins at trial against defendant B for $30 in damages, defendant B cannot seek contribution against defendant A because defendant A settled prior to the plaintiff’s winning at trial against defendant B, even though
defendant B is paying more in damages than defendant A ($30 vs. $10).\textsuperscript{31}

Under the contribution with settlement reduction rule, the amount for which the plaintiff can sue defendant B is reduced by defendant A's settlement amount. Thus, the plaintiff cannot sue defendant B for $100, but only for the settlement reduced amount of $90. If the plaintiff wins its lawsuit against defendant B for $90 in damages, defendant B can seek contribution from defendant A for $60, such that defendant A pays its attributable damage share of $70,\textsuperscript{32} and defendant B pays its attributable damage share of $30.\textsuperscript{33}

The following diagram shows the timeline of events, and the table summarizes the differing results of the rules where: (1) the plaintiff settles with defendant A before suing defendant B; (2) the plaintiff later wins a lawsuit against defendant B; and, (3) when applicable under the rule, defendant B obtains contribution from defendant A.

\begin{center}
\begin{tabular}{c}
\text{\pisettles with $\triangle A$} & \text{\pi wins suit against $\triangle B$} & \text{$\triangle B$ can/cannot obtain contribution from $\triangle A$}
\end{tabular}
\end{center}

Timeline of Events

\textsuperscript{31} Under the contribution with claim reduction rule, it is a defendant's prior settlement that leads to a bar against contribution. Defendant B cannot obtain contribution from defendant A because defendant A settled prior to defendant B's loss at trial, not because defendant B is only paying its attributable share of damages. This difference is important, because it is the settlement-contribution bar that drives the incentive to settle under the contribution with claim reduction rule.

For example, suppose there are 3 defendants (X, Y and Z), each causing an equal proportion of the total damages of $90. Suppose defendant X settles with the plaintiff prior to any trial for $10. Assume that after this settlement with defendant X, that the plaintiff sues and wins at trial against defendant Y for $60 in damages ($90 less defendant X's attributable share of $30). Because defendant X settled prior to defendant Y's loss at trial, even though defendant Y has paid more than its attributable share of the damages ($60 > $30) and defendant X has paid less than its attributable share of the damages ($10 < $30), defendant Y cannot seek contribution from defendant X. But defendant Y can seek contribution from non-prior-settling defendant Z for defendant Z's attributable share of the damages of $30. If defendant Y is able to obtain contribution from defendant Z for defendant Z's attributable share of $30, this will reduce defendant Y's net payment to $30, which is defendant Y's attributable share of the damages.

\textsuperscript{32} $70 = 10 + 60$.

\textsuperscript{33} $30 = 90 - 60$. 
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<table>
<thead>
<tr>
<th>Rule</th>
<th>Plaintiff settles with defendant A for</th>
<th>Plaintiff sues and wins against defendant B damages of</th>
<th>Defendant B obtains contribution from defendant A of</th>
<th>Defendant A's total damage payment</th>
<th>Defendant B's total damage payment</th>
<th>Plaintiff's total award</th>
</tr>
</thead>
<tbody>
<tr>
<td>No contribution</td>
<td>$10</td>
<td>$90</td>
<td>$0</td>
<td>$10</td>
<td>$90</td>
<td>$100</td>
</tr>
<tr>
<td>Contribution with claim reduction</td>
<td>$10</td>
<td>$30</td>
<td>$0</td>
<td>$10</td>
<td>$30</td>
<td>$40</td>
</tr>
<tr>
<td>Contribution with settlement reduction</td>
<td>$10</td>
<td>$90</td>
<td>$60</td>
<td>$70</td>
<td>$30</td>
<td>$100</td>
</tr>
</tbody>
</table>

Comparative Outcomes Under the Different Rules

*Example 2:* Suppose the plaintiff sues only defendant A for damages of $100 and wins at trial. Under both the contribution with claim reduction rule and the contribution with settlement reduction rule, defendant A will be able to seek contribution from defendant B of $30. This will leave defendant A with a net payment of $70. Under the no contribution rule, defendant A will be unable to seek contribution from defendant B, and thus defendant A will be burdened with paying the full $100 in damages.

The following diagram shows the timeline of events, and the table summarizes the differing results of the rules where: (1) the plaintiff wins at trial against defendant A for the total damage award; and, (2) when applicable under the rule, defendant A obtains contribution from defendant B. In this example, contribution with claim reduction and contribution with settlement reduction achieve the same result.

\[ \pi \text{ wins suit against } \triangle A \rightarrow \triangle A \text{ can/cannot obtain contribution from } \triangle B \]

Timeline of Events
Rule | Plaintiff sues and wins against defendant A damages of | Defendant A obtains contribution from defendant B of | Defendant A's total damage payment | Defendant B's total damage payment | Plaintiff's total award
--- | --- | --- | --- | --- | ---
No contribution | $100 | $0 | $100 | $0 | $100
Contribution with claim reduction | $100 | $30 | $70 | $30 | $100
Contribution with settlement reduction | $100 | $30 | $70 | $30 | $100

Comparative Outcomes Under the Different Rules

B. Assumptions

The model assumes that there are multiple conspiratorial defendants that cause harm to one plaintiff, and that the defendants are jointly and severally liable for the damages caused to the plaintiff. Thus, the plaintiff can settle or go to trial against any or all of these defendants.

Initially quite a few assumptions will be explicitly made to more easily show the differences among the rules. Most of these assumptions are not essential to the conclusions, and will be lifted in Section V.A.

The model is one in which the plaintiff is simultaneously bargaining with all defendants. It will be assumed that the plaintiff, in entering negotiations with any particular defendant, cannot credibly commit to suing a particular defendant first if a settlement is not reached. If the plaintiff fails to settle with any or all of the defendants, it will be assumed that the plaintiff will randomly choose one of the non-settling defendants to sue.

34. Easterbrook, Landes and Posner developed the basic simultaneous bargaining model. See Easterbrook et al., supra note 16, at 356-64.

35. In most cases, it seems that the plaintiff will be unable to commit ex ante to negotiate and sue defendants in a particular order. Even if the plaintiff is able to do this, it might choose not to if its probabilities of winning at trial are perfectly correlated. However, in some situations, depending on the characteristics of the plaintiff and defendants, the plaintiff might be better off negotiating and suing defendants in a particular sequential order. See infra notes 51, 57.

In an extension of the model where the plaintiff's probabilities of winning at trial against different defendants are uncorrelated, it will be shown that under all of the rules, the plaintiff is able to credibly commit to negotiating with the defendants sequentially in a particular order. See infra part V.A.2.
The deterrence and settlement differences between the no contribution and contribution rules result from the party negotiations following detection of the conspiracy. Thus, it will be assumed that the plaintiff is able to detect the conspiracy, and that the uncertainty of the plaintiff collecting a damage award from a defendant is due solely to the uncertainty of the plaintiff winning at trial after detection has occurred. To the extent that uncertainty of detection exists, the different rules converge towards the same result in the analysis.

It will be assumed that the defendants are unable to form, prior to entering into the conspiracy, an enforceable sharing agreement regarding damage payments, or an agreement that no individual defendant will settle without all of the defendants settling as a group. Such agreements would change the multi-defendant analysis into one that is similar to that of the single defendant case. Thus, if there were an enforceable sharing agreement, each of the rules would lead to the same outcome.

It will be further assumed that if a defendant loses at trial against the plaintiff, then under the contribution rules the defendant is able to obtain contribution from the other defendants with certainty.

36. This is not an essential assumption. That detection has occurred seems to be implicitly assumed in the analysis of the previous authors. However, the assumption should be explicitly stated in examining the differences between the two rules. See infra part V.A.1 (lifting the assumption that detection has occurred and analyzing cases where detection is uncertain).

37. The defendants can still settle at the same time, it is just that they do not have an enforceable agreement to do so ex ante the conspiracy. For an analysis of contingent and group agreements, see infra part IV.A.

An enforceable ex ante conspiracy agreement document might be used as evidence to show that a conspiracy exists and thus, the conspirators might not wish to sign it.


39. This is not an essential assumption. But note, even if the plaintiff has different probabilities of winning against the various defendants, each defendant may be able to obtain contribution from the other defendants. This would seem especially true in conspiracy cases, where defendants may have evidence on each other, such as testimony of their recollections, that is not accessible to the plaintiff. For an analysis of uncertain contribution, see infra part V.A.3.
Finally, it will be assumed that the plaintiff's probabilities of winning at trial against different defendants are perfectly correlated.\textsuperscript{40} Thus, suppose the plaintiff has probabilities of winning at trial against defendant A of 0.5 and defendant B of 0.5. If the plaintiff sues both defendants in the same trial, then the plaintiff's probability of winning will still be 0.5. If the plaintiff loses at trial against defendant A, and then sues defendant B, the plaintiff will also lose at trial against defendant B. If the plaintiff wins at trial against defendant A, then the plaintiff would have won at trial against defendant B.\textsuperscript{41}

III. Deterrence

This section examines the deterrent effects of the different rules. The first subsection examines the situation where the defendants have symmetric information and thus symmetric beliefs. To begin with, the case where defendants have the same likelihood of loss at trial to the plaintiff and are equally liable for the damage under the contribution rules will be modeled. Then situations where the defendants are not equally liable for damages or do not have the same likelihood of loss at trial are examined. The paper demonstrates that if the defendants have symmetric information, some defendants may face less deterrence under the no contribution rule than under the contribution rules, but at least one defendant will face greater deterrence under the no contribution rule.

The article then analyzes the case where defendants have asymmetric information and different beliefs. The article shows that, where defendants have asymmetric information, neither the no contribution nor the contribution rules always lead to more deterrence. However, even where all de-

\textsuperscript{40} This assumption is not essential. For an analysis of the case where the plaintiff's probabilities of winning at trial against different defendants are uncorrelated, see infra part V.A.2.

\textsuperscript{41} If the defendants have different probabilities of loss at trial against the plaintiff, then the correlation is shown by the following example. Suppose the plaintiff has probabilities of winning at trial against defendant A of 0.5 and defendant B of 0.2. If the plaintiff loses at trial against defendant A and then sues defendant B, the plaintiff will lose with certainty, since 0.5 > 0.2. If the plaintiff loses at trial against defendant B and then sues defendant A, the plaintiff's updated probability of winning at trial against defendant A will be 0.375 = \((0.5 - 0.2)/(1 - 0.2)\).
fendants face less deterrence under the no contribution rule than under the contribution rules, the no contribution rule always leads the plaintiff to expect and receive a higher damage award.

For these two subsections, the focus will be on the deterrence caused by the expected damage payments of the defendants to the plaintiff and not on the deterrence caused by litigation or risk costs.\textsuperscript{42} We will assume that a defendant will prefer to settle if its expected settlement payment is less than or equal to its expected loss at trial.

Next the article analyzes defendants' incentives to give information and the plaintiff's incentives to accept information in lieu of monetary compensation. Defendants will provide information under either the no contribution rule or the contribution with claim reduction rule, as both rules have a settlement contribution bar that keeps later trial-losing defendants from obtaining contribution from prior-settling defendants. However, under the contribution with claim reduction rule, the plaintiff has a disincentive to cheaply settle with a defendant who is liable for a high proportion of the damage.

We then examine the deterrent effects caused by risk costs and litigation costs. Finally, the effect of decisionmaker insulation on deterrence will be examined.

A. \textit{Symmetric Information}

In this subsection, it is assumed that the defendants have symmetric information, and thus symmetric beliefs.\textsuperscript{43} Defendants have symmetric beliefs of each defendant's probability of loss to the plaintiff and each defendant's allocat-

\textsuperscript{42} See infra part III.D (examining the deterrent effect of risk) and part III.E (examining the deterrent effect of litigation costs).

\textsuperscript{43} For example, two defendants and a plaintiff could have information that leads each to believe that the plaintiff will win at trial against defendant 1 with probability 0.5 and against defendant 2 with probability 0.2. It is not necessary under symmetric information that the defendants have the same probability of loss to the plaintiff. It is only necessary that the defendants and the plaintiff agree on the probabilities that each assigns to the different defendants losing at trial.

It is also not necessary that the parties have symmetric information in order to have the same beliefs. But if the parties do have symmetric information, then they will have the same beliefs.
tion of liability for damages under the contribution rules. It is also assumed that each defendant believes \textit{ex ante} the conspiracy that the plaintiff will share its beliefs if detection of the conspiracy occurs. What is important with regard to deterrence is the \textit{ex ante} conspiracy belief of a defendant regarding its expected damages.

This subsection begins with an analysis of cases where the defendants are identical. This restriction is then lifted and cases where defendants are liable for different proportions of the damage or face different probabilities of losing at trial are analyzed.

1. \textit{Identical Defendants}

Defendants are identical, for purposes of the model, when they have caused the same proportion of damages under the contribution rules, have the same probability of losing at trial to the plaintiff and have the same information and beliefs. The case of identical defendants with symmetric information was thoroughly examined by Easterbrook, Landes and Posner and will be used to demonstrate the model. The following example illustrates how the rules differ in the bargaining process.

44. Under the no contribution rule, liability is not allocated because each defendant is potentially liable for all damages.

45. I will be assuming throughout the deterrence section of the article that part of a defendant's \textit{ex ante} conspiracy beliefs is that the plaintiff will share its beliefs. \textit{Ex ante} the conspiracy the plaintiff has no beliefs since the conspiracy has not been entered into and thus not detected by the plaintiff. Thus, \textit{ex ante} the conspiracy, the defendants can only speculate as to what the plaintiff will believe.

If a defendant believes that a plaintiff will disagree with the defendant's beliefs, then the defendant will have to take into account how it expects the plaintiff to behave in order to determine its expected damages. For example, if the defendant believes that the plaintiff will settle with every defendant for one cent, then the defendant will face little in the way of deterrence, regardless of the defendant's belief of the plaintiff's probability of winning at trial, as the defendant will plan on settling with the plaintiff for one cent. On the other hand, if the defendant believes that the plaintiff will never settle with any defendant, then the defendant will have to determine how this strategy by the plaintiff will affect the defendant's expected damage payment.

46. Easterbrook, Landes and Posner's paper focuses on settlement and the bargaining process after detection has occurred. See Easterbrook et al., \textit{supra} note 16, at 345.

47. The example assumes detection has occurred and thus, follows the analysis of Easterbrook, Landes and Posner. See \textit{id}. at 353-64.
Suppose there are two defendants which have each contributed equally to the damage of the plaintiff, and suppose that the probability of each defendant losing at trial is 0.5 and the total damage amount is $100.

Under both of the contribution rules, each defendant will face an expected liability payment of $25, and the plaintiff will receive an expected total damage award of $50. First, suppose that the plaintiff settles with neither defendant and sues only defendant A. In that case, defendant A will have a 50% chance of losing at trial to the plaintiff and paying damages of $100. But if defendant A does pay $100 in damages to the plaintiff, defendant A will be able to get $50 of that back by suing defendant B for contribution. Thus, defendant A will have a 50% chance of paying a net of $50 in damages for an expected liability payment of $25. Defendant B will also have an expected liability of payment of $25, as it will have to pay $50 in contribution to defendant A whenever defendant A loses at trial to the plaintiff, which will occur 50% of the time.

Under the contribution with settlement reduction rule, a defendant has a disincentive to settle individually, as a later trial-losing defendant can obtain contribution from the prior-settling defendants. Thus, unless there is a group or contingent settlement, there will be a trial and the result will be as above.

Under the contribution with claim reduction rule, a defendant will not have a disincentive to settle first. Suppose that the plaintiff settles with defendant A for some amount before suing defendant B. The plaintiff can then sue defendant B for $50, equal to the full damages of $100 less defendant A’s attributable share of $50. Since defendant B will have a 50% chance of losing at trial to the plaintiff, defendant B will have an expected damage payment of $25. And because the plaintiff can obtain a damage payment of $50 if it sues one (or both) of the defendants before settling with

48. Under the contribution rules, the expected damage payment of a defendant is equal to the (probability of loss at trial) $\times$ (% liable) $\times$ (total damage), which in this example is $25 = (0.5) \times (0.5) \times ($100). The total expected damage award is equal to the sum of the payments by the defendants, $50 = 25 + 25$.

49. A defendant will not settle if contribution among defendants can be obtained with certainty. See infra part IV.A. If contribution cannot be obtained with certainty, then a defendant may settle even though it may later have to pay additional damages through contribution. See infra part V.A.3.

50. See infra part IV.A (analyzing group and contingent settlements).
either, the plaintiff will want to settle with defendant A for at least $25. Defendant A will not be willing to settle for more than $25, its expected damages at trial, and thus the initial settlement between the plaintiff and defendant A will also be for $25. The plaintiff’s total expected damage award from the settlements will be $50. Thus, under the contribution with claim reduction rule, whether or not a trial occurs, each defendant will have expected damages of $25.

Under the no contribution rule, the plaintiff can obtain a higher aggregate damage award through settlements than by taking the defendants to trial jointly. The plaintiff can play the two defendants against each other in settlement negotiations and thus the plaintiff will be able to receive a higher expected payment than under the contribution rules.

51. The plaintiff would not be better off sequentially negotiating first with defendant A, and then, with defendant B. Suppose the plaintiff first approached defendant A in the negotiations. The plaintiff will have an expected damage award at trial of $50, but defendant A will only have an expected damage payment at trial of $25. This is because if defendant A lost at trial then it could obtain $50 in contribution from defendant B. Thus, defendant A’s net loss from losing at trial would only be $50, and given that defendant A will only lose at trial 50% of the time, defendant A has an expected damage award of $25. Defendant A would not offer to settle with the plaintiff for more than $25. Suppose the plaintiff offered to settle for $30, defendant A would not be able to obtain contribution from defendant B (since $30 is less than defendant A’s attributable share of $50). Thus, defendant A would be better off with the trial. The plaintiff will thus have an expected damage award of $50 at trial and will not be better off by negotiating with the defendants sequentially.

52. See Easterbrook et al., supra note 16, at 356.

Suppose the plaintiff settles with neither defendant, then it will have an expected award of $50, equal to the probability that it prevails at trial multiplied by the total damages. Now suppose defendant A offers to settle with the plaintiff for only $1. The plaintiff will be better off accepting the $1 and suing defendant B for the remainder of $99. This will give the plaintiff expected damages of $50.50 which is higher than the expected damages of $50 the plaintiff will receive if it goes to trial against defendant A. Of course, defendant B will now have expected damages of $49.50, and will bid against defendant A to settle first. Thus, we will be in a bidding war as described below.

Under a rule where contribution is only allowed among non-settled defendants, the result will be the same. In the analysis, the plaintiff will again wish to settle with all but one of the defendants before trial, as the plaintiff gains nothing when there is more than one outstanding defendant and its probabilities of winning at trial are correlated. Thus, there will remain only one non-settled defendant if there is a trial. But as in the case of the no contribution rule, under this modified contribution rule, if a defendant settles it cannot be sued for contribution. Thus, there will be no non-settled defendants from whom a trial-losing defendant can seek contribution. The result is the same as where the no contribution rule had been in effect. See id. at 363.
To see how the plaintiff is able to do this, consider the following scenario. Suppose that the plaintiff is considering settling with defendant A for $25, and then suing defendant B for the remainder of its damages. If the plaintiff settles with defendant A for $25, then the plaintiff can sue defendant B for $75, equaling the total damages of $100, less defendant A’s settlement of $25. Since defendant B has a probability of 0.5 of losing at trial to the plaintiff, defendant B will face an expected loss of $37.50. Defendant B will be better off going to the plaintiff and offering to settle for more than defendant A’s offer of $25 (before the plaintiff finalizes the settlement with the defendant A). Suppose defendant B offers the plaintiff $30, then the plaintiff will prefer defendant B’s offer to defendant A’s offer of $25. But if the plaintiff settles with defendant B for $30, then defendant A will face an expected loss of $35. Thus, defendant A would be well-advised to make an offer above $30.

This “bidding war” will continue to spiral upwards until an equilibrium is reached where a defendant’s offer to settle first is equal to its expected loss if it does not settle first. In this case, the equilibrium settlement offer will be $33.33, where the first settlement is equal to the expected loss at trial or the second settlement.

It is the defendant’s preference of settlement over litigation that causes the upward spiraling of the settlement offers. For example, let c be the cost of trial for a defendant. Both defendants would be better off if neither settled and thus, each faced a 50% chance of being taken to trial, giving each an expected liability of $25. But since each defendant will prefer settlement over litigation, a prisoners’ dilemma type situation exists. Each defendant will offer a settlement that

53. $37.50 = (0.5) \times ($100 - $25).
54. $35 = (0.5) \times ($100 - $30).
55. If defendant A settles for $33.33, then the expected damage payment of defendant B is equal to (probability of loss at trial) \times (total damages - defendant A’s settlement), which in this case is (0.5) \times ($100 - $33.33) = $33.33. Defendant B will not want to bid higher than $33.33 to settle before defendant A. At equilibrium, defendant A’s initial settlement is equal to defendant B’s later settlement (or expected loss at trial).
56. Each defendant will face a 50% chance of being chosen by the plaintiff to be sued, and a 50% chance of losing at trial and paying the total damages of $100. Thus, each defendant’s expected damages will be $25 = (0.5) \times (0.5) \times ($100).
is equal to its expected liability should it be taken to trial by the plaintiff.

<table>
<thead>
<tr>
<th>Expected Damages</th>
<th>Defendant B settles</th>
<th>Defendant B does not settle</th>
</tr>
</thead>
<tbody>
<tr>
<td>($A, A, B$)</td>
<td>$33.33, 33.33$</td>
<td>$25, 37.50 + c$</td>
</tr>
<tr>
<td>$A$ settles</td>
<td>$37.50 + c, 25$</td>
<td>$25 + c, 25 + c$</td>
</tr>
<tr>
<td>$A$ does not</td>
<td></td>
<td></td>
</tr>
<tr>
<td>settle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No Contribution Rule: Expected Damages Settlement Pattern as a Prisoners' Dilemma Situation

Unless the defendants act in concert during their negotiations, the plaintiff will be able to use the defendants' preference for settlement over litigation to create a wedge that induces each defendant to settle for the equilibrium amount of $33.33.57

57. I am assuming that the plaintiff is unable to commit to negotiating with the defendants sequentially in a particular order. While this assumption will be valid for most situations, we will examine the rational behind it here.

Under the no contribution rule, the plaintiff will have an incentive to settle with all but one defendant before any trial occurs, as the plaintiff will gain nothing by having more than one outstanding defendant in a trial. Both the plaintiff and the defendants will know this. This knowledge will affect the bargaining. The following example will show why a plaintiff might be disadvantaged in sequential settlement negotiations.

Suppose that defendant $A$ and defendant $B$ cause $100 in total damages and each has a 50% probability of losing at trial to the plaintiff. Suppose the plaintiff wants to first sue defendant $A$ and then sue defendant $B$. The plaintiff and defendant $A$ will agree that defendant $A$ will have an expected payment of $50 in damages if a trial occurs. The plaintiff will want to settle with defendant $A$ for defendant $A$'s expected damages at trial of $50 and then sue defendant $B$ for the remaining $50$. If the plaintiff and defendant $A$ settle for $50, then the plaintiff and defendant $B$ would agree that the expected outcome at their trial would lead to expected damages of $25 and thus, they would settle for $25$. This negotiating pattern will give the plaintiff an expected award of $75 from the sequential bargaining, which is greater than the $66.66 likely received from the simultaneous bargaining.

However, if the plaintiff commits to the sequential bargaining ex ante the negotiations, then the plaintiff will be better off accepting any positive offer from defendant $A$ than risking a trial. For example, if defendant $A$ offers the plaintiff only $1 to settle, the plaintiff will be better off accepting the $1 and suing defendant $B$ for the remainder of $99$. This will give the plaintiff expected damages of $50.50, which is greater than the expected damages of $50 the plaintiff could expect if it goes to trial against defendant $A$.

Thus, defendant $A$ is better off settling for up to $50 than going to trial and facing expected damages of $50 and trial costs. The plaintiff is in a better position if it settles for any positive amount, as opposed to going to trial against defendant $A$. The actual bargaining agreement between the plaintiff and de-
Since, under the no contribution rule, each defendant has an expected payment of $33.33 while under the contribution rules each defendant has an expected payment of only $25, the deterrence faced by the defendants will be greater under the no contribution rule.\textsuperscript{58} A comparison of the rules in this example gives us the following:

<table>
<thead>
<tr>
<th>Defendant A</th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50</td>
<td>$50</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$25</td>
</tr>
<tr>
<td>Defendant B</td>
<td>$50</td>
<td>$50</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
</tr>
</tbody>
</table>

Expected Damages: Symmetric Information, Identical Defendants

Thus, for the case of identical defendants with symmetric information, the no contribution rule leads to increased deterrence and a higher expected reward for the plaintiff.\textsuperscript{59}

\textsuperscript{58} Easterbrook, Landes and Posner demonstrated that the no contribution rule will lead to more deterrence under the assumptions of symmetric information and identical defendants. See Easterbrook et al., \textit{supra} note 16, at 369.

\textsuperscript{59} The whipsaw bargaining of the no contribution rule may lead to some curious results. In the model, even if the damage per conspirator is constant, the expected damage payment of each defendant increases as the number of conspirators in the conspiracy increase. \textit{See id.} at 359.
2. Dissimilar Defendants

This subsection examines two ways defendants can be different in the model. First, the defendants may be liable for different proportions of the plaintiff's damage. Second, the defendants may have different probabilities of losing to the plaintiff at trial. These differences will be examined separately below. Given that the parties have symmetric information, even if the defendants are different, the no contribution rule, as compared with the contribution rules, will lead to an increased expected damage payment for at least one defendant and a higher aggregate expected damage award for the plaintiff. We now examine the two ways defendants can differ in the model.

for the damages. Thus, in both states, the total damages are $200 and the damage per conspirator is $50. Assume all conspirators are likely to lose to a plaintiff at trial with probability 0.5.

In state A, the total damage that the four conspirators cause is $200. In equilibrium, each defendant will settle for the damages it would expect if it were the last non-settled defendant and threatened with trial. In this case under the no contribution rule, each conspirator will be willing to settle for $s equal to $40 in damages. $40 = (0.5) \times (200 - 3s) = (0.5) \times (200 - 120).

Under the contribution rules, each defendant will have expected damages of $25. $25 = (0.5) \times [(0.25) \times (200)].

