Illinois Brick and the Deterrence of Antitrust Violations--An Economic Analysis

Gregory J. Werden
Marius Schwartz

Follow this and additional works at: https://repository.uchastings.edu/hastings_law_journal

Part of the Law Commons

Recommended Citation
Available at: https://repository.uchastings.edu/hastings_law_journal/vol35/iss4/2

This Article is brought to you for free and open access by the Law Journals at UC Hastings Scholarship Repository. It has been accepted for inclusion in Hastings Law Journal by an authorized editor of UC Hastings Scholarship Repository.
A successful price-fixing arrangement among a group of competing manufacturers, a *per se* violation of section 1 of the Sherman Act, increases the price of their product to whomever purchases it. Frequently, the “direct purchasers” of the price-fixed product will be distributors or other manufacturers, and the price fix causes the prices of their products to rise as well, a phenomenon commonly referred to as “passing-on.” This process is repeated again and again as “indirect purchasers” sell their products to the next link in the vertical supply chain. Ultimately, much of the effect of the price fix is borne by the consumers of various final goods in the form of higher prices. The remainder of the effect of the price fix is divided among the various direct and indirect purchasers of the price-fixed product throughout the vertical supply chain. The question arises: which of the many affected parties should have the right to recover treble damages under section 4 of
the Clayton Act\(^5\) for this effect of the price fix?

In *Illinois Brick Co. v. Illinois*,\(^6\) the Supreme Court held that, except in special circumstances,\(^7\) only *direct* purchasers may recover damages for this effect of price fixing.\(^8\) The Court based this holding on its conclusion that "the antitrust laws will be more effectively enforced by concentrating the full recovery for the overcharge [caused by price fixing] in the direct purchasers rather than by allowing every plaintiff potentially affected by the overcharge to sue only for the amount it could show was absorbed by it."\(^9\) The wisdom of the Court's decision was

9. *Illinois Brick*, 431 U.S. at 734-35. In an earlier case that prohibited the use of the "passing-on defense" and established the right of direct purchasers to recover damages, the Court had indicated that there might be situations in which exceptions should be made to that rule. As an example, the Court cited the situation in which the "buyer has a pre-existing 'cost-plus' contract." Hanover Shoe, Inc. v. United Shoe Mach. Corp., 392 U.S. 494, 494 (1968). *See infra* text accompanying notes 23-31. The *Illinois Brick* Court concluded that it must either overrule Hanover Shoe or preclude indirect purchasers from attempting to recover damages based on the passing-on theory. 431 U.S. at 736. The Court did not elaborate further on the "cost-plus contract" exception, and the lower courts are split on the exception's breadth. *Compare In re Beef Indus. Antitrust Litig.,* 600 F.2d 1148, 1163-64 (5th Cir. 1979), *cert. denied,* 449 U.S. 905 (1980) (exception applies even if the arrangement was not a pre-existing cost-plus contract if it was the "functional equivalent"), *with* Mid-West Paper Prods. Co. v. Continental Group, Inc., 596 F.2d 573, 577 (3d Cir. 1979) (pre-existing cost-plus contracts in themselves are not sufficient for the exception to apply; they must also be of fixed quantity and "must exist between all parties in the distribution chain, . . . so that the plaintiff has absorbed the illegal overcharge in its entirety"). *See also Note, Recovery by Indirect Purchasers and the Functions of Antitrust Treble Damages, 55 TEX. L. REV. 1445, 1454-57 (1978).* The *Illinois Brick* Court also indicated that an exception might properly be made if "'the direct purchaser is owned or controlled by its customer.'" 431 U.S. at 736 n.16. This language has been interpreted as allowing indirect purchasers to recover damages in cases in which the relevant direct purchaser was owned or controlled by its supplier, an alleged price fixer. *See In re Sugar Indus. Antitrust Litig.,* 579 F.2d 13, 18-19 (3d Cir. 1978).
questioned at the time by the three dissenting Justices, has been hotly debated in the scholarly literature, and currently is being reconsidered by Congress.

This Article focuses on one of the most important issues raised in this debate—whether, as the Court appears to have concluded, assigning the exclusive right to recover damages to direct purchasers enhances the deterrent effect of private antitrust enforcement. Although the *Illinois Brick* rule applies to all damages actions under section 4 of the Clayton Act, only price fixing is considered in this Article. The Article first reviews the Court's rationale in *Illinois Brick* and summarizes the basic issues in the controversy caused by that decision. An economic model of private antitrust enforcement is then developed and the model's implications are compared with the rule of *Illinois Brick*. We conclude that the rule limiting recovery to direct purchasers is probably appropriate. Finally, some observations derived from this analysis on possible exceptions to the rule and on the optimal legal system are offered.