In state B, the total damages that the four conspirators cause is also $200. But in state B each conspiracy consists of only two members. Thus, as above in the text, in equilibrium each conspirator will offer to settle for $s equal to $33.33. $33.33 = (0.5) \times (100 - s) = (0.5) \times (100 - 33.33). And under the contribution rules each defendant will settle for $25. $25 = (0.5) \times [(0.5) \times (100)].

In both states, conspiracies cause $200 in total damages, but because there is only one conspiracy in state A, each defendant faces expected damages of $40 under the no contribution rule. However, in state B where there are two conspiracies, each conspirator faces expected damages of $33.33 under the no contribution rule. The effect of the no contribution rule on expected damages is not consistent when the conspiracy size is varied. Conspirators must take into account the amount of damage caused along with the number of defendants. As can be seen above, joining a conspiracy with twice as many members that causes twice as much total damage leads to greater expected liability, even if the benefit to each conspirator is the same in each conspiracy.

In the model, the no contribution rule provides greater deterrence for larger conspiracies than for smaller conspiracies. For some situations, such as price fixing, this seems contradictory from a policy point of view, as one would expect larger conspiracies to be more likely to break down than smaller conspiracies. Thus, it would seem that smaller conspiracies are more significant to deter than larger ones. That the damages vary with conspiracy size will also cause problems in trying to set the correct multiplier on damages, such as the chosen multiplier of 3 for antitrust damage. The main point is that the no contribution rule adds the size of the conspiracy as a factor when determining the expected damages through bargaining, which may lead to some odd results as the examples in this footnote demonstrate.
a. Different Liability Responsibility

First we examine the case where the defendants cause different proportions of the damage. Under the contribution rules, if liability is allocated by comparative fault, then the defendants may be liable for different proportions of the damage. The underlying assumption remains: each defendant has the same probability of losing at trial; and the defendants have symmetric information that leads them to the same beliefs of these probabilities and each defendant's proportion of liability.

Under the no contribution rule, liability is not allocated. The plaintiff can seek the entire amount of damages from any defendant, regardless of the proportion of damage that defendant caused. Under the contribution rules, the expected damage payment faced by each defendant is dependent on the allocation of liability for the damages among the defendants. If liability is allocated by comparative fault, a defendant that has caused more damage will have a higher expected damage payment than a defendant who has caused less damage. Under the contribution rules, the expected damage payment of each defendant is equal to the probability that the plaintiff will win at trial multiplied by the amount of damage for which the defendant is liable.

Since, under the no contribution rule, the expected damage payment of a defendant is independent of the proportion of damages attributable to the defendant, while under the contribution rules the expected damage payment of a defendant is directly proportional to the damages attributable to the defendant, it should not be surprising that those defendants causing a high proportion of damage may pay less under the no contribution rule than under the contribution rules. The total damage award received by the plaintiff where defendants have caused different proportions of the damage will be the same as where each defendant caused the same share of

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60. Defendants could also be liable for different shares of the damage under the comparative benefit liability allocation rule. See infra part VI (examining the per capita, comparative fault and comparative benefit liability allocation rules).

61. This is true when comparing the no contribution rule with the contribution rules where liability is allocated by comparative fault or comparative benefit. Under the contribution rules, if liability is allocated per capita then the expected damage payment of a defendant is also independent of the proportion of damages attributable to the defendant.
the damage for both the no contribution rule and contribution rules. Only the division of damages among the defendants under the contribution rules changes. Slightly modifying the numerical example of the previous section, by changing the amount of the damage attributable to each defendant, shows the effects of the defendants being liable for different shares of the damages under the contribution rules.

Suppose two defendants each have a probability of losing to the plaintiff at trial of 0.5, total damages are $100, defendant A is liable for 90% of the damages and defendant B is liable for 10% of the damages. Under the no contribution rule, each defendant has expected damages of $33.33, and the total expected damage award to the plaintiff will be $66.66. Even though the defendants have caused greatly different amounts of damage, the result is the same as where both defendants had caused an equal proportion of the damage. This is because under the no contribution rule each defendant's expected damage payment is a function of the total damages caused to the plaintiff, not a defendant's attributable share of the damages.

Under the contribution rules, a defendant's expected damage payment is equal to the probability of losing at trial multiplied by the damages attributable to the defendant. Thus, defendant A will have expected damages of $45, and defendant B will have expected damages of $5. The total expected damage award to the plaintiff is equal to the sum of the defendants' expected damage payments, and is thus $50. Under the contribution rules, the expected damage payments are a function of the amount of damage caused by each defendant, and, therefore, individual damage payments are different than those where each defendant causes an equal amount of the damage. However, the total damage payment of $50 remains the same.

In this example, the no contribution rule, as compared to the contribution rules, will lead to less deterrence for defendant A, given its expected damages ($33.33 vs. $45), while de-

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62. The settlement under the no contribution rule is such that $33.33 = (0.5) \times (100 - 33.33).

63. $45 = (0.5) \times (0.9) \times (100).

64. $5 = (0.5) \times (0.1) \times (100).

65. $50 = 45 + 5.$
fendant B will face more deterrence under the no contribu-
tion rule given its expected damages ($33.33 vs. $5). The
total expected damages awarded to the plaintiff will be
greater under the no contribution rule than under the contri-
bution rules ($66.66 vs. $50), just as in the example of the
previous section where defendants caused an equal propor-
tion of damage. A comparison of the rules in this example
gives us the following:

<table>
<thead>
<tr>
<th>Defendant</th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$90</td>
<td>$10</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$45</td>
</tr>
<tr>
<td>B</td>
<td>$90</td>
<td>$10</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$5</td>
</tr>
</tbody>
</table>

Expected Damages: Symmetric Information, Different Liability

Yet, just because the defendant causing more damage
pays the same amount as the defendant causing less damage
under the no contribution rule, it does not follow that the for-
mer defendant is always paying less under the no contribu-
tion rule than under the contribution rules. We can show
this by modifying the example above such that defendant A is
liable for 60% of the damages, while defendant B is liable for
40% of the damages. Defendant A and defendant B will,
again, both have expected damage payments of $33.33 under
the no contribution rule. Under the contribution rules, de-
fendant A will have an expected damage payment of $30,\(^66\)
while defendant B will have an expected damage payment of
$20.\(^67\) Under the no contribution rule, defendant A has the
same expected damage payment, of $33.33, as defendant B,
but defendant A still has a higher expected damage payment
under the no contribution rule than under the contribution
rules. A comparison of the rules in this example gives us the
following:

\(^{66}\) $30 = (0.5) \times (0.6) \times ($100).
\(^{67}\) $20 = (0.5) \times (0.4) \times ($100).
When parties have symmetric information, there are two separate effects of the no contribution rule. First, the proportion of damages paid by any particular defendant is independent of the damages caused by that defendant. Thus, the no contribution rule may lessen the expected damage payment of a defendant that causes a high proportion of the damages by shifting some of the liability to other defendants. This was shown in the first example in this section. Second, there are higher aggregate damages paid by all of the defendants because of the whipsaw bargaining under the no contribution rule. As shown in the second example, it is possible that the increased penalty paid by all defendants outweighs the shifting effect of who pays under the contribution rules. Thus, all defendants may pay more under the no contribution rule than under the contribution rules, even though some defendants have higher expected damages than others under the contribution rules.

Although the no contribution rule will always lead to an increased expected damage payment for the low damage causing defendants, it is not true that the high damage causing defendants will always face less deterrence. But the higher the proportion of damage a defendant has caused, the more likely it will have a smaller expected damage payment under the no contribution rule than under the contribution rules.

b. Different Probabilities of Loss at Trial

We will now examine the case where the defendants have different probabilities of loss at trial. For this subsection, we will assume that each defendant has caused the same proportion of damages and that the defendants have
symmetric information that leads them to the same beliefs of these probabilities and each defendant’s proportion of liability.

Suppose there are two defendants that are equally liable for the plaintiff’s total damages of $100. Assume the probability of defendant A losing at trial to the plaintiff is 0.2, and the probability of defendant B losing at trial to the plaintiff is 0.6. Under the no contribution rule, defendant A will have expected damages of $9.09, and defendant B will have expected damages of $54.55. The total damage award to the plaintiff will be $63.64. Under the contribution rules, defendant A will have expected damages of $30, and defendant B will also have expected damages of $30. The total damage award to the plaintiff will be $60.

In this example, the no contribution rule, as compared with the contribution rules, will lead to less deterrence for defendant A as its expected damages will be less under the no contribution rule than under the contribution rules ($9.09 vs. $30). Likewise, the no contribution rule will lead to more deterrence for defendant B as its expected damages will be more under the no contribution rule than under the contribu-

68. These settlements follow from the whipsaw bargaining of the no contribution rule. In equilibrium, each defendant will be willing to settle for its expected loss at trial. A defendant’s expected loss at trial is equal to the defendant’s probability of losing at trial multiplied by the damages the plaintiff can seek against the defendant. Under the no contribution rule, the plaintiff can only seek damages against non-settled defendants that are reduced by prior settling defendant’s settlement amounts. Thus, each defendant when determining its expected damages (in order to decide what to settle for) will determine what it expects the other defendant to settle for and subtract that from the total damages that the plaintiff could receive from it. This leads to equilibrium settlements as can be seen from the calculations below. See Easterbrook et al., supra note 16, at 368-70.

Under the no contribution rule, defendant A’s settlement will be $9.09 such that $9.09 = (0.2) \times ($100 - $54.55), while defendant B’s settlement will be $54.55 such that $54.55 = (0.6) \times ($100 - $9.09).

69. $63.64 = $9.09 + $54.55.

70. We are assuming that defendant B will be able to obtain contribution from defendant A with certainty. Under the contribution rules, the probability that defendant A will have to pay damages is 0.6, which is equal to the plaintiff’s probability of winning at trial against defendant B (which occurs with probability 0.6) multiplied by the probability of defendant B obtaining contribution from defendant A (which occurs with certainty). As defendant A’s share of the total damages is $50, defendant A’s expected damage will be $30 such that $30 = (0.5) \times (0.6) \times ($100). See supra note 39 and accompanying text.

71. $30 = (0.6) \times (0.5) \times ($100).

72. $60 = $30 + $30.
tion rules ($54.55 vs. $30). The total expected damages awarded to the plaintiff will be greater under the no contribution rule than under the contribution rules ($63.64 vs. $60). A comparison of the rules in this example gives us the following:

<table>
<thead>
<tr>
<th></th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A</td>
<td>$50</td>
<td>$50</td>
<td>0.2</td>
<td>0.6</td>
<td>$9.09</td>
<td>$30</td>
</tr>
<tr>
<td>Defendant B</td>
<td>$50</td>
<td>$50</td>
<td>0.2</td>
<td>0.6</td>
<td>$54.55</td>
<td>$30</td>
</tr>
</tbody>
</table>

Expected Damages: Symmetric Information, Different Probabilities of Loss at Trial

Thus, where defendants have symmetric information, for some defendants the no contribution rule may lead to less deterrence than the contribution rules. However, it should be noted that for at least one defendant the deterrence will be greater under the no contribution rule. We now examine defendants having asymmetric information and asymmetric beliefs, where the variety of possible outcomes is greater.

B. Asymmetric Information

In the real world, individuals and firms often have different information that can lead to different beliefs. Thus, ex-

73. Professor Easterbrook in his testimony before the Senate judiciary committee used a roulette wheel, a game of symmetric information, to describe the no contribution rule as a lottery of outcomes. See Antitrust Equal Enforcement Act: Hearings Before the Comm. on the Judiciary of the United States Senate, 97th Cong., 1st and 2d Sess. 183 (1981-82) (statement of Frank H. Easterbrook, Professor of Law, University of Chicago).

If played by individuals who have a variety of knowledge and skill, poker can be seen as an example of an asymmetric information game. I will compare the two games to show the differences between symmetric and asymmetric information.

A bet based on a roulette wheel is a game of symmetric information. Suppose that two players decide to play a game in which if the ball lands on black, player 1 wins and if the ball lands red, player 2 wins (assume that 0 and 00 or green leads to a re-spin of the wheel and ball). Before we send the ball onto the wheel, both players can agree on the likelihood of each party winning as each party has the same information, namely that 50% of the slots are red and 50% of the slots are black.
amining cases where asymmetric information exists among the actors is a necessary addition to the model. This subsection will show that asymmetric information may lead to less deterrence for all of the defendants under the no contribution rule as compared with the contribution rules in some informational settings.74

Poker on the other hand is a game of asymmetric information. Before the card hand is dealt, each player will have private information regarding its skill in the game of poker. This private information can lead to different beliefs. Suppose that player 1 and player 2 both majored in English at college, that very few English majors understand probability theory, and that both players know that the other player was also an English major. In addition, suppose that both player 1 and player 2 took probability courses in college for the sole purpose of playing poker, but that neither player knows that the other player took the probability courses. In this case, the players will have asymmetric information.

Player 1 will be placing its bet with the knowledge that it, player 1, has taken probability courses, while believing that it is unlikely that player 2 has much knowledge of probability (as player 1 knows that player 2 majored in English). Similarly player 2 will be placing its bet with the knowledge that it, player 2, has taken probability courses, while assuming that it is unlikely that player 1 has much knowledge of probability (as player 2 also knows that player 1 majored in English).

In this case, each player might be rather confident that it will do well (win with a probability greater than 50%) in a poker match, even though only one player can win. The players, each expecting to win and the other to lose, have inconsistent beliefs. That the beliefs are inconsistent should be obvious because both defendants cannot have a probability of over 50% of winning in a two player zero sum game. The players have these different beliefs because of their private information. It is not necessary for beliefs to be consistent as between players.

In the real world, all of the information will not be known by all parties, and in many cases, such as in the game of poker, each party will have private information unavailable to the other party. It is possible that each party has the belief that it will win the game, whether that game is poker, football or settling cheaply in an antitrust conspiracy trial. While Professor Easterbrook's roulette wheel example does explain what a lottery is, it is not as useful in describing the situation faced by antitrust or other conspirators, who are playing a game more like the game of poker.

74. Professors Easterbrook, Landes and Posner note that parties may have asymmetric information and beliefs and that this may effect deterrence under the different rules. See Easterbrook et al., supra note 16, at 350-51 & n.48. But most of their analysis and their conclusions assume symmetric information and beliefs. They seem to assume that in most situations conspirators will have symmetric information, for example on market share or as to whom the plaintiff will sue. They do not search for situations where the defendants might have asymmetric information. Their conclusions and recommendations are based on symmetric information. See id. at 364-68.

Where I expect defendants are most likely to have differing beliefs (even in antitrust cases) is in their belief that each defendant will settle cheaply with the plaintiff by giving the plaintiff information to be used against other defendants. It is entirely plausible that each defendant believes that it will be the first to settle cheaply. In fact, under the no contribution rule and contribution with
To see how asymmetric information can affect deterrence, and why the symmetric information model is unsatisfactory in many situations, we reexamine an example used by Professors Easterbrook, Landes and Posner.75

Professors Easterbrook, Landes and Posner set up their example as follows. Suppose that three firms, firm A, firm B and firm C are considering a plan to fix prices that will raise the price of a good, giving the firms a total profit of one billion dollars. Assume that firm A, firm B and firm C have 50%, 30% and 20% of the market respectively, and that profits from the conspiracy will be split according to market share. If detected, the conspiracy will have to pay total antitrust damages of three billion dollars.76 Further, assume that if there is a lawsuit, the consumers will have a 50% chance of prevailing at trial. Finally, suppose that firm A and firm B believe that if there is a lawsuit, consumers will sue firm C for the entire amount.

Given these assumptions, we must now determine whether a conspiracy will take place. Professors Easterbrook, Landes and Posner assert that a conspiracy will not take place because firm C will never enter into the conspiracy as its expected profit of $200 million is less than its expected liability of $1.5 billion.77
But, Professors Easterbrook, Landes and Posner have assumed that firm C also believes that the consumers will sue only firm C for their damages. Firm C, however, could have different beliefs than firms A and B. Suppose firm C expects the consumers to sue only firm A for all of their damages, in which case firm C will face $0 in expected liability, and will gladly join the price-fixing conspiracy with firms A and B. Just because firms A and B believe that firm C faces a high risk of liability in damages, this does not necessarily imply that firm C will also believe that it faces the same high risk of liability. It is firm C's belief about its liability (not firm A's or firm B's beliefs) that is critical to firm C when it decides whether to enter into a conspiracy.

Of course, if firm C believes that the consumers will sue only firm A, while firm A and firm B believe the consumers will sue only firm C, then the firms disagree as to whom the consumers will sue. But the firms can still enter into a price-fixing conspiracy while disagreeing as to whom the consumers will sue. In a price-fixing conspiracy, it is only necessary that the firms agree on the price.

When asymmetric information is added to the model, one can see that it is possible for the no contribution rule to lead to less deterrence for all defendants than either of the contribution rules. It is quite possible that different parties could enter into a conspiracy under the no contribution rule with a plan to settle quickly and cheaply with the plaintiff should the conspiracy be detected. Thus, the agreeing parties would face little in the way of deterrence and expect the other party to be sued for the larger proportion of the damages by the

want to enter the conspiracy because its expected liability is greater than its expected benefit from the conspiracy. See id. at 345.

78. Professors Easterbrook, Landes and Posner have assumed symmetric information and beliefs for this example and for their conclusions. See id. at 345, 364-65.

They do note that if each defendant believes that it is unlikely to be sued by the plaintiff, each defendant will then be likely to enter into the conspiracy under the no contribution rule. The example is modified to take into account the belief that a firm is unlikely to be sued. See id. at 350-51 & n.48 (indicating that such a situation would arise infrequently because participants generally have similar information leading to symmetric beliefs).

I believe such asymmetric beliefs among defendants might occur more frequently than Easterbrook, Landes and Posner suggest because defendants may hide information relevant to forming symmetric beliefs and/or defendants may collect data leading to asymmetric beliefs. See infra part III.C; see also infra note 74.
plaintiff. Of course, if each party believes it will be sued by consumers for all of the damages, then they could all face more deterrence under the no contribution rule than under the contribution rules. The point is that neither the no contribution, nor the contribution rules leads to more deterrence under all information scenarios. Although not using an economic model, Judge Hanson, in his dissent in *Professional Beauty Supply, Inc. v. National Beauty Supply, Inc.*,79 came to the same conclusion regarding the ambiguous nature of deterrence provided by the different rules when he stated:

> The majority concludes that “[t]o deny contribution would be to dilute the deterrent effect of the antitrust laws, since a participant in an antitrust violation could escape all responsibility for its wrongdoing.”... [I]t could well be argued that potential antitrust violators would be more likely to refrain from anticompetitive activities if they know that any injured party may impose the full burden of a treble damage recovery on them even though, for instance, the violator played a relatively minor part in a conspiracy to monopolize. ... To me the arguments on either side of the deterrence question are inconclusive.80

In the model, asymmetric information will be reflected by allowing the defendants to have different beliefs about either the proportion of damages that each defendant has caused or the probabilities that each defendant will lose at trial. The defendants’ beliefs about these two factors will affect the defendants’ beliefs of their expected liabilities if the conspiracy is detected.

Defendants may also have asymmetric information of the probability of detection, the conspirators’ relationships with the potential plaintiff, the total amount of damage caused and many other factors. In addition, the collecting and hiding of information can lead to asymmetric information and asymmetric beliefs among defendants.81

In the section above, it was shown that given symmetric information, and thus symmetric beliefs, it is possible that the expected damage payment and deterrence of a particular defendant can be less under the no contribution rule than

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80. Id.
81. See infra part III.C.
under the contribution rules. Now, if each defendant holds the belief that it will be held responsible for relatively little, then all defendants will be more likely to enter into a conspiracy under the no contribution rule than under the contribution rules. Because the defendants have different information, it may lead them to divergent beliefs and, in turn, diminished deterrence. Modifying the symmetric information numerical examples will show that neither the no contribution rule nor the contribution rules always leads to more deterrence.

1. Different Beliefs of Liability Responsibility

It could be the case that each defendant believes that it is liable for a small portion of the damage under the contribution rules. In such a case, the conspiracy will be more likely to take place under the contribution rules than under the no contribution rule. For example, suppose each defendant believes that it is liable for 10% of the damage and the other defendant is liable for 90% of the damage. Under the no contribution rule, each defendant will have expected damages of $33.33. Under the contribution rules, each defendant will have expected damages of $5 while each defendant will believe that the other defendant will have expected damages of $45. However, it is the defendant's own beliefs, not those of another defendant, that determine deterrence. Thus, each

82. See supra part III.A.2.
83. Conspirators do not have to foresee the damages caused by other conspirators in order to be held responsible for such damages under joint and several liability. Thompson v. Johnson, 180 F.2d 431 (5th Cir. 1950). Under the no contribution rule, it does not matter how the damages among the defendants are allocated, as each defendant is potentially liable for all of the damages regardless of fault or the number of defendants. However, under the contribution rules, how the damages are allocated will affect the expected damages of conspirators contemplating entering into a conspiracy.
84. For example, a conspirator may not know the "fault" of each conspirator in the conspiracy. An actor may become a co-conspirator without knowing all activities undertaken pursuant to the conspiracy. See, e.g., Hoffman-La Roche, Inc. v. Greenberg, 447 F.2d 872, 875 (7th Cir. 1971).
Defendants are more likely to have asymmetric information on damage allocation under the contribution rules when damages are allocated by either comparative fault or comparative benefit methods. Defendants are less likely to disagree on the damage allocation when damages are allocated per capita under the contribution rules.
85. $33.33 = (0.5) \times (100 - 33.33).
86. $5 = (0.5) \times (0.1) \times (100).
87. $45 = (0.5) \times (0.9) \times (100).
defendant will face less deterrence under the contribution rules than under the no contribution rule. A comparison of the rules in this example gives us the following:

<table>
<thead>
<tr>
<th></th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A</td>
<td>$10</td>
<td>$90</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$5</td>
</tr>
<tr>
<td>Defendant B</td>
<td>$90</td>
<td>$10</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$5</td>
</tr>
</tbody>
</table>

Expected Damages: Asymmetric Information of Liability

Of course, if each defendant believes it has caused most of the damages, then the defendants will face more deterrence under the contribution rules than under the no contribution rule. For example, suppose each defendant believes that it will be liable for 90% of the damages under the contribution rules. As the no contribution rule reaches the same outcome regardless of the allocation of damages, each defendant will again face expected damages of $33.33.\(^88\) Under the contribution rules, each defendant will face expected damages of $45,\(^89\) while each defendant will believe that the other defendant will have expected damages of $5.\(^90\) Again, it is the defendant's own beliefs, not those of another defendant, that determine deterrence. In this case, each defendant will face more deterrence under the contribution rules than under the no contribution rule. A comparison of the rules in this example gives us the following:

<table>
<thead>
<tr>
<th></th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A</td>
<td>$90</td>
<td>$10</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$45</td>
</tr>
<tr>
<td>Defendant B</td>
<td>$10</td>
<td>$90</td>
<td>0.5</td>
<td>0.5</td>
<td>$33.33</td>
<td>$45</td>
</tr>
</tbody>
</table>

Expected Damages: Asymmetric Information of Liability

88. $33.33 = (0.5) \times (100 - 33.33).
89. $45 = (0.5) \times (0.9) \times (100).
90. $5 = (0.5) \times (0.1) \times (100).
2. **Different Beliefs of Probabilities of Loss at Trial**

We now examine the case where the defendants have different beliefs as to their chances of losing to the plaintiff at trial. The beliefs about the probabilities of loss at trial may be different because a defendant is planning to supply the plaintiff with information to be used against the other defendants, while unaware of others’ plans to do likewise.  

In this section, the assumption is that the defendants have different beliefs about their probabilities of losing at trial, but the same beliefs about the proportion of damages that are caused by each defendant. Some numerical examples show how asymmetric information may affect deterrence.

Suppose there are two defendants, each defendant is equally liable for the plaintiff’s damages, and the total damages are $100. Suppose defendant A believes that the probability of it losing at trial is 0.2 and the probability of defendant B losing at trial is 0.6. Then, under the no contribution rule, defendant A will believe that it will have an expected damage payment of $9.09. Under the contribution rules, defendant A will believe it has an expected damage payment of $30. Thus, defendant A will believe it faces less in expected damages, and thus less deterrence under the no contribution rule than under the contribution rules.

Now if defendant B believes that its probability of losing at trial is 0.2 and the probability of defendant A losing at trial is 0.6, then defendant B will also believe that it will have an expected damage payment of $9.09 under the no contribution rule, and $30 under the rules of contribution. Thus, de-

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91. See infra part III.C.
92. See supra part III.A.2.b.
93. Recall we are assuming that defendant B will be able to obtain contribution from defendant A with certainty. See supra note 39 and accompanying text; see also supra note 64. Thus, the plaintiff can collect damages from defendant A “through” defendant B with probability 0.6. $30 = (0.5) \times (0.6) \times (100)$.
94. Defendant B will believe that it has expected damages of $9.09, such that $9.09 = (0.2) \times (100 - 54.55)$. Defendant A will believe that defendant B has expected damages of $54.55$, such that $54.55 = (0.6) \times (100 - 9.09)$.
95. Defendant B's settlement of $30 under the contribution rules is such that $30 = (0.5) \times (0.6) \times (100)$.  

Defendant $B$ will also face less deterrence under the no contribution rule than under the contribution rules. These results are summarized below. A comparison of the rules in this example gives us the following:

<table>
<thead>
<tr>
<th>Defendant</th>
<th>Belief of damages attributable to defendant $A$</th>
<th>Belief of damages attributable to defendant $B$</th>
<th>Belief of the plaintiff winning at trial against defendant $A$</th>
<th>Belief of the plaintiff winning at trial against defendant $B$</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant $A$</td>
<td>$50$</td>
<td>$50$</td>
<td>$0.2$</td>
<td>$0.6$</td>
<td>$9.09$</td>
<td>$30$</td>
</tr>
<tr>
<td>Defendant $B$</td>
<td>$50$</td>
<td>$50$</td>
<td>$0.6$</td>
<td>$0.2$</td>
<td>$9.09$</td>
<td>$30$</td>
</tr>
</tbody>
</table>

Expected Damages: Asymmetric Information of Probabilities of Loss at Trial

In the example above, defendant $A$ expects defendant $B$ to face $54.55$ in damages, and defendant $B$ expects defendant $A$ to face $54.55$ in damages. But again, what is important to defendant $A$ is what it believes it faces in damages ($9.09$). Likewise, what is important for defendant $B$ is its own beliefs as to the damages it faces. Therefore, both defendants have beliefs that will increase the likelihood of them entering into a conspiracy under the no contribution rule than under the contribution rule.

Of course, more deterrence for all defendants is also possible under the no contribution rule. In the example above, if each defendant believes that it has a probability of losing at trial of $0.6$ and that the other defendant has a probability of losing at trial of $0.2$, then each defendant will believe that it faces more deterrence under the no contribution rules than under the contribution rules, as $54.55 > 30$. These results are summarized below. A comparison of the rules in this example gives us the following:

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96. Each will believe that it has expected damages of $54.55$, such that, $54.55 = (0.6) \times (100 - 9.09)$. Each defendant will believe that the other defendant has expected damages of $9.09$, such that $9.09 = (0.2) \times (100 - 54.55)$. 

Thus, we have seen situations where the no contribution rule and the contribution rules have each led to more deterrence for all defendants. There could also be a conspiracy where some conspirators are deterred more by the no contribution rule and others are deterred more by the contribution rules. 97

One might think that, in cases where both defendants face less deterrence under the no contribution rule than under the contribution rules, the plaintiff’s total damage award will also be less. However, regardless of the beliefs of the defendants, the no contribution rule will always lead the plaintiff to expect and receive a higher total damage award than that which could be obtained under the contribution rules. When defendants have asymmetric beliefs, they cannot both be correct; one or both must be wrong about the outcome. There will be only one actual outcome, and the results that occur will be consistent. One might think of this actual outcome as imposing consistent ex post beliefs on all of the parties involved. As can be noted from the examples in the symmetric information section, where the beliefs of the outcome are consistent, the plaintiff will always receive more in damages. 98 Thus, if compensating the plaintiff is a high pri-

<table>
<thead>
<tr>
<th>Defendant</th>
<th>Belief of damages attributable to defendant A</th>
<th>Belief of damages attributable to defendant B</th>
<th>Belief of the plaintiff winning at trial against defendant A</th>
<th>Belief of the plaintiff winning at trial against defendant B</th>
<th>Belief of its expected damages under the no contribution rule</th>
<th>Belief of its expected damages under the contribution rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A</td>
<td>$50</td>
<td>$50</td>
<td>0.6</td>
<td>0.2</td>
<td>$54.55</td>
<td>$30</td>
</tr>
<tr>
<td>Defendant B</td>
<td>$50</td>
<td>$50</td>
<td>0.2</td>
<td>0.6</td>
<td>$54.55</td>
<td>$30</td>
</tr>
</tbody>
</table>

Expected Damages: Asymmetric Information of Probabilities of Loss at Trial

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97. See supra part III.A.2 (providing examples where one defendant was more deterred by the no contribution rule and one defendant was more deterred by the contribution rules).

98. See supra part III.A.2.

One can also notice in the above asymmetric information examples that even when each defendant believes that it faces lower expected damages under the no contribution rule than under the contribution rules, each defendant still believes that the plaintiff will receive a higher total damage award. Since the actual outcome itself must be consistent, the plaintiff will receive a higher total damage award under the no contribution rule than under the contribution rules.
ority in the choice of the rule, then the no contribution rule may be favored over the contribution rules. Of course, one could always place a multiplier on damages under the contribution rules in order to obtain the same higher damage award that the plaintiff could have received under the no contribution rule without a multiplier.

C. Information Exchange in Settlements

In conspiracy situations, it is frequently the case that earlier settling defendants settle for less than later settling defendants. This is often because settling with one defendant improves the plaintiff's chances of winning at trial against the remaining defendants. Thus, an early settlement is more valuable to the plaintiff than just the monetary amount received from the defendant. A defendant settling early may provide the plaintiff with information about the conspiracy that can be used against the other defendants. The initial settlement money itself may improve the plaintiff's prospects against the other defendants by allowing the plaintiff to continue with a case that might otherwise have to be dropped for lack of resources. Additionally, the plaintiff may settle either to break up a united front among defend-

100. See In re Corrugated Container Antitrust Litig., 1981-1 Trade Cas. (CCH) ¶ 64,114, at 76,691 (S.D. Tex. 1981). In the Corrugated Container Antitrust Litigation, the plaintiffs' first settlement was with St. Regis Paper Company for $1.7 million, a relatively small amount as compared with other amounts paid by defendants who later settled. Id. at 76,704. In addition to the monetary payment, St. Regis agreed to provide documents, made no objection to the surrender of their grand jury transcripts by St. Regis employees who testified during the government investigation, made available confidential information filed with the Cost of Living Council to the plaintiffs, provided extensive informal discovery and provided basic industry and market data. Id. at 76,705.

The information provided was of great value to the class in organizing discovery against the other defendants, as the court noted:

This settlement was advantageous to the class. It did not detract from the class' chances of prevailing for the entire range of damages; in fact, through discovery benefits and the streamlining of the class' case against defendants, it enhanced them. . . . [T]he court finds the St. Regis settlement to make up in that respect for whatever it lacks in hard dollars. Id. at 76,705-06.

101. Funds from early settlements can allow an asset constrained plaintiff to continue its lawsuit against others. Thus, to the plaintiff a dollar in an early settlement may be of greater value than a dollar from a later settlement. The added value from an early dollar settlement comes from increasing the plaintiffs' negotiating position against the other defendants.
ants, or to remove a defendant that caused minor portion of the damages from the trial or could negatively affect the plaintiff's case at trial.

As noted above, one reason that a defendant may have low expected damages when entering into a conspiracy is that the defendant has a belief that it will be able to settle with the plaintiff cheaply by supplying the plaintiff with information to be used against other defendants (while discounting the likelihood that the other defendants will do the same). Different defendants in a conspiracy may each believe that they will be the first to settle cheaply.

In the Corrugated Container Antitrust Litigation, the plaintiffs' second settlement was with International Paper Company for $8.3 million. In re Corrugated Container Antitrust Litig., 1981-1 Trade Cas. (CCH) ¶ 64,114, at 76,706 (S.D. Tex. 1981). This provided the class with substantial funds to prosecute the case against the remaining defendants. Id.

102. In the Corrugated Container Antitrust Litigation, the plaintiffs' third settlement was with the Union Camp Corporation for $7.4 million. Id. This settlement served a strategic purpose in breaking up a negotiating block organization of unindicted defendants. Id. at 76,707.

103. In the Corrugated Container Antitrust Litigation, the plaintiffs' fourth settlement was with Dura-Containers, Inc. for $750,000. Id. at 76,709. Regarding this settlement the court explained:

[T]he expense to the class to engage in discovery and to litigate against Dura would be out of proportion to the amount it could hope to recover. The presence of "clean" companies such as Dura in a mass trial would be prejudicial to the class' chances of recovering against even the more culpable defendants.

Id.

104. In one case, a plaintiff settled with a defendant to keep the settling defendant from helping the other defendant at trial. See Commercial Union Ins. Co. v. Ford Motor Co., 640 F.2d 210 (9th Cir. 1981), cert. denied, 454 U.S. 858 (1981). Thus, the defendant's settlement effectively prevented the other defendant from gaining access to potentially useful information. See id. In Commercial Union, the plaintiff sued Ford Motor and one of its dealers for personal injuries. Ford settled with the plaintiff and was dismissed from the suit. The plaintiff then received a large judgment against the defendant dealer at trial. The insurer of the dealer sought indemnity against Ford, but the trial court dismissed the action under California's contribution statute (CAL. CIV. PROC. CODE § 877). Id. The court of appeals reversed, holding that the removal of the deep-pocket defendant deprived the remaining dealer defendant of the advantage of the experts and skilled counsel which Ford could afford to employ. Id.

105. For example, suppose that defendant A is contemplating entering into a conspiracy with defendant B. Defendant A might rationalize that if the conspiracy is detected, then it will make a quick settlement with the plaintiff for a low amount by giving the plaintiff information to use against defendant B. If defendant A's expected settlement amount is low, then defendant A will be likely to enter into the conspiracy. Now, if defendant B believes it will settle cheaply first by supplying information against defendant A, then defendant B may also be likely to enter into the conspiracy.
However, the different rules give the defendants different incentives to provide this information, and give the plaintiff different incentives to accept the information, in lieu of monetary compensation. These different incentives can influence the conspirators' beliefs of their expected liability before entering into the conspiracy.

The defendants will be willing to supply the plaintiff with information under both the no contribution and contribution with claim reduction rules because of the settlement-bar to contribution from later trial-losing defendants. But, under the contribution with claim reduction rule, the plaintiff will have a disincentive to settle cheaply with a defendant who is liable for a high proportion of the damage.

Under both the no contribution and contribution with claim reduction rules, a defendant who knows the culpability of its act may be able to settle for less than ignorant defendants because, ex ante the conspiracy, the culpable defendant will have a greater incentive to collect information that can be supplied to the plaintiff in the event that the conspiracy is detected.

We now proceed by more formally analyzing certain disparate effects of the rules: the defendants' incentives to provide information; the plaintiff's willingness to offer financial incentives to obtain the information; and the defendants' incentives to collect and hide the information to be given to the plaintiff. Finally, we integrate the above in attempting to determine which rule will be better for deterrence.

1. Defendants' Incentives to Provide Information

The defendants will be willing to supply the plaintiff with information under both the no contribution and contribution with claim reduction rules because of the settlement-bar to contribution from later trial-losing defendants. The defendants will not be willing to provide information under the contribution with settlement reduction rule, as there is no settlement-bar to contribution. The plaintiff, under the contribution with claim reduction rule, will have to provide the defendant with an incentive to reveal information, such as a lower monetary settlement amount. However, the plaintiff will not have to provide an incentive under the no contribution rule.
The defendant's willingness to supply the plaintiff with information can lead to a prisoners' dilemma situation among the defendants. However, often the information that a defendant might provide could be used against it. Thus, before providing the plaintiff with the information, a defendant will want a settlement agreement. Therefore, the plaintiff may be unable to effectuate the ideal prisoners' dilemma situation of using each defendant's information against the other to improve its strategic position. The following examples illustrate the incentives for defendants to provide information.

Suppose there are two defendants, each defendant equally liable for the damage of the plaintiff. The probability of each defendant losing at trial is 0.2 if no information is given, and 0.8 if information is given. The total damage caused is $100. Each defendant can either disclose or not disclose information to the plaintiff. This gives us four cases for which we can compute the expected damage payments depending on whether none, one or both of the defendants provides the plaintiff with information. The four cases are shown below.

<table>
<thead>
<tr>
<th>Defendants' Probabilities of Loss at Trial to the Plaintiff ($p_A, p_B$)</th>
<th>Defendant $B$ does disclose information</th>
<th>Defendant $B$ does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant $A$ does disclose information</td>
<td>0.8, 0.8</td>
<td>0.2, 0.8</td>
</tr>
<tr>
<td>Defendant $A$ does not disclose information</td>
<td>0.8, 0.2</td>
<td>0.2, 0.2</td>
</tr>
</tbody>
</table>

Probabilities of Loss at Trial Depending Upon Disclosure of Information

a. No Contribution Rule

First, we examine the settlement outcomes under the no contribution rule. Initially, assume that the information which a defendant provides the plaintiff cannot be used against the information-providing defendant. If neither discloses information, then each defendant will have a probability of loss at trial of 0.2, and each will have expected damages of $16.67.107

106. Yi, supra note 22, at 92-95.
107. $16.67 = (0.2) \times (100 - 16.67)$. 

1994] JOINT AND SEVERAL LIABILITY
If only defendant A discloses information, then defendant B will have a probability of losing at trial of 0.8, while defendant A will have a probability of losing at trial of 0.2. The resulting expected damage payments will be $4.76 for defendant A and $76.19 for defendant B. Likewise, if only defendant B discloses information, then the resulting expected damage payments will be $76.19 for defendant A and $4.76 for defendant B.

If defendant A and defendant B each disclose information, then both will have a probability of 0.8 of losing at trial to the plaintiff, and both will have expected damages of $44.44.108

Examining the decision to disclose information leads to the following normal form game where the strictly dominant strategy is to disclose the information. This is a prisoners' dilemma situation in which both defendants will be better off if they can agree not to provide information. Absent such an agreement, each has an incentive to supply information.

<table>
<thead>
<tr>
<th>Defendants' Expected Damage Payments (ΔA, ΔB)</th>
<th>Defendant B does disclose information</th>
<th>Defendant B does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A does disclose information</td>
<td>$44.44, $44.44</td>
<td>$4.76, $76.19</td>
</tr>
<tr>
<td>Defendant A does not disclose information</td>
<td>$76.19, $4.76</td>
<td>$16.67, $16.67</td>
</tr>
</tbody>
</table>

No Contribution Rule Expected Damages: Depending Upon Disclosure of Information Prisoner's Dilemma Type Situation

Under the no contribution rule, defendant A is better off if the plaintiff can collect a high damage amount from defendant B (and vice versa). If the plaintiff can collect a high damage amount from defendant B, then the plaintiff will not be able to sue defendant A for as much as it could have if it had collected a low damage amount from defendant B. This is because any suit against defendant A would be reduced by defendant B's settlement amount. Thus, increased expected damages for defendant B will lead to defendant A having lower expected damages.

108. $4.76 = (0.2) × ($100 - $76.19).
     $76.19 = (0.8) × ($100 - $4.76).
109. $44.44 = (0.8) × ($100 - $44.44).
If defendant A can be sure that the information it gives the plaintiff can only be used against defendant B, and not be used against itself, then defendant A will freely give the plaintiff the information. Defendant A is better off if the probability of defendant B losing at trial is higher. The lower expected damage payment for defendant A will not come through an incentive offer by the plaintiff to obtain the information, but will be due to defendant B’s higher expected damage payment (and thus, higher settlement payment) and the corresponding reduced damages that can be sought from defendant A. The lower expected damage payment is not necessarily an enticement from the plaintiff to disclose the information but merely the outcome of the new equilibrium settlement pattern.\textsuperscript{110}

Information exchange often occurs during or after settlement to prevent the information from being used against the defendant who supplies it. In many situations, it is unlikely the plaintiff will be able to get both defendants to reveal information against the other defendant before either defendant has settled.\textsuperscript{111}

However, it may not be necessary for the plaintiff to have the actual information in order to obtain the higher settlement. The plaintiff may be able to create a bidding war

\textsuperscript{110} By enticement, I mean that the plaintiff is willing to settle for less than the equilibrium amount. Thus, even though giving information may reduce a defendant’s settlement amount from $16.67 to $4.76, this is not because the plaintiff offers to settle for a reduced amount in order to obtain the information. Instead, the plaintiff will now be able to collect more from the other defendant, and the information-providing defendant would face lower expected damages were it to be sued by the plaintiff. This is the new equilibrium settlement that occurs after the information is given to the plaintiff.

\textsuperscript{111} The problem is as follows. Suppose the plaintiff wants to obtain the information from defendant A to use against defendant B. To obtain the information, the plaintiff will have to settle with defendant A. Defendant A will not be willing to give the information to the plaintiff without a settlement since the plaintiff could use the information against defendant A itself. So, in order to use information from defendant A against defendant B, the plaintiff will have to settle with defendant A.

Now suppose the same is true regarding information that the plaintiff wishes to acquire from defendant B to be used against defendant A. The plaintiff will have to settle with defendant B to obtain its information.

The plaintiff must decide which defendant to settle with first since the information loses its value if both settle at the same time. Thus, if the plaintiff needs to settle to obtain and convey the value of the information, then the plaintiff will only be able to obtain the information from one defendant for use against the other defendant.
among the defendants to be the first defendant to provide information. In that case, where the parties agree on the value of the information, the plaintiff will secure the prisoners' dilemma equilibrium amount. The plaintiff, before it has any information, can ask each defendant how much it will be willing to settle for, on the condition of providing information.

Suppose defendant A offers to settle for $4.76 and to provide information against defendant B. Defendant B will then face expected damages of $76.19. Thus, defendant B will offer to pay more than $4.76, say $20. But then defendant A will face expected damages of $64, \(^{112}\) and will want to raise its settlement offer above defendant B's settlement offer of $20. This will continue until each defendant offers to settle for $44.44, which is the equilibrium settlement under the no contribution rule where both defendants provide information.

If the plaintiff and the defendants are unable to agree on the value of the information, then the plaintiff will settle with the defendant that gives the plaintiff the highest expected value of the lawsuit. The plaintiff will have to weigh both the value of the information and the monetary value of the settlement in deciding with whom to settle first.

b. Contribution with Claim Reduction Rule

We now examine the settlement outcomes under the contribution with claim reduction rule. If neither defendant discloses information, then each defendant will have a probability of loss at trial of 0.2, and each will have expected damages of $10. \(^{113}\) If only defendant A discloses information, then defendant B will have a probability of losing at trial of 0.8, while defendant A will have a probability of losing at trial of 0.2. The resulting expected damage payments will be $10 for defendant A and $40 for defendant B. \(^{114}\) Likewise, if only defendant B discloses information, then the resulting expected damage payments will be $40 for defendant A and $10 for defendant B. If defendant A and defendant B each disclose information, then both will have a probability of 0.8 of

\(^{112}\) If the plaintiff settles with defendant B for $20, it can sue defendant A for the remaining $80. With defendant B's information, the plaintiff will have a 0.8 probability of winning against defendant A. Thus, defendant A will have an expected loss of $64 = (0.8) \times ($80).

\(^{113}\) $10 = (0.2) \times (0.5) \times ($100).

\(^{114}\) $40 = (0.8) \times (0.5) \times ($100).
losing to the plaintiff at trial and both will have expected damages of $40.

Examining the decision to disclose information leads to the following normal form game where neither player has a dominant strategy to disclose the information. This is not a prisoners' dilemma situation, as each defendant is indifferent as to whether it reveals or withholds information.

<table>
<thead>
<tr>
<th>Defendants' Expected Damage Payments ($A, B$)</th>
<th>Defendant $B$ does disclose information</th>
<th>Defendant $B$ does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant $A$ does disclose information</td>
<td>$40, $40</td>
<td>$10, $40</td>
</tr>
<tr>
<td>Defendant $A$ does not disclose information</td>
<td>$40, $10</td>
<td>$10, $10</td>
</tr>
</tbody>
</table>

Contribution with Claim Reduction Rule Without Incentives Expected Damages: Depending Upon Disclosure of Information

However, the plaintiff can make this situation a prisoners' dilemma case by giving each defendant a small monetary incentive for disclosing information. If we let this incentive be $e$, then we will have the following normal form game which will be a prisoners' dilemma.

<table>
<thead>
<tr>
<th>Defendants' Expected Damage Payments ($A, B$)</th>
<th>Defendant $B$ does disclose information</th>
<th>Defendant $B$ does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant $A$ does disclose information</td>
<td>$40 - e, $40 - e$</td>
<td>$10 - e, $40</td>
</tr>
<tr>
<td>Defendant $A$ does not disclose information</td>
<td>$40, $10 - e</td>
<td>$10, $10</td>
</tr>
</tbody>
</table>

Contribution with Claim Reduction Rule with Incentives Expected Damages: Depending Upon Disclosure of Information Prisoner's Dilemma Type Situation

With the incentive $e$, each defendant now has a dominant strategy to disclose information. This incentive can, theoreti-

115. It should be noted that giving a defendant a small incentive to provide information should be cheaper for the plaintiff than threatening those defendants that do not provide information with trial. The cost to the plaintiff to carry out a threat of trial is likely to be more than the cost of the small incentive $e$, that may be sufficient, despite its small size, to obtain information. Also, since under the contribution with claim reduction rule neither the plaintiff nor the defendant has a disincentive to settle, the threat of a trial may not be credible when both the plaintiff and the defendant agree on the expected outcome.
cally, be very small. Thus, the plaintiff should be able to receive nearly the expected damage award it could obtain if it had all of the information.\textsuperscript{116}

As is the case under the no contribution rule, under the contribution with claim reduction rule, the plaintiff will want to use the information of each defendant against the other. The plaintiff may need to settle with a defendant in order to obtain the information and, thereafter, convey the information's value to the other defendant. But if the value of the information is known to the plaintiff and the defendants before the plaintiff obtains it, then the plaintiff may use a bidding war between the defendants in order to achieve the prisoners' dilemma amount.

2. Plaintiff's Willingness to Accept Information in Lieu of a Monetary Settlement

Above, we showed that if the plaintiff and the defendants agree on the value of the information that the defendants can provide, then the plaintiff will be able to use this to start a bidding war between the defendants and achieve the prisoners' dilemma maximum. But it may be the case that the plaintiff does not know the value of the information or is unable to convey the value of the information to defendants without actually having the information. In such a case, the plaintiff might have to settle with one defendant first to be able to use the information in a suit against the other defendant.\textsuperscript{117} If such is the case, the plaintiff will have different incentives as to which defendant it settles with first under the

\begin{footnotesize}
\textsuperscript{116} Of course, the incentive will have to take into account additional costs for the defendant of providing the information, such as document production costs.

\textsuperscript{117} See Jones v. Hurst, 459 A.2d 219 (Md. Ct. App. 1983). This case involved an automobile accident. The plaintiff, Jones, sued the driver, Zachary Hurst, and the owner of the vehicle, Henry Hurst. Zachary Hurst contended that the cause of the accident was brake failure. The plaintiff, Jones, then brought a separate suit against the manufacturer of the automobile, General Motors. The cases were consolidated for trial. In a settlement with General Motors, the plaintiff accepted a release reciting consideration for a nominal amount of $10. The plaintiff's primary reason for settling with General Motors was the offer of technical assistance at the trial against the driver. The release, however, failed to include a denial of liability by General Motors and thus, when the plaintiff won suit against the driver of the car, the award the plaintiff received was reduced under the contribution with claim reduction rule. \textit{Id.} See generally Md. Ann. Code art. 50, §§ 16-24 (1994).
\end{footnotesize}
no contribution rule as compared with contribution with claim reduction rule.

Under the no contribution rule, the plaintiff will be indifferent as to how much damage is caused by the defendant it settles with because the amount of damages that the plaintiff can seek from the other defendant is only reduced by the settlement amount. Under the contribution with claim reduction rule, the plaintiff will have a disincentive to settle cheaply with a defendant that is liable for a large proportion of the total damage, as the amount it can seek against other defendants will be reduced by the settling defendant's high proportion of the damages. The following numerical examples show the differences between the two rules.

118. Thus, the no contribution rule allows for more flexibility in the plaintiff's negotiating strategy. This is noted in the Corrugated Container Antitrust Litigation, where under the no contribution rule, the plaintiff settled cheaply with some defendants that could have been found liable for much more if the contribution rules were being used. The court explained:

Perhaps a word should be said here about the class attorneys' technique of offering discounts to early settlers. These first three settlements, and especially the first two, were negotiated at dollar amounts which in themselves do not closely correlate to the three defendants' potential liability. Nevertheless, as will be seen as we progress through the history of this litigation, this strategy was designed to achieve a maximum aggregate recovery for the class and the fact that the later settlements were at considerably higher rates tends to show that the strategy was successful.

The court ... finds that this strategy was not only reasonable but also successful. . . . [T]he court [finds] that the strategic benefits of these three early settlements were of great ultimate importance to the class.


119. That those defendants who cause a large proportion of the damage will not likely be able to settle cheaply with the plaintiff under the contribution with claim reduction rule has also been noted by Senator Thurmond. 132 Cong. Rec. S2280 (1986) (statement of Sen. Thurmond).

[Under contribution with claim reduction rule], plaintiffs will no longer have any incentive to release the most culpable [high proportion damage causing] persons for nominal amounts. Since the amounts the plaintiff can recover from the remaining defendants will be reduced by the share of the plaintiff's claim attributable to settling persons' conduct, the amount a plaintiff would accept from a person being released from liability will be correlated to that person's culpability. Larger, more culpable persons will be less likely to receive early and attractive settlements with claim reduction than under the current system.
a. No Contribution Rule

Suppose we have the same situation as above, but that defendant A has caused 90% of the damages and defendant B has caused 10% of the damages. Assume that the plaintiff needs to settle with a defendant in order to obtain that defendant’s information, which can then be used against a non-settling defendant. Under the no contribution rule, we would have the following payoff matrix.

<table>
<thead>
<tr>
<th>Defendants' Expected Damage Payments (( \cap A, \cap B ))</th>
<th>Defendant B does disclose information</th>
<th>Defendant B does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant A does disclose information</td>
<td>not reachable</td>
<td>$4.76, $76.19</td>
</tr>
<tr>
<td>Defendant A does not disclose information</td>
<td>$76.19, $4.76</td>
<td>$16.67, $16.67</td>
</tr>
</tbody>
</table>

No Contribution Rule Expected Damages: Depending Upon Disclosure of Information Settlement Required for Information Exchange

Under the no contribution rule, the plaintiff is indifferent as to whether it settles first with defendant A or defendant B. In each case, the plaintiff will have an expected damage award of $80.95.\(^\text{120}\)

<table>
<thead>
<tr>
<th>Plaintiff Settles First with defendant A</th>
<th>Plaintiff Settles First with defendant B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80.95</td>
<td>$80.95</td>
</tr>
</tbody>
</table>

No Contribution Rule Plaintiff's Expected Total Damage Award

b. Contribution with Claim Reduction Rule

As noted in the previous section, under the contribution with claim reduction rule the plaintiff will need to provide each defendant with an incentive \( e \), in the form of a reduced monetary payment, to induce the defendants to provide information. If liability is allocated by comparative fault under the contribution with claim reduction rule, then the plaintiff will not be indifferent as to which defendant it settles with first and receives its information from.

If the plaintiff settles first with defendant A for $18 - \( e \), then the plaintiff can only sue defendant B for $10, as defend-

\(^\text{120}\) $80.95 = $4.76 + $76.19.
ant A's attributable share of the damages is $90.\textsuperscript{121} Thus, even if defendant A gives the plaintiff information that improves the plaintiff's probability of winning at trial against defendant B from 0.2 to 0.8, the expected trial award against defendant B is only increased from $2 to $8.

If the plaintiff settles first with defendant B for $2 - e, then the plaintiff can sue defendant A for $90, as defendant B's attributable share of the damages is only $10.\textsuperscript{122} If defendant B gives the plaintiff information that improves the plaintiff's probability of winning at trial against defendant A from 0.2 to 0.8, the expected trial award against defendant A is increased from $18 to $72.

Assuming that a defendant will not provide information until it has settled, we will have the following payoff matrix under the contribution with claim reduction rule.