The *Illinois Brick* Debate

The Rationale of *Illinois Brick*

To understand the rationale of *Illinois Brick*, it is useful to begin with the statutory provision for treble damages awards and its historical interpretation in price-fixing cases. Section 4 of the Clayton Act provides: "Any person who shall be injured in his business or property by reason of anything forbidden by the antitrust laws may sue therefor and shall recover threefold the damages by him sustained, and the cost of the suit, including a reasonable attorney's fee." This provision raises two distinct but related questions—whether a plaintiff has suffered injury and therefore is entitled to recover and, if so, how much should be awarded.

10. *Illinois Brick*, 431 U.S. at 748 (Brennan, J., joined by Marshall and Blackmun, JJ., dissenting); id. at 765 (Blackmun, J., dissenting).
11. See, e.g., commentary cited infra notes 33, 42-43, 46.
12. See infra notes 103-05 & accompanying text.
13. The discussion below applies to any concealed violations of the antitrust laws, but price fixing, including bid rigging and related offenses, is the only important violation of that type. In addition, we intentionally focus on a violation that clearly should be deterred.
From the first treble-damages actions for price fixing under the Sherman Act, the amount of damages to be trebled has been calculated primarily by multiplying the quantity of the price-fixed product purchased by the plaintiff, or plaintiffs, by the "estimated difference between the just and fair market price of the goods and the price actually paid." The latter figure is sometimes referred to as the "overcharge" caused by the price fix, and that is what the Supreme Court was referring to in the above-quoted passage from *Illinois Brick*. The amount of damages in price-fixing cases, therefore, is not measured either by the profits lost by firms that use the price-fixed product as an input to their production process or by the "welfare loss" borne by consumers of the final product due to the noncompetitive pricing.

The courts' approach to the other question raised by section 4—whether the plaintiff has suffered injury—is more complicated, particularly in cases involving a product that is not sold to ultimate consumers. In keeping with their method of measuring damages, the courts frequently have held that alleged injuries from antitrust violations, although possibly quite real, were "too remote" to permit the recovery of damages. Thus, in an early case, the stockholders of a corporation driven into bankruptcy allegedly by acts that violated the Sherman Act were not permitted to recover damages. Similarly, ultimate consumers, a specific category of indirect purchasers, have been precluded from recovering damages for injuries suffered as a result of the passing-on the effect of a price fix that occurred upstream in the vertical supply chain. On the other hand, although direct purchasers necessarily pay


18. This is not to say that damages should be measured any differently. Measuring welfare loss with any degree of accuracy is impossible, so there would be little or nothing to be gained by doing so.


the overcharge caused by price fixing, they may pass it on to their customers and not suffer any actual harm. But a plaintiff that suffers no actual harm cannot recover any damages. Thus, an early Supreme Court case concluded that the plaintiff, a direct purchaser, could not sue for damages because it “may not have [been] injured . . . at all.”

According to one commentator, every court confronted with this issue between 1890 and 1960 reached a similar conclusion.

Viewed together, the limitations on the abilities of both direct and indirect purchasers to recover damages created the possibility that no party would be able to recover damages from a manufacturer that fixed prices on products not sold to ultimate consumers. A simple method of eliminating this anomaly was developed and applied in 1960 in _Hanover Shoe, Inc. v. United Shoe Machinery Corp._ The trial judge ruled that the “excessive price is the injury” and therefore the plaintiff, a direct purchaser, could sue for damages even if it passed on all of the overcharge. _Hanover Shoe_ was not a price-fixing case. It involved allegations that United Shoe Machinery (United) “had monopolized the shoe machinery industry” through practices such as “leasing and refusing to sell its more complicated and important shoe machinery.”

---

23. 185 F. Supp. 826 (M.D. Pa.), _aff’d per curiam_, 281 F.2d 481 (3d Cir.), _cert. denied_, 364 U.S. 901 (1960). This series of decisions was but part of the protracted litigation that culminated in the series of decisions discussed _infra_ notes 25-31 & accompanying text.
24. _Id._ at 829 (emphasis added). The trial court relied in part on an early Supreme Court case that did not deal with antitrust damages, stating: “The general tendency of the law, in regard to damages at least, is not to go beyond the first step. As it does not attribute remote consequences to a defendant so it holds him liable if proximately the plaintiff has suffered a loss.” _Id._ at 830 (quoting Southern Pac. Co. v. Darnell-Taenzer Lumber Co., 245 U.S. 531, 533-34 (1918)).
The difference was unimportant in the later measurement of damages. The district court awarded Hanover damages equal to treble the estimated difference in cost to Hanover of leasing, as opposed to buying, the machinery. The Supreme Court affirmed, applying what it referred to as "the general principle that the victim of an overcharge is damaged within the meaning of § 4 to the extent of that overcharge."