<table>
<thead>
<tr>
<th>Defendants' Expected Damage Payments ($A, B$)</th>
<th>Defendant $B$ does disclose information</th>
<th>Defendant $B$ does not disclose information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant $A$ does disclose information</td>
<td>not reachable</td>
<td>$18 - e, $8</td>
</tr>
<tr>
<td>Defendant $A$ does not disclose information</td>
<td>$72, $2 - e</td>
<td>$18, $2</td>
</tr>
</tbody>
</table>

Contribution with Claim Reduction Rule with Incentives Expected Damages: Depending Upon Disclosure of Information Settlement Required for
Information Exchange

If the plaintiff cannot obtain a defendant's information to use against another defendant without settling with the defendant, and each defendant can provide the same quality of information, then the plaintiff will prefer to settle first with those defendants that cause less damage. In this case, the plaintiff will wish to settle with defendant B before settling with defendant A because it will give the plaintiff a greater aggregate damage award.

\textsuperscript{121} The plaintiff will settle with defendant A for $18 - e = [(0.2) \times ($90)] - e. That is the probability that defendant A will lose at trial, when the plaintiff does not have information from a defendant, multiplied by the damages defendant A is liable for, $90, less an incentive $e$.

\textsuperscript{122} The plaintiff will settle with defendant B for $2 - e = [(0.2) \times ($10)] - e. That is the probability that defendant B will lose at trial, when the plaintiff does not have information from a defendant, multiplied by the damages defendant B is liable for, $10, less an incentive $e$. 
To the extent that it is necessary to deter those conspirators that cause, and are liable for, large proportions of the damage, the contribution with claim reduction rule will make it less likely that these conspirators believe that they can settle cheaply. For they will know that the plaintiff has a disincentive to settle cheaply with them. In some situations, we will want to deter conspirators that are liable for larger proportions of the damage more than conspirators liable for smaller proportions of the damage. For instance, we will want to increase deterrence for a larger conspirator that coerces other smaller actors into the conspiracy. In such cases, the smaller actors may be unable to avoid entering into the conspiracy without being punished by the large damage causing actor. In these situations, it will be the large damage causing actor that should be deterred in order to stop the conspiracy.

In addition, it may be a defendant that caused a large proportion of damage that is in the best position to frustrate a conspiracy's objectives. For example, in a price-fixing conspiracy, a non-participating large firm would be in a superior position to a non-participating small firm to undercut a conspiracy's output restraint that is needed for the success of the conspiracy. A non-participating small firm might not be able to increase output quickly enough to undercut the conspiracy's ability to inflict damage on consumers. Thus, deter-

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123. An unlawful conspiracy exists when a distributor is forced, by penalty of sanction, to comply with the demands of its supplier to restrict competition in some way. Perma Life Mufflers, Inc. v. International Parts Corp., 392 U.S. 134, 142 (1968); see also Albrecht v. Herald Co., 390 U.S. 145, 150 n.6 (1968); Contribution and Claim Reduction in Antitrust Litigation, supra note 2, at 13.

124. See infra part VI (analyzing the allocation of damages under the contribution rules). Where one party is able to control the actions of another party by coercive threat (other than a legal threat such as price competition), I recommend that the damages be allocated by the comparative fault liability allocation rule. The controlling party in such a case would be more at fault than a controlled party.

125. This argument was made by Assistant Attorney General William Baxter. House Monopolies Subcommittee's Staff Report on Contribution Bill in 97th Congress—Proposed Legislation to Allocate Damages Among Defendants in Pri-
ring a large firm from entering into the conspiracy may have a greater effect on thwarting the conspiracy's objectives than deterring a small firm.

3. Defendants' Incentives to Collect and Hide Information

Under both the no contribution rule and the contribution with claim reduction rule, defendants may wish to provide the plaintiff with information in order to lower their monetary settlement amount. How much a defendant can save on its monetary settlement will, to some degree, depend upon the quality of the information and evidence it can provide to the plaintiff. We might not expect each defendant to have the same quality of information to be used against other defendants. One reason for the divergent quality of information is that the defendants may have different incentives to collect the information.

A pessimistic defendant that enters a conspiracy believing that the probability of detection is high, and that it is likely to be found liable to the plaintiff, will have a strong incentive to collect information that can be used against the other defendants. A pessimistic defendant's strategy will be to enter into the conspiracy, collect information and, if detected, provide the information to the plaintiff in exchange for a lower monetary settlement. The pessimistic defendant will also try to hide information that can be used against it.

On the other hand, an optimistic defendant that enters a conspiracy believing it unlikely that the conspiracy will be detected, or that, should detection occur, it is unlikely liability will be imposed, will have less incentive to collect information to be used against other defendants. In addition, an optimistic defendant will not try as hard as a pessimistic defendant to hide the information that can be used against it.

Whether a conspirator is optimistic or pessimistic will depend upon many factors. One such factor is the conspirator's knowledge of the illegality of its action. Conspirators that believe that their actions are legal are likely to be optimistic as to the outcome of the conspiracy, as they will believe that if a trial takes place they will be victorious. Conspirators that be-

lieve their actions are clearly illegal are likely to be pessimistic. However, in a conspiracy between optimistic and pessimistic conspirators, the pessimistic conspirators are likely to be the ones that have the best information to be used against others and to have hidden the information that can be used against themselves. Thus, the pessimistic conspirators may be able to reach a cheaper settlement with the plaintiff than optimistic conspirators.  

It may seem unjust that the conspirators who know the wrongness of their actions are able to settle for a cheaper amount than conspirators that seem less culpable. But this will provide an incentive to actors to determine the legality of their action ex ante the conspiracy. Whether this is a proper incentive depends on whether we believe that parties already spend enough in resources trying to determine the legality of their potential actions. It is doubtful that we want actors to have to contact lawyers before they perform any action, but in some areas of activity, it is desirable that these actors become better informed than they currently are.

Both the no contribution rule and the contribution with claim reduction rule, because they may lead to situations where defendants provide information that is adverse to other defendants, will lead to situations where culpable defendants are able to settle for less than non-culpable defendants. Neither rule will be fair in the sense that the most culpable defendant is forced to pay more than less culpable defendants. Of course, a jury may find the most reprehensible defendants liable for more damages because of their cul-

126. Of course, if the optimistic defendants are correct in their beliefs and the plaintiff has no cause of action, then the pessimistic defendants may have wasted resources collecting information against others and hiding information against themselves.

127. Senator Charles Grassley (R-IA) stated such views on legislation to change the antitrust laws to allow for contribution with claim reduction:

[T]he most culpable defendants will necessarily settle a case first—since they know they cannot go to trial—at amounts far less than their share of damages. Less culpable and innocent defendants are faced with rapidly escalating potential damage exposure based upon the sales of settling defendants. Class action plaintiffs' lawyers have taken advantage of this situation by demanding enormous sums from each successive company without regard to culpability. Often, the most culpable pay the least; the least culpable pay the most. This is wrong. Senate Judiciary Committee Report on S995, "Antitrust Equal Enforcement Act," with Additional Views, 42 Antitrust & Trade Reg. Rep. (BNA) No. 1062, at 934 (April 29, 1982) (statement of Sen. Charles E. Grassley).
pability, but in many situations, it may be culpable defendants who appear the cleanest.

As for differences among the rules, the contribution with claim reduction rule will make it more likely that a defendant liable for a large proportion of the plaintiff's damage will face more deterrence. To the extent that one believes that such defendants are also more culpable, possibly because they have more resources to determine the legality of their actions, there will be more deterrence for the more culpable defendants under the contribution with claim reduction rule. However, in situations where the more culpable defendant is liable for only a small proportion of the damages, then the contribution with claim reduction rule favors the more culpable defendant.

D. The Effect of Risk Aversion on Deterrence

The no contribution rule, as compared with the contribution rules, imposes additional risk costs on risk averse defendants. In addition to the risk a defendant faces of winning or losing at trial, the no contribution rule leads to additional risk by causing uncertainty as to the amount of damages that a defendant may be forced to pay. While these higher risk costs increase the deterrence faced by the defendant ex ante the conspiracy, should there be a conspiracy, the risk costs themselves are a social waste. There is a trade-off between the benefit of increased deterrence when a conspir-
acy does not form and the social waste of the risk costs when a conspiracy does form.\textsuperscript{129}

We can avoid these risk costs by setting liability damages under either of the contribution rules such that the same \textit{ex ante} deterrence is achieved as under the no contribution rule.\textsuperscript{130} The plaintiff will then receive a greater expected damage award, instead of the risk costs vanishing as a social waste when a conspiracy does occur.

E. The Effect of Litigation Costs on Deterrence

The contribution rules both require that the liability be allocated among the defendants, while the no contribution rule does not require a division of damages. Thus, the contribution rules may cause additional expenditures of legal resources to determine the allocation of damages.\textsuperscript{131} These additional litigation costs under the contribution rules can be minimized by using a per capita liability allocation rule as opposed to the comparative fault or comparative benefit liability allocation rules.\textsuperscript{132}

The contribution rules may also lead to greater litigation costs because there may be more outstanding defendants if a

\textsuperscript{129} These additional risk costs on defendants are imposed by the possibility of a defendant having to pay a large proportion of the total conspiratorial liability alone. Thus, this assumes that the conspirators do not also reach an agreement on the sharing of liability if the conspiracy is detected. \textsuperscript{See} A. Mitchell Polinsky, \textit{An Introduction to Law and Economics} \textit{79-86} (2d. 1989); A. Mitchell Polinsky \& Steven Shavell, \textit{The Optimal Tradeoff Between the Probability and Magnitude of Fines}, \textit{69 Am. Econ. Rev.} \textit{880} (1979).

\textsuperscript{130} But see \textit{infra} part III.E. (noting that the contribution rules may lead to more litigation costs which are also a social waste). Thus, there may be a trade-off between the two rules regarding the waste of risk costs and the waste of litigation costs.

\textsuperscript{131} It is generally believed that the contribution rules will lead to increased litigation costs because the allocation of liability damages must be determined. \textsuperscript{See} Antitrust Equal Enforcement Act: Hearings Before the Comm. on the Judiciary of the United States Senate, \textit{97th Cong., 1st \& 2d Sess. 28} (1981-82) (statement of William Baxter, Asst. Att’y Gen.).

\textsuperscript{132} \textit{See} \textit{infra} parts VI.A-C.
trial occurs. Under the no contribution rule, the plaintiff will always want to settle with all but one defendant. Under the contribution with settlement reduction rule, defendants will have an incentive not to settle individually. Thus, there may be many defendants if a trial takes place. The contribution with claim reduction rule falls between these two rules, as the defendants will not have a disincentive to settle individually, but the plaintiff will not have an incentive to settle with all but one of the defendants. Thus, it would seem that the contribution with settlement reduction rule would lead to more total litigation costs than the contribution with claim reduction rule, which would lead to more total litigation costs than the no contribution rule.

Just as risk costs are a social waste, the same may be said of litigation costs. Although higher legal costs will increase the amount of deterrence faced by the defendants, as in the case of risk costs, a balance exists between the benefit the litigation costs bring as a deterrent to the activity and the waste that occurs when there is a trial. However, unlike the waste of risk costs which do not affect risk-neutral defendants, litigation expenses raise the costs of risk-neutral as well as risk-averse defendants.

We seem to have a trade off between wasteful litigation costs under the contribution rules and wasteful risk costs under the no contribution rule (for risk-averse defendants). Which rule leads to less total waste is an empirical question that may be different depending on which law is being examined. If we knew which type of costs dominated, we could

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133. See infra part IV.
134. This assumes that the probabilities of the plaintiff winning at trial are perfectly correlated. The plaintiff may also settle with the last outstanding defendant. It is just that it has an incentive to always settle with other defendants for small monetary amounts. See infra part V.A.2. See also supra note 52.
135. But see infra part IV.B. (showing that complete settlement may be more likely under the contribution with claim reduction rule in some situations). These situations would likely be cases involving a few number of conspirators where liability is apportioned per capita (or apportioned in nearly equal shares).
136. Professors Polinsky and Rubinfeld show that costly trials may increase deterrence and thus, may increase social welfare as compared with less costly trials. They do not, however, advocate trials be made more costly to increase deterrence. Instead, they suggest other options superior to increased trial costs, such as raising the level of liability. See A. Mitchell Polinsky & Daniel L. Rubinfeld, The Deterrent Effects of Settlements and Trials, 8 Int'l. Rev. L. & Econ. 109 (1988).
apply the rule that minimized those costs and set the liability level to achieve the appropriate amount of deterrence. The least wasteful way to increase deterrence is to increase the liability of the defendants.

F. Insulation of Decisionmakers

Decisionmakers of an organization found liable for damages may be insulated from the full extent of the liability since they do not pay the organization's total damages.¹³⁷ A decisionmaker may be indifferent as to whether the organization faces a large or small punishment. In such a situation, an organization may be deterred more if each of the organizations is liable for some of the damages, rather than one organization being liable for all of the damages. In such cases, the contribution rules would be favored. This has been formally analyzed by Polinsky and Shavell.¹³⁸

Easterbrook, Landes and Posner note that if there is some minimal level of liability that the organization must face in order for the decisionmaker to be punished, then the no contribution rule may lead to more deterrence.¹³⁹ In some situations, the minimum level of organizational liability that leads to decisionmaker deterrence may be achieved if an organization would pay all the conspiracy's damages under the no contribution rule. But that level would not be reached where the organization pays only its share under the contribution rules.

If the damage amount caused by each defendant is large, then the contribution rules will likely lead to more deterrence for decisionmakers. If there is a minimum threshold of damage payment resulting in adverse consequences for the decisionmaker, and the conspiracy's damages are low, then the no contribution rule may lead to more deterrence. The problem of decisionmaker insulation could be addressed by changing the rule used, depending on the expected amount of total liability (or liability per firm). One could use a contribution rule where damages are large, and thus ensure that all deci-

¹³⁷. See Polinsky & Shavell, supra note 17, at 454 n.22 (citing Note, Contribution in Private Antitrust Actions, 93 HARV. L. REV. 1540 at n.6 at 1545-46 & n.30 (1980) (citing Richard A. Whiting, Antitrust and the Corporate Executive II, 48 VA. L. REV. 1, 7 n.22 (1962))).
¹³⁸. Id. at 453-55.
¹³⁹. Id. at 455 n.26 (referring to comments from Easterbrook, Landes and Posner).
sionmakers face some deterrence. Where total damages are small, the no contribution rule could be applied to ensure that at least one decisionmaker is punished. Additionally, if there is a limited amount of punishment an organization can impose on a decisionmaker, it may be better for society to impose fines or imprisonment on the decisionmaker directly.\(^\text{140}\)

IV. SETTLEMENT

This section analyzes how the different rules affect the likelihood of settlement. We first examine the disincentive for defendants to settle individually under the contribution with settlement reduction rule. This disincentive to settle occurs even when the defendants and the plaintiff have the same beliefs as to the outcome at trial.\(^\text{141}\) However, this disincentive to settle does not exist if all defendants settle at once or condition their settlement on others settling. The conclusion of this subsection was originally shown by Easterbrook, Landes and Posner,\(^\text{142}\) and by Polinsky and Shavell.\(^\text{143}\)

Next, the article shows that when the plaintiff and defendants have asymmetric information and beliefs, it is unclear as to whether the contribution with claim reduction rule or the no contribution rule will be more likely to lead to complete settlement. The analysis will focus on situations where the defendants and the plaintiff have different beliefs as to their likelihood of winning at trial. Under the no contribution rule, the plaintiff will settle with all but one defendant. But the last outstanding defendant may be less likely to settle under the no contribution rule than a similar defendant under the contribution with claim reduction rule. Yi also

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141. That there is no settlement at all assumes that defendants are able to obtain contribution from each other with certainty. Under the contribution with settlement reduction rule, if defendants are unable to obtain contribution with certainty, a defendant will be willing to settle with the plaintiff, even though it will still face possible liability if the second defendant loses at trial and seeks contribution from it. A defendant by settling will no longer face the possibility of having to pay most of the plaintiff’s damages while possibly failing to obtain contribution from others (assuming contribution is uncertain). The case where contribution cannot be obtained with certainty is further examined below. *See infra* part V.A.3.


showed that neither rule would always lead to more complete settlement. He demonstrated this conclusion with the case where the plaintiff had private information regarding its injury. Although the analysis of this subsection is different from Yi's analysis, the conclusion is the same.

A. **Defendants' Disincentive to Settle Under the Contribution with Settlement Reduction Rule**

The contribution with settlement reduction rule will give defendants a disincentive to settle individually even if the defendants and the plaintiff have symmetric information and beliefs. If a defendant and the plaintiff agree on the expected outcome of a trial, one would normally expect them to settle and thus save litigation costs. But under the contribution with settlement reduction rule, a settling defendant might still have to pay contribution to another defendant that later loses at trial. Without a settlement-bar to contribution, a defendant that settles will have higher expected damages than simply its settlement amount. In fact, where contribution can be obtained with certainty, a defendant will be unwilling to settle with the plaintiff for any positive amount. This can be seen by examining a numerical example.

144. Yi, supra note 22, at 82-90. For an outline of Yi's analysis see infra note 156.

145. This analysis is shown both by Easterbrook, Landes and Posner, and by Polinsky and Shavell. See Easterbrook et al., supra note 16, at 362; Polinsky & Shavell, supra note 17, at 458-59.

146. If Mary Carter agreements are allowed between the defendants and plaintiff, then the defendants will not have a disincentive to settle under the contribution with settlement reduction rule. See infra part V.B.

147. Some courts have argued that the contribution with settlement reduction rule will completely stop settlement. One court stated:

[A] "no-bar" rule ... would quite clearly inhibit the policy of encouraging settlements. A defendant has nothing to gain by entering into a settlement that does not effectively terminate, or for that matter even reduce, further financial exposure. ... Indeed, a defendant has everything to lose by so doing. Even in the strongest of actions, there is always the possibility of a defense verdict and, thus, a required payout of zero. At the very least, by remaining in the action a defendant can defend himself and attempt to reduce his proportionate share of liability. Since the upper-end risk is not reduced in the slightest by a partial
Suppose that two equally liable defendants cause total damages of $100, and the defendants and the plaintiff believe that each defendant will lose at trial to the plaintiff with probability 0.5. Given symmetric information, under the contribution with settlement reduction rule, the expected damage payment of each defendant is $25.\footnote{148} We can now show the defendant’s disincentive to settle under the contribution with settlement reduction rule.

First, suppose that defendant $A$ settles with the plaintiff for $25\footnote{149}, defendant $A$’s expected damages if the plaintiff sues defendant $A$. The plaintiff will bring suit against defendant $B$ for the remaining $75$ in damages, and the plaintiff’s expected damage award payment from the trial will be $37.50$. However, defendant $B$ will not be willing to settle with the plaintiff for $37.50$. If defendant $B$ settles with the plaintiff for $37.50$, then defendant $B$ will be unable to seek contribution from defendant $A$, as $37.50$ is less than defendant $B$’s share of the damages of $50\footnote{150}$. But if defendant $B$ loses at trial to the plaintiff, and pays the plaintiff $75$ in settlement, a rational defendant may as well “roll the dice,” pursuing the matter to trial and hoping for a favorable verdict.


\footnote{148} $25 = (0.5) \times (0.5) \times ($100$).

\footnote{149} If the plaintiff sues defendant $A$ and wins, then defendant $A$ will have to pay the plaintiff $100$ in damage. However, defendant $A$ will be able to obtain contribution from defendant $B$ of $50$. Thus, defendant $A$ will have a net loss of $50$ if it loses at trial, and since defendant $A$ will only lose at trial with probability 0.5, defendant $A$’s expected damages are $25$.

\footnote{150} Contribution is allowed for settlements under some laws. For example, the Uniform Contribution Among Tortfeasors Act states:


But, if a defendant settles for an reasonable amount that is more than its share of the damages, then it will be able to seek contribution from other defendants. Unif. Contribution Among Tortfeasors Act § 1(d) cmt., 12 U.L.A. 65 (1955). However, even if a defendant is allowed to seek contribution when it settled for more than its share of the damages, the defendant will still have a disincentive to settle, because if the defendant loses at trial, it will be able to seek more in contribution from other defendants than if it settles for the expected damages at trial.

For example, suppose defendant $A$ is liable for 90% and defendant $B$ is liable for 10% of total damages of $100$, and that each defendant has a probability of losing at trial to the plaintiff of 0.5. Suppose that the plaintiff brings suit against defendant $B$ for the total damages of $100$. \footnote{1994}
damages, defendant $B$ will seek contribution from defendant $A$ of $25$. This will leave defendant $B$ with a net damage payment of $50$ if it loses at trial. Thus, defendant $B$ has an expected damage payment before trial of $25$ as there is only a 50% chance the plaintiff will prevail at trial. However, defendant $A$ will have an expected damage payment of $37.50$. This is equal to the $25$ from the initial settlement plus a 50% chance of having to pay defendant $B$ contribution of $25$.$^{151}$

Now suppose that neither defendant $A$ nor defendant $B$ settles with the plaintiff. The plaintiff has a 50% chance of winning at trial, and thus each defendant will have a 50% chance of having to pay its share of the damages of $50$. Each defendant will have an expected damage payment of $25$. Because $25$ is less than $37.50$, which is defendant $A$'s expected total damage payment if defendant $A$ initially settled for $25$, defendant $A$ is better off not settling first individually. Similarly, defendant $B$ is better off going to trial than settling first individually.

In fact, defendant $A$ will not be willing to settle with the plaintiff for any positive amount under the contribution with settlement reduction rule.$^{152}$ Suppose defendant $A$ settled with the plaintiff for $1$. By paying the plaintiff $1$ in an early settlement, defendant $A$ only reduces its expected liability by 50¢. The plaintiff can still sue for $49$ of defendant $A$'s damages by suing defendant $B$. Defendant $B$ will obtain contribution from defendant $A$ if it loses at trial for the $49$ in damages. Because defendant $B$ has a 50% chance of losing at trial to the plaintiff, and we are assuming defendant $B$ is able to obtain contribution from defendant $A$ with certainty, defendant $A$ will have a 50% chance of having to pay an additional

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151. \(37.50 = 25 + (0.5) \times (50-25)\).

152. See Easterbrook et al., supra note 16, at 362.
$49 in damages. This will give defendant A an expected contribution payment of $24.50, for a total expected damage payment of $25.50. If defendant A had not settled with the plaintiff, then defendant A would have had a 50% chance of paying $50 in damages, and a total expected damage payment of $25. Since $25 is less than $25.50, defendant A is better off refusing to settle with the plaintiff than settling with the plaintiff for $1 in damages.

It seems bothersome that even though all parties agree about the expected outcome at trial, they remain unable to reach an agreement and save litigation costs. Under the contribution with settlement reduction rule, if parties are able to reach multi-party agreements, or are able to condition agreements on the settlements of other defendants, then there may not be the disincentive to settle as when defendants settle individually.\(^{153}\)

To see this in the above example, suppose defendant A agrees to settle with the plaintiff for $25 conditioned on defendant B also settling. Defendant A has no disincentive to sign such an agreement because if defendant B does settle, defendant B will be unable to seek contribution from defendant A. If defendant B does not settle, then defendant A has not settled and thus will be in no worse of a position than if there is no agreement. Similarly, defendant B will have no disincentive to sign such an agreement. The plaintiff will conditionally settle with each defendant and the settlements will take effect at the same time. Thus, through these contingent agreements and group settlement, litigation costs are saved.

Where all parties have symmetric information and beliefs of the probabilities of loss at trial, there will be a disincentive for defendants to settle individually under the contribution with settlement reduction rule. If both defendants are not willing to simultaneously settle, then neither defendant will settle first and both defendants will go to trial. The result is that if just one defendant is unwilling to settle a case,

\(^{153}\) That contingent or group settlements will lead to settlement where parties have symmetric information regardless of which rule is being used is noted by Easterbrook, Landes and Posner. Of course, these settlements may be more costly to reach, as they are more complicated. *See id.*
all of the defendants will have an incentive to remain parties at trial against the plaintiff.\textsuperscript{154}

B. Complete Settlement Under the No Contribution and Contribution with Claim Reduction Rules

Easterbrook, Landes and Posner showed that under the no contribution rule the plaintiff will always settle with all but one of the defendants.\textsuperscript{155} They did not, however, examine the likelihood of trial with the last outstanding defendant. It may be that, for this last outstanding defendant, there will be a trial under the no contribution rule where there would have been settlement under the contribution with claim reduction rule. Of course, the opposite may also be true. It is the last outstanding defendant's characteristics that determine which rule will be more likely to lead to complete settlement. This is shown by Yi for the case where the plaintiff has private information concerning its amount of damage.\textsuperscript{156}

\textsuperscript{154} Courts have also noted that there will be no settlement if just one defendant is unable to reach an agreement with the plaintiff. In \textit{In re Nucorp Energy Sec. Litig.}, 661 F. Supp. 1403 (S.D. Cal. 1987), the court deduced that if there was no bar against seeking contribution from a party that had settled, then no partial settlements would occur. The court explained:

Any single defendant who refuses to settle, for whatever reason, forces all other defendants to trial. Anyone foolish enough to settle without barring contribution is courting disaster. They are allowing the total damages from which their ultimate share will be derived to be determined in a trial where they are not even represented.

\textit{Id.} at 1408.

\textsuperscript{155} See Easterbrook et al., \textit{supra} note 16, at 356.

This is assuming that the probabilities of the plaintiff winning at trial against the various defendants are positively (exactly) correlated. \textit{See infra} part V.A.2. (examining settlement when probabilities of the plaintiff winning at trial are not correlated). The plaintiff may still settle with the last outstanding defendant, but that will depend upon both the plaintiff's and the last outstanding defendant's beliefs about the outcome of the trial.

\textsuperscript{156} Yi, \textit{supra} note 22, at 82-90. Yi shows that total settlement might be less likely to occur under the no contribution rule than under the contribution with claim reduction rule where defendants are unsure of the damages caused to the plaintiff.

Yi sets up a situation where a plaintiff has private information concerning its injury that can either be a high damage injury or a low damage injury. The defendants form a probability assessment of whether the injury to the plaintiff is high damage or low damage. The defendants then offer either a high or a low settlement depending on their probability assessment of the plaintiff's level of injury. If a defendant offers a high settlement, the plaintiff will accept it regardless of which type it is; while if a defendant offers a low settlement, then there is a possibility of a trial.
We will examine the case where defendants and the plaintiff agree on the amount of the damage the plaintiff has suffered, but disagree as to the chances of the plaintiff winning at trial. We can compare the no contribution rule with the contribution with claim reduction rule by examining the difference between the plaintiff's demands and the defendants' offers for settlement. The smaller the difference between the plaintiff's settlement demand and a defendant's

For defendants that are equally liable under the contribution with claim reduction rule, Yi demonstrates that a defendant's probability belief that the plaintiff suffered high damage, for which the defendant offers a high settlement, is lower for the contribution with claim reduction rule than for the no contribution rule. That means for some probability assessments, the defendant will make a high settlement offer under the contribution with claim reduction rule where it might have made a low settlement offer under the no contribution rule. Because a plaintiff will always accept the high settlement offer, while it may or may not accept the low settlement offer, for a range of the defendant's probability assessment of the plaintiff's type there is more likely to be settlement under the contribution with claim reduction rule than under the no contribution rule.

What drives this result is that the difference between the high and low settlement offers under the no contribution rule is larger than the difference between the high and low settlement offers under the contribution with claim reduction rule. For the case where defendants are liable for the same proportion (or nearly the same proportion) of the damage, a defendant has more to gain if a low settlement offer is accepted under the no contribution rule than if it is accepted under the contribution with claim reduction rule. Because the value of having a low settlement offer is greater under the no contribution rule, the defendant is more likely to make a low settlement offer, even though making a low settlement offer will increase the risk of a trial and the litigation costs associated with it.

Yi's analysis shows that if defendants are liable for (nearly) equal proportions of the damage, then the contribution with claim reduction rule will lead to more settlement than the no contribution rule. He also shows that if the defendants are liable for different proportions of the damage, it is possible that the difference between the high and low settlement offers are smaller under the no contribution rule than under the contribution with claim reduction rule for some defendants (defendants liable for a high proportion of the damage). Therefore, trials may be more likely under the contribution with claim reduction rule than under the no contribution rule (as the defendants that caused a high proportion of the plaintiff's damage will have more to gain from a low settlement offer under the contribution with claim reduction rule than under the no contribution rule).

My analysis above does not assume that defendants lack knowledge regarding the plaintiff's injury. Instead, the assumption I make is that the plaintiff and the defendants disagree on the probability of the plaintiff winning at trial. My analysis more closely follows that of the typical one plaintiff, one defendant settlement models with asymmetric information as to the probability of trial outcome, but common knowledge of what each party's beliefs are and the amount of damages caused.
settlement offer, the more likely there will be a settlement.\footnote{Plaintiffs and defendants who disagree about the outcome of a trial may still reach an agreement in order to save litigation costs. To the extent that the difference in their disagreement is smaller, settlement is more likely to occur.} Examples comparing the two rules will show how the different settlement outcomes depend on the characteristics of the defendants.

Suppose there are two defendants, total damages are $100, and each defendant believes the plaintiff will win the trial with probability 0.5. However, assume the plaintiff believes it will win the trial with probability 0.6.

First, assume that each defendant is liable for 50% of the damages under the contribution with claim reduction rule. In this case, the contribution with claim reduction rule is more likely to lead to more complete settlement than the no contribution rule.

Under the no contribution rule, the defendants will offer to settle for $33.33, as this is what they believe the equilibrium settlements will be (based on their beliefs of losing to the plaintiff at trial with probability 0.5).\footnote{\$33.33 = (0.5) \times (\$100 - \$33.33).} The plaintiff will initially demand that each of the defendants settle for $37.50, as this is what the plaintiff believes the equilibrium settlements will be (based on its beliefs of winning at trial with probability 0.6).\footnote{\$37.50 = (0.6) \times (\$100 - \$37.50).} However, the plaintiff will settle with one defendant based on the defendant’s beliefs because the plaintiff is better off settling with one defendant, and suing the other, than refusing to settle with either defendant and suing both defendants.\footnote{If the plaintiff refuses to settle with both defendants, it will have an expected damage payment of $60 based on its beliefs of winning at trial with probability 0.6.}

After settling with the first defendant for $33.33, the plaintiff will sue the outstanding defendant for $66.67. We now have a single defendant case where at trial the plaintiff

\begin{align*}
\text{damage payment at trial} &= \text{probability of winning} \times \text{total damages} \\
&= (0.6) \times (\$66.67) \\
&= \$40
\end{align*}

Thus, the plaintiff is better off settling with the one defendant, as the plaintiff was able to receive $33.33 with certainty rather than $33.33 with a 0.6 probability, which leads to the increase of $13.33 in the total expected damage payment.
will expect to receive damages of $40,\textsuperscript{161} while the defendant will expect to pay damages of $33.33.\textsuperscript{162} The difference between the plaintiff’s and the last outstanding defendant’s expected outcome of the trial is $6.67.\textsuperscript{163}

Under the contribution with claim reduction rule, each defendant will offer to settle for $25.\textsuperscript{164} The plaintiff will demand that each of the defendants settle for $30.\textsuperscript{165} Under the contribution with claim reduction rule, the difference between the plaintiff’s demand and each defendant’s offer is $5.

For the plaintiff and defendant to settle under the no contribution rule, it must be that their total litigation costs are greater than $6.67. However, under the contribution with claim reduction rule, a defendant and plaintiff need only have total litigation costs of $5 in order to settle. Since the difference between the settlement demands and the offers of the defendants under the contribution with claim reduction rule is less than the settlement demand and offer of the last outstanding defendant under the no contribution rule, complete settlement is more likely under the contribution with claim reduction rule.\textsuperscript{166}

Now let us modify the example such that defendant A is liable for 90% and defendant B is liable for 10% of the damages under the contribution with claim reduction rule. The analysis under the no contribution rule will be the same as where liability was equally allocated under the contribution rules. The plaintiff will settle with one defendant for $33.33, and sue the other defendant for $66.67. As before, the difference between the plaintiff’s and the last outstanding defendant’s expected outcomes at trial will be $6.67.\textsuperscript{167}

Under the contribution with claim reduction rule, the proportion of damage a defendant is liable for affects the defendant’s expected damage payment. Thus, we will have dif-

\begin{itemize}
  \item \textsuperscript{161} $40 = (0.6) \times ($66.67).
  \item \textsuperscript{162} $33.33 = (0.5) \times ($66.67).
  \item \textsuperscript{163} $6.67 = $40 - $33.33.
  \item \textsuperscript{164} $25 = (0.5) \times (0.5) \times ($100).
  \item \textsuperscript{165} $30 = (0.5) \times (0.6) \times ($100).
  \item \textsuperscript{166} For example, if the total litigation costs of a defendant and the plaintiff are $6, then settlement will occur under the contribution with claim reduction rule, but there will be a trial under the no contribution rule.
  \item \textsuperscript{167} The plaintiff will demand $40 and the defendant will offer $33.33. The difference is $6.67.
\end{itemize}
Differing results in this example than where damages are equally allocated.

Defendant A is liable for $90 in damages and has a belief that it will lose at trial with probability 0.5. Thus, defendant A will make a settlement offer of $45, an amount equal to its expected damages at trial. The plaintiff, however, believes that it will win at trial with probability 0.6. Thus, the plaintiff will demand that defendant A pay $54, the plaintiff’s expected damage award from defendant A at trial. The difference between defendant A’s settlement offer and the plaintiff’s settlement demand is $9.

Defendant B is liable for $10 in damages and has a belief that it will lose at trial with probability 0.5. Thus, defendant B will make a settlement offer of $5 equal to its expected damages at trial. The plaintiff believes that it will win at trial with probability 0.6. Thus, the plaintiff will demand that defendant B pay $6, the plaintiff’s expected damage award from defendant B at trial. The difference between the defendant B’s settlement offer and the plaintiff’s settlement demand is $1.

In this case, complete settlement is more likely under the no contribution rule. For the plaintiff and the last outstanding defendant to settle under the no contribution rule, they must have total litigation costs greater than $6.67. However, under the contribution with claim reduction rule, defendant A and the plaintiff need to have total litigation costs of $9 in order to settle. As the difference in the settlement demands and offers of the last outstanding defendant under the no contribution rule is less than the settlement demand and offer of defendant A under the contribution with claim reduction rule, complete settlement is more likely under the no contribution rule.

Neither the no contribution rule nor the contribution with claim reduction rule will always be more likely to lead to complete settlement. What drives the result is the amount of damage for which the last outstanding defendant is liable for under the two rules. When the plaintiff and defendant disagree about the outcome of trial, the absolute amount of their

168. \(45 = (0.5) \times (90).\)
169. \(54 = (0.6) \times (90).\)
170. \(5 = (0.5) \times (10).\)
171. \(6 = (0.6) \times (10).\)
disagreement will be larger when the defendant is liable for more of the damages. If there is not a defendant that is liable for a large proportion of the damages under the contribution with claim reduction rule, then the contribution with claim reduction rule is more likely to lead to complete settlement than the no contribution rule. If liability is allocated per capita among the defendants, then the contribution with claim reduction rule is more likely to lead to complete settlement than the no contribution rule.

The advantage the no contribution rule holds over the contribution with claim reduction rule is that there will tend to be fewer defendants outstanding if a trial does actually take place. When a trial does occur under the contribution with claim reduction rule, there may be many non-settled defendants.

V. EXTENSIONS

A. Lifting of Model Assumptions

We have made many assumptions in order to more easily show the differences among the rules. Most of these assumptions have not been necessary to the conclusions reached, and will be lifted in this section.

1. Uncertain Detection

We have assumed thus far that the plaintiff has been able to detect the conspirators with certainty. Thus, the probability that a plaintiff would be able to obtain damages from the defendants was the same as the plaintiff’s probability of success at trial. We now lift the assumption that the plaintiff’s detection of the conspiracy occurs with certainty. In determining the probability that a plaintiff will be able to collect its damages at trial from a conspirator, the probability of detection can be separated from the probability of the plaintiff winning at trial after detection has occurred.172

172. Previous authors have not explicitly separated the probability of detection from the probability of the plaintiff winning at trial. For example, Easterbrook, Landes and Posner combine both the probability of detection and the probability of the plaintiff winning at trial into one variable. See Easterbrook et al., supra note 16.
In the diagram above, $q$ is the probability of detection of the defendant by the plaintiff, and $p$ is the probability of the plaintiff winning at trial given the plaintiff has detected the defendant. The probability of the plaintiff obtaining damages from the defendant is thus $(p \times q)$.

If $q$ is equal to 1, detection is assumed to occur with certainty, and the differences between the no contribution rule and the contribution rules are extenuated. This is what we have assumed above in comparing the rules. However, in many, if not most, situations the probability of detection will not be 1. If the probability of detection is uncertain, the different rules are closer in their results.

We can reexamine the example in subsection III.A.1 where there was certain detection. In that example, we had two defendants who were equally liable for the total damages of $100. Detection of the conspiracy occurred with certainty. Both defendants had beliefs that each defendant would lose at trial to the plaintiff with probability 0.5. The expected damage a defendant faced under the no contribution rule was $33.33, while under the contribution rules the expected damage was $25. The difference in expected damages of the rules, and thus deterrence, being $8.33.

Now suppose that each defendant believes that the probability of detection is 0.7071 and the probability of losing to the plaintiff at trial after detection is 0.7071. This also will lead each defendant to believe that the probability of paying damages is 0.5. Under the no contribution rule, if detection occurs, the defendants will have expected damages of $41.42, while if detection does not occur, the defendants will have zero in expected damages. Under the contribution rules, if detection occurs, the defendants will have expected

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173. See supra part III.A.1.
174. $0.5 = (0.7071) \times (0.7071)$.
175. $\$41.42 = (0.7071) \times (\$100 - \$41.42)$. 
damages of $35.36,\textsuperscript{176} while if detection does not occur, the defendants will again have $0 in expected damages.

When detection does not occur, 29.29% of the time the defendants will pay zero regardless of which rule is used. The other 70.71% of the time, they will have expected damages of $41.42 under the no contribution rule and $35.36 under the contribution rules. Thus, the expected damages will be $29.28 under the no contribution rule,\textsuperscript{177} and $25 under the contribution rules.\textsuperscript{178} The difference between the expected damages under the rules is only $4.28, which is less than the difference of $8.33 in expected damages when detection occurs with certainty. In both examples, the defendants have a probability of paying damages to the plaintiff of 0.5. But because the strategic bargaining under the no contribution rule only occurs after detection of the conspiracy, the differences between the no contribution rule and the contribution rules are greater when a defendant’s uncertainty of paying damages is due solely to its uncertainty of loss at trial after detection.

We can look at one more example and observe that if all of the uncertainty of the defendants having to pay damages to the plaintiff is due to the uncertainty of detection, then the no contribution rule and the contribution rules will lead to the same results. Suppose that the probability that the conspiracy is detected is 0.5, and that if the conspiracy is detected the defendants will lose to the plaintiff. In this case, both the no contribution rule and the contribution rules will give the defendants expected damages of $25.

Under the no contribution rule, if the conspiracy is not detected, then each defendant will have damages of $0. If the conspiracy is detected, then each defendant will have expected damages of $50 (as each defendant will be just as likely to have to pay more than its share of the damages). As

\textsuperscript{176} $35.36 = (0.7071) \times (0.5) \times ($100).

\textsuperscript{177} Under the no contribution rule, a defendant 29.29% of the time will expect to pay $0 and 70.71% of the time expect to pay $41.42. Thus, each defendant’s expected damage payment from the conspiracy is $29.28. $29.28 = [(0.2929) \times (0)] + [(0.7071) \times ($41.42)].

\textsuperscript{178} Under the contribution rules, a defendant 29.29% of the time will expect to pay $0 and 70.71% of the time expect to pay $35.36. Thus, each defendant’s expected damage payment from the conspiracy is $25. $25 = [(0.2929) \times (0)] + [(0.7071) \times ($35.36)].
the probability of detection is 0.5, each defendant has expected damages of $25 under the no contribution rule.

Under the contribution rules, if the conspiracy is not detected, then each defendant will have damages of $0. If the conspiracy is detected, then each defendant will have damages of $50 (as each defendant is equally liable for the total damages of one-hundred). As the probability of detection is 0.5, each defendant has expected damages of $25 under the contribution rules. Thus, where all of the uncertainty of a defendant's paying damages is due to the uncertainty of the conspiracy being detected, the contribution and the no contribution rules lead to the same outcomes.

The results of the three cases we have seen separating the probability of detection from the probability of loss at trial are summarized below.

<table>
<thead>
<tr>
<th>Case</th>
<th>Probability of detection</th>
<th>Probability of loss at trial given detection</th>
<th>Probability of detection and loss at trial</th>
<th>Defendant's expected damages under the contribution rules</th>
<th>Defendant's expected damages under the no contribution rule</th>
<th>Difference in expected damages under the rules</th>
</tr>
</thead>
<tbody>
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<td>0.5</td>
<td>$25</td>
<td>$33.33</td>
<td>$8.33</td>
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<tr>
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<td>0.7071</td>
<td>0.5</td>
<td>$25</td>
<td>$29.28</td>
<td>$4.28</td>
</tr>
<tr>
<td>Case 3</td>
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<td>0.5</td>
<td>$25</td>
<td>$25</td>
<td>$0</td>
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</tbody>
</table>

Probability of Detection and Loss at Trial Equal to 0.5 Probability of Detection Varied

An additional question that should be addressed here is whether the rule that is used affects the probability of detection. One could argue that, because the plaintiff's expected damages under the no contribution rule will be greater than its expected damages under the contribution rules, the plaintiff is more likely to extend resources in detecting conspiracies under the no contribution rule.\(^{179}\) The defendants will know that the plaintiff will have higher expected damages under the no contribution rule than under the contribution rules, and that the plaintiff may expend more resources in detecting conspiracies; thus, the defendants may believe that

\(^{179}\) See supra part III.B.2, note 98, and accompanying text. Observe that even if each defendant has beliefs that it will face less in damages under the no contribution rule than under the contribution rules, the defendant will also have the belief that the plaintiff will collect more in total damages.
the conspiracy is more likely to be detected under the no contribution rule, and may be more deterred.\textsuperscript{180}

2. \textit{Independent Trial Outcomes and Sequential Settlement}

The plaintiff's probabilities of winning at trial against different defendants are more likely to be correlated in conspiracy cases than in non-conspiracy cases. For example, in a two firm price-fixing conspiracy case, if the plaintiff is to win at trial against the first defendant, it will be likely to win at trial against the second defendant (since for the plaintiff to win at trial against the first defendant for fixing prices with the second defendant, the plaintiff will also be showing that the second defendant is fixing prices with the first defendant).

However, in some situations the defendants' probabilities of loss at trial may not be perfectly correlated and possibly even independent. We will briefly examine the situation where the probabilities of the defendants' losing at trial are independent.

Under the assumption of independent probabilities of loss at trial, the expected damages under the no contribution rule and contribution rules are the same. Under the no contribution and contribution rules, if the plaintiff negotiates simultaneously with defendants, then the plaintiff and the defendants will be unable to agree on individual settlements.\textsuperscript{181} Under the no contribution rule, however, if the plaintiff negotiates sequentially with the defendants, then settlements may be reached.\textsuperscript{182} Where the defendants' probabilities of loss at trial are independent, the plaintiff will have credibility in sequentially bargaining with the defendants, although the defendants will only be willing to settle under the no contrib-

\textsuperscript{180} Even if under the no contribution rule the defendants believe that the conspiracy is more likely to be detected, they will not necessarily face greater deterrence \textit{ex ante} the conspiracy. If the defendants have beliefs that they can settle cheaply under the no contribution rule, then these beliefs might outweigh the increase in probability of detection with regard to deterrence. \textit{See supra} part III.B.


\textsuperscript{182} Of course, where all parties have the same information and beliefs, as assumed in the analysis of this subsection, conditional or group settlements are also possible.
The following example where probabilities of loss at trial are independent will demonstrate the settlement and deterrence effects of the rules.

Suppose there are two identical defendants, each defendant equally contributing to the damage of the plaintiff, the probability of each defendant losing at trial is 0.5 and the total damage caused is $100. Assume that the probabilities of each defendant losing at trial to the plaintiff are independent.

First, note that if the plaintiff sues both defendants in a joint trial, then under both the contribution rules and the no contribution rule the plaintiff has an expected damage award of $75, and each defendant has expected damages of 37.50.\textsuperscript{184}

Under the no contribution rule, the plaintiff can achieve a total settlement of $75 through sequential negotiations and settlements with the defendants. Under the contribution rules, the defendants will not want to settle, as they would be better off going to trial.

The settlement pattern under the no contribution rule is as follows. Suppose the plaintiff decides to first negotiate with defendant A and then with defendant B. The plaintiff will first approach defendant A and threaten to sue it for the entire $100 in damages. Defendant A will settle with the plaintiff for the expected damage payment of $50.\textsuperscript{185}

\textsuperscript{183} Credibility in that when the plaintiff is negotiating with a particular defendant, the plaintiff is better off than if it was simultaneously negotiating with the other defendants or jointly suing all the defendants.

This contrasts to the case where the probabilities of the defendants losing at trial are not independent, where the plaintiff may not have credibility in sequentially negotiating with the defendants because if the negotiations are not going in the plaintiff’s favor, then it will be better off entering into simultaneous negotiations with all defendants. See supra note 57.

\textsuperscript{184} The plaintiff has a 75% chance of receiving all of its damages because its probabilities of winning at trial against each defendant are independent. $0.75 = 0.5 + 0.5 - [(0.5) \times (0.5)].$

For this case of identical defendants, the defendants have expected damages of $37.50, even if the defendants are unable to obtain contribution from each other with certainty, as each defendant will be equally likely to pay more than its share of the damages.

\textsuperscript{185} The plaintiff’s threat to first sue defendant A alone and go to trial is credible. Suppose defendant A refuses to settle with the plaintiff and there is a trial. There is a 50% chance that the plaintiff will win at trial and receive $100 from defendant A. There is also a 50% chance that the plaintiff will lose to defendant A at trial and then sue defendant B, where the plaintiff will again have a 50% chance of winning $100 in damages. This makes the plaintiff’s expected damage payment equal to $75. $75 = [(0.5) \times ($100)) + [(0.5) \times (0.5) \times ($100)].$ Thus, the plaintiff is just as well off suing defendant A as if it settles
plaintiff will then approach defendant B and threaten suit for the remaining $50 in damages. Defendant B will settle with the plaintiff for the expected damage payment of $25. The plaintiff’s total expected damage award will be $75. If the defendants do not know ex ante the conspiracy what the plaintiff’s sequential settlement order will be, then each defendant will have expected damages of $37.50.

Suppose that instead of negotiating with the defendants sequentially, the plaintiff makes offers to settle with each defendant for $37.50. In this case, there will be no settlement unless both defendants simultaneously or conditionally settle, because each defendant will prefer to let the other defendant settle first and then be sued by the plaintiff—while the plaintiff will not be willing to settle with the first defendant unless it settles for its full share of the damages. Suppose the plaintiff first settles with defendant A for $37.50, then the plaintiff can sue defendant B for $62.50. But then the plaintiff will only have an expected award of $31.25 at trial against defendant B. Thus, the plaintiff will have an expected damage award of only $68.75, which is less than the $75 the plaintiff can expect by suing both jointly at trial. 186 Both defendants will prefer to settle second in such a situation, and the plaintiff will prefer to take them both to trial rather than settle with either individually.

with defendant A, and thus, the plaintiff’s threat to sue defendant A first is credible.

Under the no contribution rule, because the plaintiff can do better through sequential settlement or group trials, the plaintiff will no longer have an incentive to settle with the defendants for the simultaneous negotiating equilibrium amount of $33.33. However, if the probabilities are somewhat but not perfectly correlated, then $33.33 will be the minimum that the plaintiff could obtain from each of the defendants under the no contribution rule.

Under the contribution rules, defendant A will not want to settle for $50 since it will not be able to seek contribution from defendant B. If defendant A loses at trial and pays the plaintiff damages of $100, then defendant A can seek contribution of $50 from defendant B. This will make defendant A’s net loss at trial only $50. Even if defendant A wins at trial, there will still be a chance of defendant B later losing at trial and seeking contribution from defendant A, but defendant A’s total expected damages will still only be $37.50, which is less than the proposed settlement amount of $50.

186. The plaintiff will not individually settle with defendant A first unless the settlement is for $50 (as the plaintiff would then have a total damage award of $75). But if the plaintiff is not committed to a sequential settlement order, then defendant A would rather take its chances at trial where it will have expected damages of $37.50.
Professors Kornhauser and Revesz show that where the plaintiff's probabilities of winning at trial against the defendants are independent, and the plaintiff makes a pair of settlement offers to both defendants concurrently, there will be no pair of settlements that are agreeable to both defendants and the plaintiff.\textsuperscript{187} Thus, where negotiations are simultaneous, there will be a trial regardless of the rule applied to contribution.\textsuperscript{188} Only where the plaintiff settles with the defendants in a group, or under the no contribution rule sequentially, will litigation be avoided.

The following table summarizes the outcomes of the rules depending on the circumstances. Under the no contribution rule, the plaintiff sequentially negotiates with the defendants and settles first with defendant A and then with defendant B. Under the contribution rules, the plaintiff sues both defendants at trial.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Plaintiff settles with defendant A for</th>
<th>Plaintiff settles with defendant B for</th>
<th>Plaintiff's total expected award</th>
</tr>
</thead>
<tbody>
<tr>
<td>No contribution rule</td>
<td>$50</td>
<td>$25</td>
<td>$75</td>
</tr>
<tr>
<td>Contribution with claim reduction</td>
<td>Will Not Settle</td>
<td>Will Not Settle</td>
<td>$75</td>
</tr>
<tr>
<td>Contribution with settlement reduction</td>
<td>Will Not Settle</td>
<td>Will Not Settle</td>
<td>$75</td>
</tr>
</tbody>
</table>

Plaintiff’s Expected Damage Award, Sequential Settlements Defendant's Probabilities of Loss at Trial Independent

3. \textit{Uncertain Contribution}

In the analysis above we assumed that, if allowed to do so under the rule, a defendant could obtain contribution from another defendant with certainty. One can think of this as contribution in its strongest form. The no contribution rule can be seen as contribution with probability zero. Moving from contribution with probability one to probability zero is thus moving from this strong contribution to no contribution. Uncertain contribution falls between these two extremes.\textsuperscript{189}

Both deterrence and settlement will be affected by the defendants' ability to obtain contribution. Under the contri-

\textsuperscript{187} Kornhauser & Revesz, supra note 181, at 50-76.
\textsuperscript{188} Id.
\textsuperscript{189} Some of the results of this subsection are presented by Easterbrook, Landes and Posner. See Easterbrook et al., supra note 16, at 362-64. They more formally model the case where contribution is not obtained with certainty.
bution with settlement reduction rule, expected damages will be higher when contribution cannot be obtained with certainty than when contribution can be obtained with certainty.

Settlement patterns will also be different where contribution cannot be obtained with certainty. Unlike the case where contribution is certain, if contribution is uncertain then under the contribution with settlement reduction rule, a defendant may be willing to settle with the plaintiff. The defendant will settle even though it may have to pay additional damages if a later losing defendant is able to obtain contribution from it. The settlement amount will be less than the defendant's expected damages, but the settlement will put an upper bound on the defendant's potential liability at its attributable share of the damages. An example will show the affects of uncertain contribution on deterrence and settlement.

Suppose there are two identical defendants, each defendant equally contributing to the damage of the plaintiff, the probability of each defendant losing at trial is 0.5, and the total damage caused is $100. Suppose that the probability of one defendant obtaining contribution from another defendant is 0.5.

First, we can examine the defendants' expected damage payments under the contribution with claim reduction rule. Suppose defendant A settles for some amount s. The plaintiff will then sue defendant B for $50 in damages, an amount equal to the total damages of $100 less the $50 in damages attributable to defendant A. Thus, defendant B will have an expected damage payment of $25. Defendant A will settle for $25, as it cannot do better by settling second, and the plaintiff will not accept less than $25. Thus, under the contribution with claim reduction rule, we have the same result as when contribution occurred with certainty: both defendants will have expected damages of $25 and the plaintiff will have an expected award of $50.

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190. See supra part IV.A for an analysis of the settlement pattern under the contribution with settlement reduction rule where contribution can be obtained with certainty.
191. See Easterbrook et al., supra note 16, at 363-64.
192. Under the contribution with claim reduction rule, it may be possible for the plaintiff to achieve a higher damage award than $50 by committing to a sequential settlement pattern. Suppose the plaintiff commits to suing defend-
Under the contribution with settlement reduction rule, we reach a different result when contribution cannot be obtained with certainty than when contribution can be obtained with certainty. First, it should be noted that there is now an advantage to settling. A defendant that settles removes the chance that it might pay more than its share of the damages. After settlement, the most the defendant will ever have to pay is its attributable share of the damages. A trial-losing defendant may be liable for more than its share of damages if it fails to obtain contribution from the other defendants.