The Supreme Court rejected United's argument that Hanover was not necessarily damaged at all because it recouped, or might have recouped, any increased costs by passing them on to the buyers of its shoes. Although the Court could not rule out the possibility of complete passing on, it concluded that "the task [of proving it] would normally prove insurmountable." On the other hand, the availability of the passing-on argument would, in the Court's view, lead to its frequent use and would "require long and complicated proceedings involving massive evidence and complicated theories." Moreover, the Court found assigning the exclusive right to recover damages to ultimate consumers unappealing because each consumer "would have only a tiny stake in a lawsuit and little interest in attempting a class action." Thus, the Court feared that allowing defendants to assert a passing-on defense would substantially reduce the deterrent effect of private antitrust enforcement.

Nine years later, the Supreme Court was presented in Illinois Brick Co. v. Illinois with what has been called the "mirror image of Hanover Shoe." Illinois Brick involved a suit by the State of Illinois, on behalf of itself and numerous local governments in the Chicago area, seeking damages for injuries caused by an alleged conspiracy to fix the price of concrete block. The state and local governments did not, as a rule, purchase the block directly from the alleged price fixers, but they claimed to have been damaged because contractors that did purchase the block directly from the price fixers passed on the overcharges to the state and local governments. Defendants contended that Hanover Shoe

27. 392 U.S. 481, 491 (1968).
28. Id. at 493.
29. Id.
30. Id. at 494.
31. Id.
barred the recovery of damages by indirect purchasers. A majority of the Supreme Court agreed, construing *Hanover Shoe* to hold "that the overcharged direct purchaser, and not others in the chain of manufacture or distribution, is the party 'injured in his business or property.'" The Court expressly declined to overrule *Hanover Shoe*.

The Court's primary reason for allocating the right of potential damages recovery solely to direct purchasers was that

[the apportionment of the recovery throughout the distribution chain would increase the overall costs of recovery by injecting extremely complex issues into the case; at the same time such apportionment would reduce the benefits to each plaintiff by dividing the potential recovery among a much larger group. . . . The combination of increasing the costs and diffusing the benefits of bringing a treble-damages action could seriously impair this important weapon of antitrust enforcement.]

The Court also rejected the idea of a rule that prohibits the defensive use of passing-on, as attempted in *Hanover Shoe*, but allows the offensive use of passing-on by indirect purchasers seeking damages. The Court asserted that this type of rule would "create a serious risk of multiple liability for defendants." Unfortunately, the *Illinois Brick* Court failed to set forth clearly why the risk of multiple liability is either socially undesirable or legally impermissible.

### The Debate Over *Illinois Brick*

The evaluation of any policy rule entails determining how well the rule furthers established goals and what costs it imposes. The courts and the commentators seem to agree that private treble-damages actions were intended to further two important goals: 1) to compensate in some fashion the victims of antitrust violations, and 2) to deter antitrust violations by imposing substantial costs on antitrust violators who are

34. *Illinois Brick*, 431 U.S. at 727.
35. *Id.* at 729 (quoting § 4 of the Clayton Act).
36. *Id.* at 745.
37. *Id.* at 730.
38. The dissenting Justices argued that the Court's decision severely undermines the effectiveness of the private treble-damages action as an instrument of antitrust enforcement . . . frustrat[ing] both the compensation and deterrence objectives of the treble-damages action. Injured consumers are precluded from recovering damages from manufacturers, and direct purchasers who act as middlemen have little incentive to sue suppliers so long as they may pass on the bulk of the illegal overcharges to the ultimate consumers. *Id.* at 749 (Brennan, J., joined by Marshall and Blackmun, JJ., dissenting). The dissent also minimized the additional difficulty that would be introduced by trying to apportion damages and argued that "as a practical matter, existing procedural mechanisms [could] eliminate [the] danger [of multiple liability] in most instances." *Id.* at 761, 758-64.
caught. These are the two goals against which Illinois Brick should be judged.

Whatever effect Illinois Brick may have on the furtherance of these goals, there can be little doubt that it has the desirable effect of lowering litigation costs by reducing the number of potential litigants and by eliminating the complex problem of apportioning damages between direct and indirect purchasers. Lowering litigation costs is important, but this effect alone cannot justify Illinois Brick's effect on the goals of compensation and deterrence. These effects and their relative importance have been the focus of the controversy over Illinois Brick.