Suppose defendant A is considering settling with the plaintiff. If defendant A settles for the amount s, it will have a total expected liability of its settlement, s, plus the expected liability from possibly having to pay contribution to defendant B. Defendant A will only have to pay defendant B contribution if defendant B loses at trial to the plaintiff and defendant B successfully sues defendant A for contribution. These are uncertain events, as the probability of each occurring is 0.5. The probability that defendant A will pay contribution is 0.25. The amount of contribution that defendant A would have to pay defendant B would be $50 - s. Therefore, defendant A's total expected liability is $s + [(0.25) \times ($50 - s)]$. 

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193. See Easterbrook et al., supra note 16, at 362-64.
We can now calculate defendant B's expected liability if defendant A first settles with the plaintiff for \( s \). The plaintiff will sue defendant B for the total damages less defendant A's settlement, \( $100 - s \). However, if defendant B loses at trial against the plaintiff, defendant B may be able to obtain contribution from defendant A for defendant A's attributable share of the damages. In this case, defendant A will be liable for $50 in damages, but has already paid \( s \) in damages through its settlement with the plaintiff. Thus, defendant B can seek contribution from defendant A of \( $50 - s \). Now this contribution is uncertain, as defendant B will only be able to obtain it 50% of the time. Thus, defendant B's expected damages from losing at trial to the plaintiff are \( $100 - s - [(0.5) \times (50 - s)] \). That is the damages the plaintiff sues defendant B for less the expected contribution defendant B obtains from defendant A. Of course, defendant B will only lose at trial to the plaintiff 50% of the time. Thus, defendant B's total expected damages are \( (0.5) \times [100 - s - [(0.5) \times (50 - s)] \].

Now we need to determine if defendant A will settle first. Defendant A will only settle first if its expected damages from settling are less than or equal to its expected damages from not settling. In this case, if we set defendant A's expected damages equal to defendant B's expected damages and solve for \( s \), we will find that \( s = $25.194 \). Defendant A will have total expected damages of $31.25, equal to its settlement with the plaintiff for $25, and the expected contribution it must pay to defendant B. Given that defendant B will both lose at trial to the plaintiff and obtain contribution of $25 from defendant A only 25% of the time, defendant A's expected contribution payment will be $6.25.

Defendant B will also have expected damages of $31.25. The plaintiff will sue defendant B for $75 and win 50% of the time. But if defendant B loses at trial to the plaintiff, then 50% of the time defendant B will be able to obtain contribution of $25 from defendant A. Thus, defendant B will have an expected damage payment of \( (0.5) \times [75 - (0.5) \times 25] \).

194. If the plaintiff settles with defendant A for only $10, then defendant B will have expected liability of \( $35 = (0.5) \times [100 - 10 - (0.5) \times 40] \). Defendant B will thus bid against defendant A to settle first with the plaintiff, as $10 < $35. This bidding to settle first will continue until the plaintiff settles with a defendant for $25. This is similar to the bidding up of settlement offers that occurs under the no contribution rule. See supra part III.A.1.
$31.25. It should be noted that defendant B will not settle with the plaintiff, even if they agree on the outcome of the trial, because a settlement will keep defendant B from being able to sue defendant A for contribution. Thus, the contribution with settlement reduction rule will lead to at least one trial.

We have shown that, while settlement may occur for the first defendant under the contribution with settlement reduction rule, the last defendant facing trial will not settle. The first defendant settles because settlement protects it from the possibility of paying more than its attributable share of the damages. The second defendant will not settle because if it settles it will be unable to seek contribution from previous settling defendants. The expected damages of both defendants are higher under the contribution with settlement reduction rule where contribution cannot be obtained with certainty than where contribution can be obtained with certainty. As in the case of the no contribution rule, under the contribution with settlement reduction rule with uncertain contribution, the plaintiff can use the defendants' preferences for settlement to obtain a damage award that is higher than if it sues both defendants at trial.

In this example, the expected damages of the defendant are higher under the contribution with settlement reduction rule than under the contribution with claim reduction rule. But the example above did not analyze the incentives to reveal information. Even where contribution cannot be obtained with certainty, the contribution with settlement reduction rule will result in a disincentive for the defendants to provide the plaintiff with information to be used against other defendants, as those other defendants may later seek contribution from the settling information-giving defend-

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195. In this case, defendant B and the plaintiff will agree that the plaintiff has an expected award of $37.50 at trial ($37.50 = (0.5) \times ($75)). But if defendant B pays $37.50 to the plaintiff, then defendant B will be unable to seek contribution from defendant A because defendant B will have paid less than its attributable share of the damages of $50. See supra note 150.

196. See supra part III.A.1.

197. But see supra note 192 where I show that sequential settlements under the contribution with claim reduction rule may lead to the same total expected damage award for the plaintiff. Expected damages for the defendants may also be the same if they do not know ex ante the conspiracy and the plaintiff's sequential settlement order.
ant. But information exchange may greatly affect the plaintiff's probabilities of prevailing at trial against the defendants, and thus increase the expected damage award and deterrence. Thus, the expected damages in the example should not be seen as necessarily a complete representation of increased deterrence under the contribution with settlement reduction rule over the contribution with claim reduction rule when contribution is not obtained with certainty.

The chart below summarizes the results of this section, when contribution cannot be obtained with certainty under the contribution rules, and compares these outcomes with the results when contribution can be obtained with certainty under the contribution rules, and the results under the no contribution rule.

198. The incentive for a settling defendant not to provide information to the plaintiff under the contribution with settlement reduction rule will be weaker when contribution is uncertain than when contribution is certain because there is a lesser likelihood that a settling defendant will have to pay contribution when contribution is uncertain.

199. See supra part III.C.

200. The settlements in the table are those the defendants will individually settle for with the plaintiff. In some cases, the defendant will not be able to reach an individual settlement with the plaintiff, in which case I note that the defendant will not settle. Whenever all defendants and the plaintiff have identical beliefs, group or contingent settlements are always possible.

See supra part III.A.1 for the analysis of the no contribution and contribution rules where it is assumed that contribution can be obtained with certainty.
### Defendants' Expected Damages and Plaintiff's Expected Award Comparison of No Contribution, Uncertain Contribution and Certain Contribution

<table>
<thead>
<tr>
<th></th>
<th>Defendant A Will Settle for</th>
<th>Defendant A’s Total Expected Liability</th>
<th>Defendant B Will Settle for</th>
<th>Defendant B’s Total Expected Liability</th>
<th>Plaintiff’s Total Expected Damage Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>No contribution</td>
<td>$33.33</td>
<td>$33.33</td>
<td>$33.33</td>
<td>$33.33</td>
<td>$66.66</td>
</tr>
<tr>
<td>Contribution with Claim Reduction Probability 0.5</td>
<td>$25</td>
<td>$25</td>
<td>$25</td>
<td>$25</td>
<td>$50</td>
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<tr>
<td>Contribution with Claim Reduction Probability 1</td>
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<td>$25</td>
<td>$25</td>
<td>$25</td>
<td>$50</td>
</tr>
<tr>
<td>Contribution with Settlement Reduction Probability 0.5</td>
<td>$25</td>
<td>$31.25</td>
<td>Will Not Settle</td>
<td>$31.25</td>
<td>$62.50</td>
</tr>
<tr>
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<td>Will Not Settle</td>
<td>$25</td>
<td>Will Not Settle</td>
<td>$25</td>
<td>$50</td>
</tr>
</tbody>
</table>

#### B. Mary Carter Agreements

The term “Mary Carter Agreement” is used rather generally to apply to any agreement between a plaintiff and a settling defendant whereby the parties place limitations on the financial responsibility of the settling defendant.\(^{201}\) The amount a settling defendant actually pays is sometimes on a variable scale that decreases as the plaintiff’s recovery against the other defendants increases.

Under the contribution with settlement reduction rule, a settling defendant and plaintiff may enter into a Mary Carter agreement to protect the settling defendant from having to pay contribution to later trial losing defendants. Should the settling defendant have to pay contribution to a later trial losing defendant, the plaintiff “reimburses” the settling defendant for any amount of contribution that the settling defendant is forced to pay, limiting the settling defendant’s to-

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\(^{201}\) Mary Carter agreements are named after the case [Booth v. Mary Carter Paint Co., 202 So. 2d 8 (Fla. Ct. App. 1967)].
Joint and Several Liability

tal liability to the settlement amount. A Mary Carter agreement can thus increase a defendant's incentive to settle under the contribution with settlement reduction rule.

Proponents of Mary Carter agreements argue that they encourage settlement, allow defendants to freely provide information, and allow for risk sharing among the settling defendants and the plaintiff.

Some have argued that Mary Carter Agreements are bad in that they hurt non-settling defendants, undermine the equitable apportionment of damages and contravene legal ethics. If information by a settling defendant is given to the plaintiff, then the non-settling defendant may be more likely to lose at trial. However, this is not necessarily bad, so long as the information is truthful. In fact, this is one of the advantages shared by the contribution with claim reduction rule and the no contribution rule. The Mary Carter Agreement, by limiting a settling defendant's liability, encourages information exchange under the contribution with settlement reduction rule.

Damages will be equitably apportioned where Mary Carter Agreements are allowed. Each defendant will be liable for its share of the damages, and no defendant will have to pay more than its share without being able to seek contribution from others who pay less than their shares. Of course, the equitable apportionment of liability is not the same as each defendant paying the same amount (or percentage of its share) in damages. Any rule that allows for information exchange between the defendants and the plaintiff may lead to earlier settling defendants settling for less than later settling defendants. But each defendant will not face potential damages caused by others without the right to seek contribution (as is the case under the no contribution rule). The Mary

202. See Easterbrook et al., supra note 16, at 366. See supra part IV.A.
203. See supra part III.C.
206. See supra part III.C.
Carter Agreement will simply keep the plaintiff from collecting the full share of damages from an agreeing defendant; it does not increase the damages that a non-agreeing defendant faces.207

The legal ethics question is somewhat more murky. Certainly if a settling defendant will receive a lower settlement amount if the non-settling defendant pays more at trial, the settling defendant will have an incentive to exaggerate or even lie. However, a non-settling defendant at trial will also have an incentive to exaggerate (or forget) or lie in order to pay less in damages. The point is that as long as a party has an interest in the outcome of the trial, the party will have an incentive to be somewhat less than truthful. Countervailing this incentive not to be truthful are penalties, such as perjury, and ethical rules. It seems odd that to think that a Mary Carter Agreement will cause a settling defendant to be more untruthful in situations where it helps the plaintiff, and thus itself, than in situations where defendants are simply representing their own interests at trial against the plaintiff.

If we want situations where defendants will have no incentive to lie at trial, we could allow only those Mary Carter Agreements that fix the settling defendants' liability at a set amount, and not allow agreements where the payment is on a sliding scale that depends on the plaintiff's recovery against other defendants. Thus, by receiving a payment from the settling defendant, the plaintiff will be reducing the amount it can obtain from a non-settling defendant by the settling defendant's share of the damages. This results because if the plaintiff wins at trial against a non-settling defendant, to the extent that the non-settling defendant is able to obtain contribution from the settling defendant, the plaintiff will have agreed not to collect the damages. This in effect allows the parties to change the contribution with settlement reduction rule into the contribution with claim reduction rule.208 By limiting its liability to a set amount regardless of the plain-

207. Of course, whenever contribution is uncertain a defendant may end up paying more than its share of the damages, but uncertain contribution is not caused by Mary Carter Agreements. See supra part V.A.3.

208. These parties could enter into Mary Carter agreements because they save the agreeing defendant and the plaintiff litigation costs, regardless of cooperation and information transferred from the agreeing defendant to the plaintiff. If the agreement also increases the probability the plaintiff will win at trial against the non-agreeing defendant, the plaintiff may give the agreeing defend-
joint suit against other defendants, the settling defendant will not have an incentive to be untruthful at trial, and can freely give the plaintiff and the court information that will allow the tribunal to make a correct decision.

C. Fairness and Equity Among Defendants

The no contribution rule has been critiqued as unjust for two reasons. First, defendants who cause little damage often must pay more than their share of the damages. A defendant may face more damages than its attributable share because under the no contribution rule a defendant may be liable for all of the damages. Because damages are not apportioned under the no contribution rule, those defendants who cause little damage face the same potential liability as those who cause substantial damage. Second, defendants who fail to settle early often face excessive damages at trial. A defendant that fails to settle with the plaintiff may face high damages at trial if the plaintiff settles with other defendants cheaply because the plaintiff can seek damages from non-settled defendants that are reduced only by a settling defendant’s settlement, and not by the settling defendant’s attributable share of the damages. Both complaints with respect to the equity of the no contribution rule follow from the plaintiff’s ability to strategically apply the rule.

There are two questions regarding inequities under the no contribution rule that need to be answered. First, should we look for the inequities before or after the conspiracy? Second, even if inequities exists, who should remedy the situation, the courts or the conspirators themselves?

The issue of when to determine the equity was addressed by Easterbrook, Landes and Posner. They noted that we should look for inequities at the time the conspiracy is


211. See supra notes 100-04 and accompanying text for examples as to why a plaintiff would settle cheaply with early settling defendants.

formed, not after the conclusion of the settlements or trial. In focusing on *ex ante* equity, they stated "a no contribution rule would be unfair only if one group of defendants were, for inappropriate reasons, more likely than the other [group of defendants] to be selected as the defendant[s] called on to pay the full damages." Of course, even this might not lead to *ex ante* unfairness if the conspirators know *ex ante* which "group" of defendants are more likely to be sued. Prior to the conspiracy each defendant should know that it is potentially liable for all of the damages, and will take into account its beliefs about being sued by the plaintiff when entering into the conspiracy. If a conspirator believes it will be held liable for much of the damage, then it should ask for a greater share of the conspiratorial benefit. Thus, if a conspirator feels that it will be unable to settle quickly with the plaintiff and will face higher damages than other conspirators, then it should ask for a larger share of the conspiratorial benefit to cover this increased expected liability.

Easterbrook, Landes and Posner explain: "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." This seems to be a reasonable response to a conspirator complaining about inequities of the no contribution rule, since before entering into the conspiracy, each conspirator must have expected a net benefit; otherwise it would not have joined the conspiracy.

Of course, there might be situations where a conspirator joins the conspiracy because of coercion on the part of another
conspirator.\textsuperscript{217} In such cases, it may be unfair to impose additional liability on the coerced conspirator. In addition, a conspirator’s belief as to damages will depend upon the information it has when it enters into the conspiracy. It could be that a conspirator enters into a conspiracy without realizing the full extent of the activities or damage that the conspiracy will cause.\textsuperscript{218} In this case, the conspirator’s limited information may have led it to a bad decision. We might want to investigate the reason for the conspirator’s inadequate information. If the reason involved a misrepresentation by another conspirator, we might punish the conspirator that made the misrepresentation.\textsuperscript{219} Indeed, if the conspirator realizes that it might be liable for all of the damages, it will have an enhanced incentive to keep track of the activities of the conspiracy. Thus, while \textit{ex ante} equity will be prevalent in most conspiratorial situations, there may be some situations where the conspirators are treated unfairly prior to the conspiracy. This unfairness does not result from the no contribution rule, but rather from the actions of the other conspirators. In situations where a \textit{controlling} conspirator unfairly controls the actions of a \textit{controlled} conspirator, we may wish to increase the liability of the \textit{controlling} conspirator, possibly by allowing contribution with liability allocated by comparative fault.\textsuperscript{220}

This leads us to the question of whether the courts or the conspirators should remedy the inequities of the no contribution rule. The costs for the courts to remedy the inequities might not be higher than having the conspirators determine the equity of the conspiracy. In many situations, we should be able to expect the conspirators to reach agreements regarding the division of the conspiratorial benefits among themselves.\textsuperscript{221}

\begin{itemize}
\item \textsuperscript{217} See \textit{infra} part VI.G where I examine conspiracies where one conspirator is able to control the actions of another conspirator through the use of \textit{bad} threats. \textit{See also} cases cited \textit{supra} note 123.
\item \textsuperscript{218} See \textit{supra} notes 83-84.
\item \textsuperscript{219} See \textit{infra} part VI.G.
\item \textsuperscript{220} See \textit{infra} part VI.G.
\item \textsuperscript{221} See \textit{infra} part VI, where the practice of conspirators allocating the division of the conspiratorial benefit and thus, obtaining \textit{ex ante} conspiracy fairness is further analyzed.
\end{itemize}
Even if we believe there is too much inequity among conspirators under the no contribution rule, we will need to determine where we place the desire for equity for conspirators among our other goals, such as deterrence, the plaintiff's recovery and the reduction of litigation costs. It would not be difficult to argue that equity among the defendants should probably come somewhere near the end of our list of desirable attributes for the rule.\textsuperscript{222} When conspirators can make rational decisions to enter into a conspiracy, the inequity argument against the no contribution rule holds little weight. However, in situations where a controlling conspirator controls the actions of a controlled conspirator, we may wish to allow contribution in order to guard against the unfairness among conspirators.

In addition, the actual application of the no contribution rule may not be as unfair as it theoretically could be. There may already be a thumb on the scale for fairness for defendants that cause a small proportion of the damage. A defendant's damage payment under the no contribution rule theoretically does not depend upon the proportion of damages attributable to the defendant,\textsuperscript{223} as the damage payment should only depend on the probabilities that the defendant and other defendants will lose at trial to the plaintiff. However, there are situations where plaintiffs treat defendants differently, depending on their size. The following example illustrates some of these situations.

The settlement pattern in the \textit{Corrugated Container} litigation has been used to show the unfairness of the no contribution rule to later settling defendants.\textsuperscript{224} We will use the

\textsuperscript{222} A California appellate court explained:

\begin{quote}
We analyze the [California] Supreme Court decisions as creating a hierarchy of interests. First in the hierarchy is maximization of recovery to the injured party for the amount of his injury to the extent fault of others has contributed to it .... Second is encouragement of settlement of the injured party’s claim .... Third is the equitable apportionment of liability among the tortfeasors.
\end{quote}

Sears, Roebuck & Co. v. International Harvester Co., 147 Cal. Rptr. 262, 264 (Ct. App. 1978). In addition, one may want to add deterrence to this list of interests before “equitable apportionment of liability among the tortfeasors.” \textit{Id.}

\textsuperscript{223} See supra part III.A.2.a.

\textsuperscript{224} This appears a valid complaint in that later settling defendants in each group faced increased liability and thus settled for higher amounts. For example, The Mead Corporation, which had a 3% market share, settled for $45 million after it had been found liable at trial by a jury. Of course, The Mead Corpo-
Corrugated Container settlement data to show that the actual application of the no contribution rule may not be unfair to smaller defendants. The settlement pattern is shown in the following table.

225. We are showing here that small defendants are not being taken advantage of by the plaintiff under the no contribution rule. The data does support that later settling defendants do face more potential liability than defendants who settle early (if one normalizes for the fairness to smaller defendants).

226. The table was originally compiled by Benjamin Civiletti for testimony before the House Subcommittee on Monopolies and Commercial Law to show the unfairness of the no contribution rule. See Contribution and Claim Reduction in Antitrust Litigation, supra note 2, at 16 (citing Antitrust Damage Allocation: Hearings Before the Subcomm. on Monopolies and Commercial Law of the House Comm. on the Judiciary, 97th Cong., 1st & 2d Sess. 330 (1981-82) (prepared statement of Benjamin Civiletti, an attorney with the Baltimore firm of Venable, Baetjer, Howard & Civiletti)). The information in the table is also found in In re Corrugated Container Antitrust Litig., 1981-1 Trade Cas. (CCH) ¶ 64,114 (S.D. Tex. 1981).

This data has also been analyzed by others. See Contribution and Claim Reduction, supra note 2, at 15-19; Cavanagh, supra note 11, at 1288-90.
CORGATED CONTAINER LITIGATION

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share</th>
<th>Settlement Date</th>
<th>Settlement Amount ($ Million)</th>
<th>Amount Per Point ($ Million)</th>
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<tbody>
<tr>
<td><strong>FELONY INDICTEES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Paper</td>
<td>8.3</td>
<td>8/24/78</td>
<td>8.30</td>
<td>1.0</td>
</tr>
<tr>
<td>Champion</td>
<td>5.36</td>
<td>12/18/78</td>
<td>24.12</td>
<td>4.5</td>
</tr>
<tr>
<td>Weyerhaeuser</td>
<td>7.83</td>
<td>1/06/79</td>
<td>39.15</td>
<td>5.0</td>
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<tr>
<td>Owens-Illinois</td>
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<td>1/12/79</td>
<td>32.70</td>
<td>6.0</td>
</tr>
<tr>
<td>Olinkraft</td>
<td>1.22</td>
<td>1/12/79</td>
<td>7.35</td>
<td>6.0</td>
</tr>
<tr>
<td>Continental Group</td>
<td>4.22</td>
<td>1/16/79</td>
<td>27.43</td>
<td>6.5</td>
</tr>
<tr>
<td><strong>MISDEMEANOR INDICTEES</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boise Cascade</td>
<td>2.82</td>
<td>12/18/78</td>
<td>9.89</td>
<td>3.5</td>
</tr>
<tr>
<td>Container Corp.</td>
<td>8.56</td>
<td>1/06/79</td>
<td>34.24</td>
<td>4.0</td>
</tr>
<tr>
<td>Inland Container</td>
<td>7.29</td>
<td>1/18/79</td>
<td>34.63</td>
<td>4.75</td>
</tr>
<tr>
<td>Stone Container</td>
<td>3.05</td>
<td>1/18/79</td>
<td>14.49</td>
<td>4.75</td>
</tr>
<tr>
<td>St. Joe Paper Co.</td>
<td>2.62</td>
<td>1/18/79</td>
<td>12.47</td>
<td>4.75</td>
</tr>
<tr>
<td><strong>UNINDICTED COMPANIES</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Regis Paper Co.</td>
<td>3.97</td>
<td>7/21/78</td>
<td>1.98</td>
<td>.5</td>
</tr>
<tr>
<td>Union Camp</td>
<td>3.7</td>
<td>12/13/78</td>
<td>7.40</td>
<td>2.0</td>
</tr>
<tr>
<td>Diamond International</td>
<td>.5</td>
<td>12/14/78</td>
<td>1.00</td>
<td>2.0</td>
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<tr>
<td>Dura Container</td>
<td>.37</td>
<td>12/14/78</td>
<td>.75</td>
<td>2.0</td>
</tr>
<tr>
<td>Chesapeake Corp.</td>
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<td>12/18/78</td>
<td>3.02</td>
<td>2.4</td>
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<td>12/18/78</td>
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<td>2.75</td>
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<td>12/18/78</td>
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<tr>
<td>U.S. Corrugated</td>
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<td>1/25/79</td>
<td>3.07</td>
<td>4.0</td>
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<tr>
<td>Green Bay Packaging</td>
<td>1.71</td>
<td>1/25/79</td>
<td>5.56</td>
<td>3.25</td>
</tr>
</tbody>
</table>

The above data shows that for defendants that are similarly situated (at the same level of federal indictment) the settlement per market share point of earlier settling defendants is less than that of later settling defendants. The court noted that the plaintiffs had engaged in a settlement pattern that was meant to obtain “maximum aggregate recovery” for the plaintiffs. However, it is not clear that this pattern of settlement actually maximized the plaintiffs’ total damage award.

We need to ask why under the no contribution rule the plaintiffs would base their settlement demands on a defendant’s market share when damages are not allocated per market share and each defendant is potentially liable for all the damages. The important numbers are the actual settlement amounts (the bold numbers in the above table), as under the no contribution rule, the settlement of each defendant should be independent of the share of damages caused by the defendant.

ant. That the plaintiffs' settlement offers are related to market share is indicative of plaintiffs bringing possibly unintentional *fairness* into the settlement negotiations for the defendants causing smaller amounts of damage (or receiving fewer benefits).

There seem to be four plausible explanations for the plaintiffs' decisions to settle with smaller defendants for less than larger defendants that were similarly situated in terms of federal indictment status. First, some of the smaller defendants were judgment proof. The damages estimated in the Corrugated Container litigation ranged from $200 million to $1 billion and were subject to trebling. For example, Olinkraft, a smaller defendant, did not have enough assets to cover the total damage the plaintiffs suffered. Because Olinkraft was judgment proof, it is not surprising that Olinkraft settled for less in absolute terms than the larger firms.

Second, a firm's probability of loss at trial or the determination of damages at trial could be correlated with the defendant's market share. Juries may be more likely to empathize with smaller defendants. Smaller defendants thus face lower expected damage payments and settlement costs. However, neither judgment proofness nor jury empathy for small defendants fully accounts for some of the settlements observed. Not every firm with a small market share was small in size. It seems unlikely that the plaintiffs would have won less in damages at trial against a large federally indicted firm such as Boise-Cascade than a smaller non-indicted firm such as Williamette Industries. But, because the plaintiffs

231. Easterbrook, Landes and Posner, also note that a majority of the Judiciary Committee believed that the plaintiff would prefer to sue smaller defendants because of their inability to afford as good of legal services as larger defendants. Easterbrook et al., supra note 16, at 343 (citing S. Rep. No. 96-428, 96th Cong., 1st Sess. 2 (1979)). Easterbrook et al., argue that asset constrained defendants, with a good case, could borrow (often from their own lawyers) to pay for their defense.
232. The court said the following about the plaintiff's prospects of winning at trial against Boise-Cascade and Williamette Industries:
decided to base their settlement strategy on a particular market share, and though both firms settled on the same day, Williamette Industries ended up settling for over $1,000,000 more than Boise-Cascade. Thus, firm size and culpability do not seem to fully explain the plaintiffs’ settlement demands.

Third, the plaintiffs may have been trying to lower their transaction costs in the settlement negotiations. By asking for a dollar amount per market share point, the plaintiffs would not have to communicate to each defendant what the other defendants were also being offered. But with the amount of damages involved in this case, it would appear that the plaintiffs could have come up with a better way to save transaction costs.

Fourth, the plaintiffs simply may have thought that basing their settlement demands on market share was the correct way to maximize settlement. If this were the case, then the plaintiffs did not truly understand how the no contribution rule works—as they could have gained millions in potential settlement dollars by demanding more from smaller market share defendants. Certainly, the plaintiffs could have

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Williamette Industries negotiated a settlement for $11,286,000, or $2.7 million per percentage point of its 4.18 percent share of the defendants’ market.

Williamette was investigated by the Corrugated grand jury but neither it nor any of its employees were indicted.

... Williamette’s 1977 net working capital was $67 million and its 1977 after-tax income was $48 million.

... The class’s chances of prevailing against Williamette [(had they not settled) would not have been] very substantial.

... Boise-Cascade negotiated a settlement for $9,891,000, or $3.5 million per point of its 2.8 percent share of defendants’ market.

Boise-Cascade was indicted for pre-1975 violations of the Sherman Act. The Government identified nineteen employees as co-conspirators, and two of them, both general managers, were also indicted at the misdemeanor level. Boise and its two employees pled nolo contendere and were sentenced.

... Boise is a large company. [Boise-Cascade’s] 1977 net working capital was $275 million and its 1977 after-tax income $115.6 million. It is, therefore, capable of responding in judgment for the whole range of damages.

The class’s chances of prevailing against Boise [(had they not settled) would have been] relatively good.

*In re* Corrugated Container Antitrust Litig., 1981-1 Trade Cas. (CCH) ¶ 64,114, at 76,710 to 76,711, (S.D. Tex. 1981).

233. See supra note 118.
demanded more from Boise-Cascade than they did from Williamette Industries.

Giving the plaintiffs and their attorneys the benefit of the doubt, we can assume that it was probably a combination of all these reasons that led to the market percentage-based settlement pattern. In this case, the plaintiffs were effectively being "fair" to the smaller defendants as compared with the larger defendants. If any firm seems to be in a position to complain about the unfairness of the no contribution rule, at least as it was applied in this instance, it would be those large unindicted defendants, such as Williamette Industries, who ended up paying more in damages simply because they were larger. Of course, one could argue that the plaintiffs were fair to Williamette Industries and too easy on the other defendants. The point, however, is that there may be some forces of fairness that are outside the model of the no contribution rule.

VI. ALLOCATING DAMAGES UNDER THE CONTRIBUTION RULES

For most conspiracy situations, the allocation of damages per capita\textsuperscript{234} is preferable to a comparative fault\textsuperscript{235} or a comparative benefit allocation\textsuperscript{236}. The per capita liability allocation rule will allow for administrative cost savings, reduction of influence costs (legal expenditures and information hiding and collecting costs by the parties), increased certainty for the plaintiff in settling, increased detection of conspiracies, and \textit{ex ante} conspiracy fairness. In certain contexts, however, such as when one conspirator is able to control another conspirator, liability allocated by comparative fault will lead to better results than per capita liability allocation.

A. Administrative Costs

Conserving judicial resources and efficiently resolving issues are current concerns of many courts. One benefit of a

\textsuperscript{234} Under a per capita liability allocation rule, each defendant is liable for an equal proportion of the damage.

\textsuperscript{235} Under the comparative fault liability allocation rule, liability is allocated by the relative fault of the defendants.

\textsuperscript{236} Under the comparative benefit liability allocation rule, liability is allocated by the relative benefit received by each of the defendants. The benefit received might be determined by a proxy such as market share.
per capita allocation of liability is the ease with which it can be administered.\textsuperscript{237} Both the comparative fault and comparative benefit liability allocation rules require not just a determination of who the defendants are, but also a determination of the fault or benefit of each defendant in the conspiracy.\textsuperscript{238} Certainly it will be easier for a court to determine only who the conspirators are as opposed to determining both who the conspirators are and the proportion of damages caused or benefit received by each conspirator.

The comparative benefit liability allocation rule may be simpler to administer than the comparative fault liability allocation rule in situations where the benefit of each defendant can be measured. Sometimes a proxy for benefit received, such as market share, may be an appropriate measure.\textsuperscript{239}

B. Influence Costs

The per capita liability allocation rule is an objective rule because it would be difficult to distort the number of defendants involved in the conspiracy. The clarity of the per capita allocation rule will lead litigating parties to spend less trying to influence the apportionment of liability. Conspirators may

\textsuperscript{237} The court in Professional Beauty Supply asserted that administrative costs would be decreased by allocating damages using the per capita liability allocation rule. The court explained: "Because of the administrative difficulties of assessing exact percentages of fault in complicated antitrust actions . . . we adopt a rule of pro rata contribution except in unusual circumstances." Professional Beauty Supply, Inc. v. National Beauty Supply, Inc., 594 F.2d 1179, 1182 n.4 (8th Cir. 1979).

\textsuperscript{238} Professor Easterbrook, in examining the problems of a comparative benefit liability allocation approach, stated:

In order to apportion liability, it would be necessary to determine a relevant market and calculate the market share of each firm. This is no mean feat; the National Commission for the Reform of Antitrust Laws and Procedures concluded in 1979 (Report Vol. II, at 95-96) that in complex cases market determination takes some 55% of trial time, averaging several months of trial per case. Market definition is complex because there is no "right" market. A market definition is just a proxy for power over price, and in any given case there may be several equally plausible market definitions.

also exert less wasteful effort to hide and gather information and evidence during the conspiracy under the per capita liability allocation rule.\textsuperscript{240}

Both the comparative fault and the comparative benefit liability allocation rules may lead courts to make imprecise allocations regarding liability. The imprecision in allocating liability under these rules will lead defendants to exert effort in order to obtain the "best allocation" for themselves, an allocation that leaves them with low liability for the damages.

Under the contribution with claim reduction rule, the plaintiff will also be involved in exerting effort to show that a defendant it has settled with caused little damage, thus allowing the plaintiff to seek more from the other defendants.\textsuperscript{241}

Under the comparative fault liability allocation rule, conspirators may hide evidence of the amount of damage that they have caused, while simultaneously trying to obtain evidence that can be used to show that other conspirators have caused more damage. Similarly, under the comparative benefit liability allocation rule, conspirators may exert effort to receive their share of the conspiratorial benefit in a form that cannot easily be measured.

Of course, even the per capita liability allocation rule will lead to some wasteful hiding costs, although less than under the other two liability allocation rules.\textsuperscript{242} Under the per capita allocation liability rule, the parties will attempt to hide the conspiracy, but not to distort the allocation of liability. The comparative benefit liability allocation rule would seem to result in less wasteful hiding and collecting of allocation evidence than the comparative fault liability allocation rule, as the comparative benefit liability allocation rule appears to be a more objective measure.

\textsuperscript{240} The effort spent on the illegal activity, such as setting up the conspiracy or hiding and collecting information of the conspiracy, is a social waste. That effort could be spent doing productive, socially beneficial activities. See Gordon Tullock, \textit{The Welfare Costs of Tariffs, Monopolies and Theft}, 5 \textit{W. Econ. J.} 224 (1967). See generally C. CHARLES K. ROWLEY ET AL., \textit{The Political Economy of Rent-Seeking} (1988).

\textsuperscript{241} The plaintiff will have the same incentives under the contribution with settlement reduction rule where a Mary Carter agreement has been signed between the plaintiff and a settling defendant. See supra part V.B.

\textsuperscript{242} See Tullock, supra note 240.
C. Plaintiff’s Willingness to Settle

Under the contribution with claim reduction rule, the plaintiff will want to determine the liability of a defendant that it settles with, as it is the liability amount, not the settlement amount, that is subtracted from the amount of damages the plaintiff can seek from the other defendants. The per capita liability allocation rule will make it easier for the plaintiff to determine the allocation of damages attributable to each defendant. The plaintiff will thus expend fewer resources in trying to determine the allocation of liability among the defendants. The per capita liability allocation rule will also lead to less uncertainty for the plaintiff in the settlement process, and may increase the likelihood of settlement under the contribution with claim reduction rule. As former Assistant Attorney General William Baxter noted:

If a plaintiff could calculate the [defendant's] share [of the damages] accurately, it could then settle with a defendant if the amount appeared adequate. But if a plaintiff cannot calculate the share, it may shun settlements because of the risk of giving up an unknown proportion of its total claim.

Certainly, the plaintiff’s certainty in this respect depends critically on the method chosen to calculate contribution shares. The most straightforward method is the “pro rata” or equal shares method. . . . Comparative fault is a slightly more sophisticated method of computing contribution shares. . . . Comparative Benefit is still another method of computing contribution shares.\(^{243}\)

In situations where the benefit of each party is easy to determine, the comparative benefit liability allocation rule may be preferred over the comparative fault liability allocation rule.

D. Deterrence

Professors Kornhauser and Revesz argued that the per capita liability allocation rule could lead to over-deterrence in joint and several liability cases for some defendants by exposing them to too much liability relative to the benefit they

would receive in a worthwhile activity. But for most conspiracy situations, parties can bargain over the division of benefits and, thus, the per capita liability allocation rule will not overly deter conspirators. In cases where the allocation of benefits can be negotiated by the conspirators, those conspiracies that produce more total benefit than total liability for the conspirators will take place.

The transaction costs in reaching an additional agreement on the division of the benefit will have some deterrent effect. Yet parties will already incur some transaction costs in reaching the agreement on the conspiratorial act itself. These costs will include finding other members with whom the agreement can be made as well as the actual agreement on the act. Because parties must already reach an agreement on the act, the marginal costs of bargaining over the division of the benefit may be low in many situations. In addition, if the parties know that they are to be held liable for the damage per capita, then the negotiations regarding the splitting of the benefit should be even easier for the parties than in situations where they must negotiate over the division of the benefit but do not know what their precise proportions of liability will be.

There could be some situations where the additional transaction costs are high or asset-constrained parties are

244. See Kornhauser & Revesz, supra note 28. Kornhauser and Revesz do not focus on the conspirator, non-conspirator dichotomy, and their analysis ignores bargaining among the conspirators over the division of benefits of a conspiracy. If the parties can bargain about the division of the benefit ex ante the conspiracy, and the additional transaction costs of reaching agreement on the division of damages are low, then their criticism of the per capita liability allocation rule for joint and several liability does not apply. Their analysis is applicable to situations where harm is caused by non-conspirators or where the ex ante bargaining over division of the benefits is costly.

245. This is simply a Coasian analysis applied to the bargaining on the division of the benefit of the conspiracy. See Ronald H. Coase, The Problem of Social Cost, 3 J.L. & Econ. 1 (1960).

246. For a non-conspiracy case, the division of the benefit among the parties would require the parties to find each other ex ante the conspiracy and to possibly agree on the extent of each party's participation in the act or acts as well as the division of the benefits. This is unlikely in many joint and several liability cases. For example, in automobile accidents it would be extremely unlikely that the participants would be able to find each other and agree on their actions in an upcoming accident. Thus, using the per capita allocation rule in non-conspiracy situations would seem ill-advised because of the much higher transaction costs of the parties reaching an agreement. Of course, if the parties reached an agreement, they would have formed a conspiracy by definition.
unable to make needed side payments such that a profitable conspiracy will not take place. In these situations, we might wish to use the comparative fault or comparative benefit liability allocation rules.\textsuperscript{247}

A per capita contribution rule may also lead to more detectable conspiracies and lessen the likelihood that hidden conspiracies will be able to operate indefinitely. Conspiracies may be more detectable under a per capita liability allocation rule because side payments to account for the per capita division of potential liability may make the conspiracy more visible.

In addition, under the comparative fault liability allocation rule, parties are more likely to have asymmetric information as to who will be found at fault \textit{ex ante} the conspiracy. This could affect their decisions to enter into a conspiracy.\textsuperscript{248} If parties hide information about their own fault while collecting information about others' fault, then all parties might believe that they will be liable for little of the damages, and thus, they may be more likely to enter into a "non-beneficial" conspiracy than if the damage allocation is known more precisely \textit{ex ante} the conspiracy.\textsuperscript{249} The per capita rule makes it less likely that the parties will have asymmetric information regarding their liability.\textsuperscript{250}

Finally, I recommend the comparative fault liability allocation rule for situations where deterring the conspirator

\begin{footnotesize}
\begin{enumerate}
\item For example, besides the cost of the benefit division agreement itself, parties may have monitoring costs to make sure that others are not cheating on the agreement.
\item The court in Professional Beauty Supply asserted that deterrence would be increased by allocating damages using the per capita liability allocation rule. The court explained: "[W]e believe a rule of pro rata contribution will serve as a more effective deterrent to antitrust violations (i.e., under a comparative fault rule some parties may feel they have little to lose in joining in an antitrust violation in a minor capacity)." Professional Beauty Supply, Inc. v. National Beauty Supply, Inc., 594 F.2d 1179, 1182 n.4 (8th Cir. 1979).
\item See supra part III.B.1.
\item However, the per capita rule will not necessarily eliminate asymmetric information as a conspirator may not know how many other conspirators are in the conspiracy or the full amount of damage caused by the conspiracy. An actor may become a co-conspirator without knowing every other conspirator, the full extent of the conspiracy, or all activities undertaken pursuant to the conspiracy. Hoffman-La Roche, Inc. v. Greenberg, 447 F.2d 872, 875 (7th Cir. 1971).
\end{enumerate}
\end{footnotesize}
that causes much of the damage is necessary to deter the conspiracy as a whole.\textsuperscript{251}

E. Fairness

Another argument against per capita contribution is that it may operate "inequitably" and thus produce a form of "rough justice."\textsuperscript{252} However, this is not true if the conspirators know that the per capita liability allocation rule will be applied before they enter into a conspiracy. If each conspirator knows that all conspirators will be held equally liable for the damages, then each conspirator will demand a share of the benefits that covers its expected liability, or else it will refuse to take part in the conspiracy.

Information regarding which conspirators are taking risks or receiving a benefit, or how the benefit is being received may be difficult for the court or plaintiff to determine after the conspiracy has been detected. A per capita liability allocation rule may be more fair than the comparative fault or comparative benefit liability allocation rules because it places the conspirators, the parties with the most knowledge of the risks and benefits of the conspiracy, in the position of determining the fairness of their conspiracy.

Further, the per capita liability allocation rule will yield the same results as the comparative fault rule in some situations. In circumstances where each defendant is essential to the carrying out of the conspiracy, it can be argued that each defendant should be equally liable for the damage. Of course, this is simply a case where the results of the per capita and the comparative fault liability allocation rules happen to reach the same result. But explicitly stating that the per capita rule will be used in some situations may lead to quicker resolution and cost-savings in determining the liability of each defendant.

Allocating the damages by either the comparative fault or comparative benefit liability allocation rules may allow the conspirators to lower their transaction costs in forming the

\textsuperscript{251} See supra note 125 and accompanying text. Of course, in situations where deterrence is a priority, raising the total amount of damages the conspirators are liable for may also achieve the desired deterrent effect.

conspiracy, as the benefit each conspirator receives without side payments may correspond to their expected damages. In such cases, the comparative fault or comparative benefit liability allocation rules are not increasing fairness among the conspirators but simply lowering the conspirators transaction costs in forming the conspiracy (while increasing the administrative, influence and uncertainty costs at trial). There is no reason to believe that as long as the conspirators know that liability will be allocated among them per capita that the conspiracy will be unfair, although the conspirators may have higher transaction costs in allocating the benefit and making any necessary side payments. The fairness argument against the per capita liability allocation rule, as applied to conspiracies, really comes down to favoring the court's allocation of liability after a trial has begun over the conspirators allocating the benefit when forming the conspiracy. The reasons we should believe that courts will make fairer decisions at trial than the conspirators make in entering into the conspiracy do not seem at all clear.

F. The Per Capita Liability Allocation Rule and the Coase Theorem, an Example

Suppose two conspirators, firm A and firm B, are contemplating entering into a conspiracy. Suppose that the expected benefit of the conspiracy to both firms is $120, but the benefit will flow to the firms such that firm A receives $80 and firm B receives $40. Suppose that the total expected damages of the conspiracy is $100, and that the expected liability is allocated per capita such that each firm has an expected liability of $50.

In this case, firm A will want to enter into the conspiracy, as its expected benefit of $80 is greater than its expected liability of $50, while firm B will not want to enter into the con-

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253. There is a difference between the conspirators' expected damages and the real damages caused. The conspirators' expected damages could be $100 because the real damages are $100 and the conspirators expect to have to pay these damages with certainty. However, the conspirators expected damages could also be $100 because the real damages are $300 and the conspirators expect to have to pay those damages $\frac{1}{3}$ of the time.

Suppose the real damages were $300$ and the conspirators expected to pay the damages $\frac{1}{3}$ of the time. In order for the conspirators to have an expected damage payment of $300$, the damages the conspirators would need to face would be $900$. 
spire, as its expected benefit of $40 is less than its expected liability of $50.

But firm A and firm B can reach an agreement, in addition to an agreement on the act of the conspiracy itself, on a side payment from firm A to firm B. In this case, if firm A agrees to make a side payment to firm B anywhere in the range of $10 to $30, then the conspiracy will occur, as each party will have an expected benefit that is greater than its expected liability.\textsuperscript{254}

The example shows that if the conspirators are able to reach an agreement on the division of the conspiratorial benefit, then those conspiracies that produce a net benefit to the conspirators as a whole will take place.

G. Unfairness, Control and Bad Threats

In contrast to most situations where I recommend the per capita liability allocation rule, I strongly recommend the comparative fault liability rule for unfair conspiracies. Unfair conspiracies would include situations where one conspirator has effective control over another conspirator.\textsuperscript{255} For example, an original supplier could have control over an agent. If the original supplier wants the agent to boycott a new supplier, then the original supplier may threaten the agent with cancellation of its status as an agent, effectively putting the agent out of business if it fails to go along with the boycott. I do not recommend, however, the comparative fault liability allocation rule for situations where the conspirators merely have disparities in culpability.

When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party. When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party. When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party. When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party. When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party. When examining the deterrence of liability a controlled party faces, we must compare the penalty threatened by the controlling party if the controlled party does not join the conspiracy with the penalty of potential damage liability from a controlled party.

\textsuperscript{254} If the firms find that per capita liability leads to a focal point of splitting the benefits, then the parties might reach an agreement of $20 as the side payment. However, it is not necessary for the benefits to be divided per capita for the conspiracy to take place under the per capita liability allocation rule. All that is necessary is that each party receive more in expected benefits than expected liability.

Of course, the additional transaction costs for reaching this further agreement on the division of the benefit of the conspiracy must be less than the surplus benefit the conspiracy produces for the conspirators. In this case, the additional transaction costs must be less than the total conspiratorial benefit of $20 for the conspiracy to take place.

\textsuperscript{255} See supra note 123.
plaintiff if the controlled party does join the conspiracy. If the controlling party can threaten the controlled party with a large penalty, then it is unlikely that the controlled party will face much deterrence from being held accountable for some of the damages in the conspiracy.

In such a case where there is control by one conspirator over another, we will want to place more of the damage liability on the conspirator who has the control, as it is this party that can be deterred.\textsuperscript{256} It is the additional fault that the controlling conspirator has by threatening the controlled conspirator into the conspiracy that can be used as the basis for increased liability.

Control does not necessarily have to result from threats by the controlling party. Control can also manifest itself in the form of misrepresentation of fact. For example, a conspirator may have information that the conspiratorial act violates the law, but misrepresents its lawfulness to another conspirator, preempting the information-receiving conspirator from obtaining legal advice regarding the act. In this case, we might want the conspirator who made the misrepresentation to be liable for more of the damages than the other conspirator because of its fault or control through misrepresentation.

We need to separate good threats from bad threats. For good threats, such as price competition, the comparative fault liability allocation rule should not apply. We do not want a conspirator to be able to claim that it joined a price-fixing conspiracy because others threatened to compete with the conspirator on price. We only want to use the comparative fault liability allocation rule in the control situations where we feel that one conspirator is unfairly controlling another conspirator through a bad threat.

Of course, we do not want every conspirator to claim that it has been controlled by another conspirator. Thus, the standard at which the comparative fault liability allocation rule is used should be quite high. For example, we might want to

\textsuperscript{256} One might suggest that we increase the liability on the controlled conspirator because it needs a greater incentive not to enter into the conspiracy. But if we did increase the penalty on controlled conspirators, then controlled conspirators would simply claim they were not being controlled. Thus, it is doubtful that such a step would increase deterrence.

By increasing the penalty on the controlling conspirator, we can get the conspiracy as a whole to internalize the damages to the plaintiffs.
use the requirement of economic ruin in antitrust cases. In addition, a set rule could be used, such as allocating 50% of the controlled conspirators liability to the controlling conspirator. While this would lead to some failures in the internalization of damage, the set rule would reduce the administrative and influence costs in determining the allocation of fault.

The following table is a summary of my recommendations for liability allocation under the contribution with claim reduction rule.

<table>
<thead>
<tr>
<th>Per Capita Liability Allocation Rule</th>
<th>Comparative Fault Liability Allocation Rule</th>
<th>Comparative Benefit Liability Allocation Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most conspiracies. Default rule for conspiracies.</td>
<td>Unfair conspiracies where one conspirator has control over another through use of a bad threat. Joint harm caused by non-conspirators.</td>
<td>Costly for parties to bargain ex ante over the division benefits and easy to measure the benefits ex post. Joint harm caused by non-conspirators.</td>
</tr>
</tbody>
</table>

Recommendations for the Allocation of Liability for the Contribution With Claim Reduction Rules

VII. CONCLUSIONS AND RECOMMENDATIONS

This article examines the right to contribution and liability allocation in joint and several liability situations involving conspiracies. Conspiratorial situations are special because the conspirators will often have information about other conspirators’ involvement in the illicit act and conspirators can bargain over the division of the total conspiratorial benefit. This inquiry differs from most previous discussions in that we account for parties having asymmetric information and assess the resulting influences upon both deterrence and settlement under the different rules.258

257. Thus, suppose there are two conspirators and damages are ordinarily allocated per capita. If the conspiracy involves one conspirator controlling another, then the controlling conspirator will be liable for 75% of the damages (its per capita share plus 50% of the controlled conspirators per capita share) while the controlled conspirator will be liable for only 25% of the damages (50% of its per capita share).

258. Yi examined the likelihood of settlement where the defendants and the plaintiff had asymmetric information about the plaintiff’s damages. See Yi, supra note 22, at 82-90.
A. Deterrence

We first showed that where conspirators have the same beliefs, some defendants may face less in expected damages, and consequently face less deterrence, under the contribution rules than under the no contribution rule. However, at least one defendant will have higher expected damages and deterrence under the no contribution rule.

We then showed that if defendants have different beliefs, then depending on these beliefs, either the no contribution rule or the contribution rules could lead to less, or more, deterrence for all defendants. In some situations, all conspirators may enter into a conspiracy under the no contribution rule because they believe they can escape liability. In other situations, conspirators will be more deterred under the no contribution rule because they fear being liable for more than their share of the damages. What is important with regard to deterrence is each defendant's belief of its own expected liability, not other defendants' beliefs of its liability. It is because defendants can have inconsistent beliefs that we cannot draw any general conclusions about which rule leads to more deterrence. It was also noted that regardless of the beliefs of the defendants, the plaintiff will receive more compensation under the no contribution rule than under either of the contribution rules.

We showed that the different rules can influence a defendant's beliefs of its likelihood to settle cheaply. Because of the settlement-bar to contribution, a defendant will be willing to supply the plaintiff with information to be used against other defendants under either the no contribution rule or the contribution with claim reduction rule. The plaintiff might settle cheaply with an information providing defendant. Information exchange is important because it will allow a plaintiff to break up a conspiracy's united negotiating front, receive a higher damage award, and lead to increased deterrence for the conspirators. Yet under the contribution rules.

259. See supra part III.A.2.
260. See supra part III.A.2.
261. See supra part III.B.

For some sets of beliefs, some defendants could face more deterrence under the no contribution rule while other defendants would face more deterrence under the contribution rules.
262. See supra note 98 and accompanying text.
263. See supra part III.C.1.
with claim reduction rule, a plaintiff will have a disincentive to settle cheaply with a defendant that is liable for a large proportion of the damages, regardless of the value of the defendant’s information to the plaintiff. 264 Thus, a defendant that is liable for a large proportion of the damage will be more deterred under the contribution with claim reduction rule than under the no contribution rule.

We showed that the more culpable defendants will have the greater incentive to collect and hide information to be used against others than less culpable defendants. 265 Because the more culpable defendants may have better information to provide the plaintiff on other defendants’ participation in the conspiracy, the more culpable defendants may be able to settle more cheaply than less culpable defendants.

We also noted that higher risk costs and higher litigation costs will increase deterrence. 266 Risk costs will be higher under the no contribution rule than under the contribution rules because of the defendants’ greater uncertainty of their damage payment. Litigation costs will be higher under the contribution rules because damages must be apportioned. Yet if liability is allocated per capita, these apportionment costs may be minimal. Litigation costs will also be higher under the contribution rules because there will tend to be more defendants outstanding at trial and defendants will duplicate some litigation expenditures. Litigation costs will be highest under the contribution with settlement reduction rule because defendants will have a disincentive to settle individually and thus, there are likely to be many outstanding defendants in the event of a trial. The contribution with claim reduction rule will neither encourage the plaintiff to settle, nor discourage the defendants from settling. The no contribution rule will give the plaintiff an incentive to settle with most of the defendants. Risk costs and litigation costs are a social waste, and while these costs may increase deterrence, they should be minimized because there are more efficient ways to increase deterrence, such as increasing liability on the defendants.

Finally, in an extension to the model, we showed that if detection is uncertain, the differences among the rules re-

264. See supra part III.C.2.
265. See supra part III.C.3.
266. See supra parts III.D, III.E.
garding deterrence may not be as great.\textsuperscript{267} Where the probability of detection of the conspiracy is low, the rules converge toward the same expected damages and thus, the same deterrence.

B. \textit{Settlement}

With regard to settlement, we first noted what previous authors had shown: that the contribution with settlement reduction rule will give defendants a disincentive to settle individually.\textsuperscript{268} Under the contribution with settlement reduction rule, just one non-settling defendant could conceivably keep all defendants from settling. Because of this disincentive to settle, contribution with settlement reduction is not a desirable rule. In an extension to the model, we observed that if contribution is uncertain, then under the contribution with settlement reduction rule, a defendant might settle with the plaintiff in order to limit its potential liability to its attributable share, even though the settling defendant would still face the possibility of having to pay contribution.\textsuperscript{269}

We then modified the analysis of Yi and showed that neither the contribution with claim reduction rule, nor the no contribution rule will always be more likely to lead to complete settlement.\textsuperscript{270} Where liability is allocated per capita, complete settlement is more likely under the contribution with claim reduction rule than under the no contribution rule.

C. \textit{Allocation of Damages Under the Contribution Rules}

I recommend that in general, liability be allocated per capita under the contribution with claim reduction rule for conspiracy cases. The per capita liability allocation rule has been attacked as unfair because it forces each defendant to face the same liability regardless of its share of the damages. However, if conspirators can agree on the act, then they should also be able to agree on a fair division of the conspiratorial benefits. Thus, the fairness argument against the per capita liability allocation rule seems misguided.

\textsuperscript{267} See supra part V.A.1.
\textsuperscript{268} See supra part IV.A.
\textsuperscript{269} See supra part V.A.3.
\textsuperscript{270} See supra part IV.B; Yi, supra note 22, at 82-90.
Allocating liability per capita will be simpler for courts to administer, and fewer resources will be wasted trying to influence the allocation of liability than allocating liability by either the comparative fault or comparative benefit rules. We can expect conspirators to have better information regarding the conspiracy than can later be obtained by judges or other third party decisionmakers. Thus, it should be less costly and more fair to have conspirators allocate the benefit among themselves than to have a third party decisionmaker allocate the liability by comparative fault or comparative benefit for those conspiracies that are detected.\footnote{271}

There are some exceptions I would make to the per capita liability allocation rule. I recommend the comparative fault liability allocation rule for cases of unfair conspiracies, where one conspirator has effective control over another conspirator through the use of a bad threat. However, I would not apply the comparative fault liability allocation rule just because one conspirator is more culpable than another. The key factor is control of one conspirator by another, not the relative depravity of the conspirators. The comparative benefit liability allocation rule may be of use for situations where conspirators face high transaction costs to bargaining or are asset-constrained \textit{ex ante} the conspiracy.\footnote{272}

D. Recommendations

The contribution with claim reduction rule and the no contribution rule each have strengths and weaknesses that make a clear cut choice impossible. However, if liability is allocated per capita for most conspiracies, then I favor the contribution with claim reduction rule.\footnote{273}

\footnote{271. Third party decisionmakers will not have to allocate the liability when detection does not occur. Thus, these \textit{ex post} detection liability allocation conspiracy costs should be discounted by the probability of detection. But even when \textit{ex post} liability allocation costs are discounted, it is probably still cheaper to have the conspirators allocate the benefit \textit{ex ante} the conspiracy.}

\footnote{272. As for cases involving non-conspirators, the analysis of Kornhauser and Revesz showed that either the comparative fault or comparative benefit liability allocation approaches would be appropriate for most cases. \textit{See} Kornhauser & Revesz, \textit{supra} note 28. Only if the costs of applying the comparative fault or comparative benefit liability allocation rules were very high, would the per capita rule be better for non-conspirators. \textit{Id}.}

\footnote{273. I also recommend the contribution with settlement reduction rule if Mary Carter Agreements are allowed. Simplified Mary Carter Agreements that merely set a defendant’s damage payment at a fixed amount would not give the
We showed that neither the contribution with claim reduction rule nor the no contribution rule will always lead to more deterrence or complete settlement.\textsuperscript{274} The contribution with claim reduction rule will increase deterrence for those conspirators who are liable for larger proportions of the damage. In addition, when liability is allocated per capita, the contribution with claim reduction rule is less likely to lead to situations where conspirators believe they will face little liability when entering into a conspiracy.

Another advantage of the contribution with claim reduction rule is that its expected damages are a constant function of the damage caused per conspirator, regardless of the number of conspirators. Under the no contribution rule, conspirators in large conspiracies are likely to face increased expected damage payments per damages actually caused.\textsuperscript{275} Having damages that are consistent across conspiracy size should make it easier to determine the correct multiplier on damages in many cases. I favor the contribution with claim reduction rule because of its consistency and its deterrence on defendants liable for a large proportion of the damages.

Both the contribution with claim reduction rule and the no contribution rule will lead to some wasteful costs. The no contribution rule will lead to more risk costs, while the contribution with claim reduction rule will likely lead to more litigation costs. But if liability is allocated per capita, then at least the liability allocation costs will be minimized. Both risk costs and litigation costs are a social waste and a rule which minimizes these costs is desirable. The contribution with claim reduction rule, where liability is allocated per capita, seems to meet this requirement.

Although the no contribution rule will lead to fewer outstanding defendants in the event of trial, the contribution with claim reduction rule is more likely to lead to complete settlement when liability is allocated per capita. If there are many conspirators, then the no contribution rule may be fa-

\begin{footnotesize}
\begin{itemize}
\item settling defendant an incentive to provide untruthful information or testimony either for or against the plaintiff or the non-settled defendants, as the settling defendant will not have a stake in the outcome of the trial. In allowing these simplified Mary Carter Agreements, the plaintiff and the settling defendant are able to transform the contribution with settlement reduction rule into the contribution with claim reduction rule.
\item See supra parts III.B, IV.B.
\item See supra note 59.
\end{itemize}
\end{footnotesize}
vored, but for conspiracies involving a small number of conspirators, the contribution with claim reduction rule will be favored. Since most conspiracies are likely to involve only a few conspirators, the settlement analysis also seems to favor the contribution with claim reduction rule.

Equity among defendants has also been argued as a reason for the contribution rules. Critics have complained that both the no contribution rule and the contribution rules, when liability is allocated per capita, are “unfair.” However, there are forces of equity, such as juries and judgment proof defendants, that operate regardless of the rule chosen. In addition, conspirators can take the potential liability of each defendant into account when making their conspiratorial benefit division. I do not give the fairness argument much weight for cases involving conspirators.

The one undisputed advantage of the no contribution rule is that it will more fully compensate the plaintiff once a conspiracy has been detected. This will be true even if the no contribution rule leads to less deterrence than the contribution rules. However, we could increase liability under the contribution rules such that a plaintiff would be able to receive a higher damage award.

For many laws, such as tort laws, legislatures should move away from only using a negligent-intentional act dichotomy and focus more on whether a joint act was caused by conspirators or non-conspirators. Conspiracy situations will allow for simpler rules, such as per capita liability allocation, as conspirators can solve fairness and liability allocation problems through their negotiation over the division of the conspiratorial benefit. It seems odd that legislatures apply different rules for intentional and negligent joint-torts and yet apply the same rules for joint tortfeasors regardless of whether they are acting in concert or causing joint harm by a simple chance accident.

For conspiracy situations, I favor the contribution with claim reduction rule, with liability to be allocated per capita, because of the deterrence and settlement effects the rule will have on conspiracies. For situations involving a controlling conspirator that manipulates the actions of a controlled conspirator, I recommend that liability be allocated by comparative fault, with additional liability placed on the controlling conspirator. The no contribution rule, if it is modified to exert
extra penalties in control conspiracies on controlling conspirators, would be my second choice. I definitely disfavor the contribution with settlement reduction rule for conspiracy cases as it will discourage settlement and lead to more trials. My recommendations apply to conspiracies that cause any type of injury, whether the harm is a negligent tort, intentional tort, securities violation, vertical antitrust violation, horizontal antitrust violation, aviation collision or some other damage caused by a conspiracy.

VIII. TECHNICAL APPENDIX

We will now formally define the model and notation.\textsuperscript{276} We will then show some of the results of the deterrence and settlement sections in the article. The same assumptions that were made in Section II will be made.\textsuperscript{277} Let there be $N$ conspiratorial defendants jointly and severally liable for the damages caused to one plaintiff. We will use the following notation:

\begin{itemize}
\item \textsuperscript{276} The model and notation follow those of Easterbrook, Landes and Posner. See Easterbrook et al., \textit{supra} note 16.
\item \textsuperscript{277} These assumptions are: (1) all defendants and the plaintiff are risk neutral, (2) detection of the conspiracy occurs with certainty, (3) the plaintiff negotiates with all defendants simultaneously, (4) if there is a failure of the plaintiff to settle with any or all of the defendants, then the plaintiff will randomly choose one of the non-settling defendants to sue, (5) the defendants are unable to form an enforceable sharing agreement regarding settlement for damage payments, or an agreement that no individual defendant will settle without all of the defendants settling as a group, (6) if a defendant loses at trial against the plaintiff, the defendant is able to obtain contribution from the other defendants with certainty and (7) the plaintiff’s probabilities of winning at trial against different defendants are perfectly correlated such that if two defendants have probabilities of losing at trial to the plaintiff of $p_h$ and $p_l$ and $p_h \geq p_l$, then (a) if the plaintiff first loses at trial against the $p_l$-defendant, then the plaintiff’s probability of later winning against the $p_h$-defendant will be

\[
\frac{p_h - p_l}{1 - p_l},
\]

and (b) if the plaintiff loses at trial against the $p_l$-defendant, then the plaintiff’s probability of later winning against the $p_h$-defendant will be 0.
\end{itemize}
Joint and Several Liability

$X$ Aggregate damages caused by the defendants, $X = \sum_{i=1}^{n} x_i$.  

$x_i$ Damages attributable to defendant $i$.  

$r_i$ Proportion of the damage attributable to defendant $i$, $r_i = \frac{x_i}{X}$.  

$s_i$ Expected settlement payment of defendant $i$.  

$e_i$ Expected damage payment of defendant $i$.  

$A$ Plaintiff's aggregate expected award, $A = \sum_{i=1}^{n} e_i$.  

$p_i$ Probability of the plaintiff winning at trial against defendant $i$.  

A. Deterrence

1. Symmetric Information, Identical Defendants

Assume the defendants have the same beliefs regarding the probabilities of the plaintiff winning at trial against each defendant and the damages attributable to each defendant. Assume that there are $n$ defendants, each liable for the same amount of damage $x_i = x$, such that

$$\sum_{i=1}^{n} x_i = nx = X,$$

and that each defendant has the same probability of losing at trial to the plaintiff $p_i = p$. We can then use the symmetry of the defendants to let their expected damages before entering into the conspiracy be $e_i = e$.

We will first compute the expected damages under the no contribution rule where the defendants will reach equilibrium expected damages of $e = e^{nc}$. The plaintiff will want to settle with all but one defendant. Those defendants that settle will have expected damages equal to their settlement amount, as the settlement bar to contribution will keep other defendants from being able to seek contribution from them. Following the analysis of Easterbrook, Landes and Posner, let $e_n$ be the expected loss of a lawsuit of the $n$th defendant after the $n-1$ other defendants have settled. Each of the other defendants will have an expected settlement of $s^{nc}$, and

---

278. See supra part III.A.1. The case of identical defendants with symmetric information is analyzed by Easterbrook, Landes and Posner. See Easterbrook et al., supra note 16.

279. See id. at 359.
thus, the expected loss for the last outstanding defendant will be: 

\[ e_n = p(X-(n-1)s^{nc}). \]

Since each defendant is equally likely to be the "nth" defendant, the only stable equilibrium will lead to 

\[ e_n = s^{nc}. \]

Solving for \( s^{nc} \), we have:

\[ s^{nc} = \frac{pX}{1+p(n-1)}. \]

Under the no contribution rule, the aggregate damage award received by the plaintiff will be

\[ A_{nc} = ne^{nc} = ns^{nc} = \frac{npX}{1+p(n-1)}. \]

We will now compute the expected damages under the contribution rules. Each defendant is liable for

\[ x = \frac{X}{n} \]

under both contribution rules. Under the contribution with claim reduction rule, each defendant will have expected damages equal to its expected settlement of

\[ e^c = scr = \frac{pX}{n}. \]

Under the contribution with settlement reduction rule, each defendant will have a disincentive to settle individually, but the expected damages of each defendant will also be

\[ e^e = \frac{pX}{n}. \]

Under both contribution rules, the plaintiff will have an expected total damage award of the lawsuit \( A_c = ne^e = pX \).

We can now compare the expected damages, and thus deterrence of identical defendants, under the rules of contribution and no contribution. Under the no contribution rule, each defendant will have expected damages of

\[ e^{nc} = \frac{pX}{1+p(n-1)}, \]

while under the contribution rules each defendant will have expected damages of
If $p = 1$ or $n = 1$, then $e^{ac} = e^c$. However, if $p < 1$ and $n \geq 2$, then the defendants will have greater expected damages under the no contribution rule, that is $e^{ac} > e^c$. This is proved below.

\[
p(n-1) < n-1 \\
1 + p(n-1) < n \\
\frac{1}{1 + p(n-1)} > \frac{1}{n} \\
\frac{pX}{1 + p(n-1)} > \frac{pX}{n}
\]

\[\because e_{nc} > e_c\]

The plaintiff will also receive a higher total damage award under the no contribution rule than under the contribution rules, $A_{nc} \geq A_c$, as

\[
\frac{npX}{1 + p(n-1)} \geq \frac{npX}{n} = pX.
\]

2. Symmetric Information, Different Damage Responsibility

We will again assume the defendants have the same beliefs regarding the probabilities of the plaintiff winning at trial against each defendant and the damages attributable to each defendant. Assume that each defendant has the same probability of losing at trial to the plaintiff $p_i = p$, but that each defendant is liable for a different proportion of the damages under the contribution rules.

Under the no contribution rule, the expected settlement is independent of the allocation of liability for the damages among the defendants. The expected damages for defendants who have caused different amounts of damage but have the same probability of losing to the plaintiff at trial remains

\[
e^{nc} = \frac{pX}{1 + p(n-1)}.
\]

280. See supra part III.A.2.a.
This is the same expected damage payment for each defendant as when damages are equally attributable to each defendant.

Under the contribution rules, the expected damages faced by each defendant are dependent on the division of liability for the damages among the defendants. Expected damages for each defendant $i$ will be $e_i^c = px_i = pr_iX$. Under the contribution with claim reduction rule, defendants will settle for $s_i^{cr} = e_i^c$, while under the contribution with settlement reduction rule, defendants will have a disincentive to settle individually. Whether a defendant faces a higher expected damage payment, and thus, increased deterrence, under either the no contribution rule or the contribution rules, depends on the proportion of damages the defendant is liable for under the contribution rules.

If the proportion of damages that a defendant is liable for is

$$r_i > \frac{1}{1 + p(n-1)},$$

then the defendant will face greater expected damages under the contribution rules than under the no contribution rule. While if

$$r_i < \frac{1}{1 + p(n-1)},$$

then expected damages will be greater under the no contribution rule. This is proved below:

$$r_i > \frac{1}{1 + p(n-1)} \quad r_i < \frac{1}{1 + p(n-1)}$$

$$pr_iX > \frac{pX}{1 + p(n-1)} \quad pr_iX < \frac{pX}{1 + p(n-1)}$$

$$px_i > \frac{pX}{1 + p(n-1)} \quad px_i < \frac{pX}{1 + p(n-1)}$$

$$\therefore e^c > e^{nc} \quad \therefore e^c < e^{nc}$$

Under the no contribution rule and contribution rules, the total damage award received by the plaintiff where the
defendants have caused different shares of the damages will be the same as where each defendant caused the same amount of damage. Only the division of damages among the defendants under the contribution rules changes. Under the contribution rules, the plaintiff's total damage award will be

\[ A_c = \sum_{i=1}^{n} e_i = \sum_{i=1}^{n} px_i = \sum_{i=1}^{n} pr_i X = pX. \]

Under the no contribution rule, the plaintiff's total damage award will again be

\[ A_{nc} = ne^{nc} = ns^{nc} = \frac{npX}{1 + p(n-1)}. \]

These are the same total damage awards as when the defendants caused equal shares of the damage, and thus, \( A_{nc} \geq A_c \).

3. *Symmetric Information, Different Probabilities of Loss at Trial*[^281]

Assume the defendants have the same beliefs regarding the probabilities of the plaintiff winning at trial against each defendant and the damages attributable to each defendant. Assume the defendants are each liable for the same amount of damage, \( x_i = x \), such that

\[ \sum_{i=1}^{n} x_i = nx = X. \]

Assume the defendants have different probabilities of loss at trial to the plaintiff. Whether a defendant faces higher expected damages under the no contribution rule or the contribution rules will depend upon the probabilities of the different defendants losing at trial to the plaintiff.

[^281]: See supra part III.A.2.b.
Given total damages of $X$ caused by the defendants, under the no contribution rule, the aggregate settlement received by the plaintiff will be

$$A_{nc} = \frac{\sum_{ij} \frac{p_i}{1-p_i} - X}{1 + \sum_{ij} \frac{p_i}{1-p_i}}$$

If a defendant has a probability of losing at trial to the plaintiff of $p_i$, then the defendant’s expected damages and expected settlement will be

$$e_i^{nc} = s_i^{nc} = \frac{p_i}{1-p_i} (X - A_{nc})$$

This is shown below.

Each defendant will offer to settle for what it expects to lose at trial if all of the other defendants settle for their equilibrium amount. We define

$$A_{nc} = \sum_{ij} e_i^{nc} = \sum_{ij} s_i^{nc}$$

as the aggregate settlement and damage award to the plaintiff. This gives us the following:

$$e_i^{nc} = s_i^{nc} = p_i \left( X - \sum_{j \neq i} s_j^{nc} \right) = p_i \left( X - \sum_{j} s_j^{nc} + s_i^{nc} \right) = \frac{p_i}{1-p_i} (X - A_{nc})$$

Solving for $A_{nc}$:

$$A_{nc} = \sum_{ij} s_i^{nc} = \sum_{ij} \frac{p_i}{1-p_i} (X - A_{nc})$$

$$= \sum_{ij} \frac{p_i}{1-p_i} X - \sum_{ij} \frac{p_i}{1-p_i} A_{nc} = \frac{\sum_{ij} \frac{p_i}{1-p_i}}{1 + \sum_{ij} \frac{p_i}{1-p_i}} X$$
and thus, the expected damages and expected settlement for defendant $i$ is:

\[
e^{nc} = s^{nc} = \frac{p_i}{1-p_i} \left( \frac{\sum_{j} p_j}{1+\sum_{j} \frac{p_j}{1-p_j}} \right) X
\]

Under the contribution rules, we will assume that each defendant is able to obtain contribution from another defendant with certainty. Thus, the expected damages of each defendant will be

\[
e^c = \left( \max_j \left[ p_j \right] \right) x_i.
\]

The aggregate damage award to the plaintiff under the contribution rule will be

\[
A_c = \left( \max_j \left[ p_j \right] \right) X.
\]

Although the expected damages of any particular defendant may be higher or lower under the no contribution rule than under the contribution rules, the aggregate damage award received by the plaintiff under the no contribution rule will always be as great as that under the contribution rules. Thus, for at least one defendant the expected settlement payment and deterrence will not decrease.

The total damage award received by the plaintiff under the no contribution rule is

\[
A^{nc} = \frac{\sum_{j} p_j}{1+\sum_{j} \frac{p_j}{1-p_j}} X
\]

while under the contribution rules it is
\[ A_c = \left( \text{Max}_j \left[ p_j \right] \right) X. \]

If there is only one defendant, then \( A_c = A_{nc} = pX. \)

If \( \text{Max}_j \left[ p_j \right] = 1, \) then \( A_c = A_{nc} = X. \)

If there is more than one defendant and \( \text{Max}_j \left[ p_j \right] < 1, \) then \( A_{nc} > A_c. \) This is shown below.

Choose any \( p_j. \) We then have the following:

\[
\frac{p_j + z}{1+z} > \frac{p_j}{1} = p_j \quad \text{for all} \; p_j < 1 \text{ and all} \; z > 0.
\]

Let \( z \left[ (1-p_j) \sum_{i \neq j} \frac{p_i}{1-p_i} \right] > 0 \) then \( \frac{p_j + z}{1+z} > \frac{p_j}{1} = p_j \)

\[
\left(1-p_j\right) \sum_{i \neq j} \frac{p_i}{1-p_i} > p_j \Rightarrow \frac{\left(1-p_j\right) \sum_{i \neq j} \frac{p_i}{1-p_i} + p_j}{1-p_j} > p_j
\]

\[
\Rightarrow \frac{\left(\sum_{i \neq j} \frac{p_i}{1-p_i} + \frac{p_j}{1-p_j}\right)}{1 + \left(\sum_{i \neq j} \frac{p_i}{1-p_i} + \frac{p_j}{1-p_j}\right)} > p_j \Rightarrow \frac{\sum_{i} \frac{p_i}{1-p_i}}{1 + \sum_{i} \frac{p_i}{1-p_i}} > p_j
\]

Since \( p_j \) was arbitrary, this is true for all \( p_j \) and in particular the maximum \( p_j. \) Thus, we can conclude the following:

\[
\frac{\sum_{i} \frac{p_i}{1-p_i}}{1 + \sum_{i} \frac{p_i}{1-p_i}} > \text{Max}_j p_j
\]
Thus, we have shown that where defendants have symmetric information, when defendants are liable for different proportions of the damage or defendants have different probabilities of loss at trial, the expected damages of any particular defendant may be higher or lower. However, the total damage award to the plaintiff is higher under the no contribution rule than under the contribution rules.

4. Asymmetric Information

Under asymmetric information, if the defendants disagree about either their proportion of the liability under the contribution rules or their probabilities of loss at trial to the plaintiff, then the expected damages, and thus deterrence, could be less (or more) for all defendants (or for some defendants) under the no contribution rule than under the contribution rules. What determines the deterrence faced by a defendant is the defendant's beliefs of the liability allocation and the different defendants' probabilities of loss at trial to the plaintiff. As was illustrated above, some defendants could have lower expected damages under the no contribution rule than under the contribution rules. Where defendants have asymmetric information, each defendant could have beliefs that lead it to face lower deterrence under the no contribution rule than under the contribution rules; however, no defendant would have to face more deterrence under the no contribution rule.

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282. See supra part III.B.

283. In modeling the asymmetric information case, we can simply index each defendant's beliefs and then look at the deterrence that the defendant faces given its beliefs. I will not do so here because it is quite repetitive of the symmetric information analysis, but one should easily see how inconsistent beliefs can lead to each defendant facing less deterrence.
B. Settlement

1. Defendants’ Disincentive Under the Contribution with Settlement Reduction Rule

Assume that each defendant has probability $p$ of losing to the plaintiff at trial. We can compare the defendant’s expected damages if it does settle, with its expected damages if it does not settle. If a defendant does settle for $s_i$, then it will have expected damages equal to the settlement plus a possible contribution payment equal to its share of the damages less its settlement amount, $x_i - s_i$. The settling defendant will have to pay this contribution with probability $p$. This will give the defendant total expected damages of $e_i^{\text{settle}} = s_i + p(x_i - s_i)$. If the defendant does not settle, then it will have expected damages of $e_i^{\text{trial}} = px_i$. Thus, the defendant will have lower expected damages by refusing to settle than by settling for any amount $s_i$. This is shown below:

\[
\begin{align*}
(1-p)s_i & \geq 0 \\
(1-p)s_i + px_i & \geq px_i \\
s_i + p(x_i - s_i) & \geq px_i \\
e_i^{\text{settle}} & \geq e_i^{\text{trial}}.
\end{align*}
\]

2. Complete Settlement Under the Contribution with Claim Reduction Rule and the No Contribution Rule

We will examine the likelihood of complete settlement where the plaintiff and the defendants disagree about the plaintiff’s probabilities of winning at trial. Suppose the plaintiff believes that it will win at trial with probability $p_p$, and the defendants believe that the plaintiff will win at trial with probability $p_\Delta$, such that $p_p > p_\Delta$. We can compare the difference in the plaintiff’s settlement demands and the defendants’ settlement offers.

We will first examine the case under the no contribution rule. The plaintiff will settle with all but one defendant for the equilibrium settlement of

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284. See supra part IV.A.
285. See supra part IV.B.
286. If the defendant believes that the probability of the plaintiff winning at trial is greater than the plaintiff’s belief of the probability of the plaintiff winning at trial, then settlement will occur, as the plaintiff will demand less than the defendant will offer.
based on the defendants’ beliefs of \( p_\Delta \). This is because the plaintiff is not better off having more than one defendant outstanding at trial, and the defendants will be unwilling to settle for more than this amount. The last outstanding defendant will believe it will lose at trial with probability \( p_\Delta \), while the plaintiff will believe that it will win at trial with probability \( p_\pi \). The amount that will be at stake at trial will be

\[
X - \left( n-1 \right) \left( \frac{p_\Delta X}{1 + p_\Delta (n-1)} \right).
\]

The difference between the plaintiff’s demand and the defendant’s offer will be

\[
(p_\pi - p_\Delta) \left( X - \left( n-1 \right) \left( \frac{p_\Delta X}{1 + p_\Delta (n-1)} \right) \right).
\]

Under the contribution with claim reduction rule, the damages that a defendant is liable for will affect the likelihood of settlement, as the more a defendant is liable for the greater the absolute difference between the plaintiff’s demands and the defendant’s offer. The defendant that will be the least likely to settle under the contribution with claim reduction rule will be the defendant that is liable for the greatest proportion of the damages, which we will call \( \bar{r}_iX \). The difference between the plaintiff’s demand and the defendant’s offer will be \((p_\pi - p_\Delta)\bar{r}_iX\).

First, we can note that if liability is allocated per capita under the contribution with claim reduction rule, then the contribution with claim reduction rule will lead to a smaller difference in the plaintiff’s settlement demand and the defendant’s settlement offer for the last outstanding defendant than under the no contribution rule.

If liability is allocated per capita under the contribution with claim reduction rule then

\[
(p_\pi - p_\Delta)\bar{r}_iX = \frac{(p_\pi - p_\Delta)X}{n}.
\]

The following shows this:
In the general case, if the proportion of liability faced by the largest damage causing defendant under the no contribution rule is such that
\[
\frac{1}{n} < \frac{1}{1 + p_{\Delta}(n-1)}
\]
\[
\frac{1}{n} < \frac{1 + p_{\Delta}(n-1) - p_{\Delta}(n-1)}{1 + p_{\Delta}(n-1)}
\]
\[
\frac{1}{n} < 1 - \frac{p_i(n-1)}{1 + p_{\Delta}(n-1)}
\]
\[
\frac{X}{n} < X - \frac{X(n-1)p_{\Delta}}{1 + p_{\Delta}(n-1)}
\]

\[
\therefore (p_\pi - p_{\Delta}) \frac{X}{n} < (p_\pi - p_{\Delta}) \left( X - \frac{X(n-1)p_{\Delta}}{1 + p_{\Delta}(n-1)} \right)
\]

In the general case, if the proportion of liability faced by the largest damage causing defendant under the no contribution rule is such that
\[
\tilde{r}_i < \frac{1}{1 + p_{\Delta}(n-1)}
\]
then the contribution with claim reduction rule is more likely to lead to complete settlement. However, if the proportion of the largest damage causing defendant under the no contribution rule is such that
\[
\tilde{r}_i > \frac{1}{1 + p_{\Delta}(n-1)}
\]
then the no contribution rule is more likely to lead to complete settlement.