One school of thought, most closely associated with Professors Harris and Sullivan, concurs with the Illinois Brick dissenters that both direct and indirect purchasers should have the right to recover damages. This view stresses the compensation goal, arguing that direct purchasers tend to pass on most of the overcharges caused by price fixing to indirect purchasers. Because indirect purchasers are not permitted to recover under Illinois Brick, the goal of compensation is frustrated.

Harris and Sullivan also contend that Illinois Brick lessens the deterrent effect of private treble damages actions because it assigns the exclusive right to recover to direct purchasers, who are not likely to have an incentive to sue. Harris and Sullivan argue that direct purchasers are likely to lack such an incentive to sue because they risk termination by their suppliers if they do so and because they suffer little actual harm from the price fix due to passing-on, possibly even benefiting from the price fix by passing on more than one hundred per cent of the overcharge.


40. The term "Illinois Brick" is used here and throughout the remainder of this Article as a shorthand for a rule that allows direct purchasers the exclusive right to recover damages in price-fixing cases and, if successful, recover treble damages based on the full amount of the overcharge, even if the direct purchasers passed on part or all of that overcharge.

41. See infra notes 65-66 & accompanying text.


45. Id. at 349-54. Although Professors Harris and Sullivan might be right in some
Opposing Professors Harris and Sullivan, and agreeing with the *Illinois Brick* majority, are Professor Landes and Judge Posner. Landes and Posner stress the deterrence goal, arguing that *Illinois Brick* enhances the deterrent effect of private treble-damages actions. Their rationale is three-fold:

First, the direct purchaser is a more efficient enforcer of the antitrust laws than the indirect purchaser and should therefore be given maximum incentive to bring antitrust suits. Second, the problem of apportioning damages among direct and indirect purchasers would be so costly that it would decrease the incentives of any purchaser to sue. Third, even if direct and indirect purchasers were equally efficient antitrust enforcers, and even if allocation problems could be solved without seriously depleting the recovery pool, deterrence would be weakened if the right to sue were divided among more parties, so that each claim was relatively small.

The superior efficiency of enforcement by direct purchasers stems from the fact that "[t]he direct purchaser deals directly with the violator, and probably with his competitors, and he is therefore in a better position than a more remote purchaser to detect a conspiracy." Landes and Posner see no reason why direct purchasers would be reluctant to sue their suppliers and collect the bounty of treble damages unless they have been "bribed" in some way, in which case the bribe would have achieved much the same result as a damages award. They also assert

---

cases, there are significant gaps in their argument. If price fixers can use the threat of termination to deter direct purchasers from suing, one must wonder why they could not extract all of the direct purchasers' excess of revenues above avoidable costs, or "quasi-rents." In this context, costs are avoidable if they need not still be incurred if the firm switches suppliers or exits from the industry. Of course, if the price fixers already had extracted all of the direct purchasers' quasi-rents, then the direct purchasers would have nothing to lose and could not be deterred from suing by the threat of termination. If the price fixers could have extracted all of the quasi-rents of the direct purchasers but refrained from doing so, there may be good reasons for continuing to refrain from doing so. See M. Schwartz, Economic Controversies Raised by *Illinois Brick* 8-9 (1983) (unpublished manuscript on file with the authors).


47. Landes & Posner, supra note 33, at 608-09.

48. Id. at 609.

49. Id. at 613-14; Landes & Posner, *supra* note 46, at 1278.

This counter argument made by Professor Landes and Judge Posner to Professors Harris and Sullivan's argument on this point, see supra note 45 & accompanying text, is even more implausible than the latter's argument. Landes and Posner assert that if direct purchasers do not sue it is only because they have been bribed not to. There are persuasive reasons, however, why those bribes would not be offered. An agreement not to reveal illicit conduct would be illegal and unenforceable, so price fixers would have to seriously doubt the effectiveness of any such bribes. Furthermore, price fixers would open themselves up to blackmail if they tried to buy the silence of all direct purchasers. Each direct purchaser could threaten to expose the conspiracy, with the result of damages payments to all as well as possible criminal prosecution. If somehow the direct purchasers were able to offer their
that indirect purchasers will be compensated as fully under *Illinois Brick* as under a splitting-the-recovery rule because direct purchasers will lower prices in anticipation of recovery.50

Before turning to a more detailed analysis of the arguments relating to deterrence, a brief discussion of compensation is appropriate—particularly because the two goals are, to some extent, interrelated. While we agree with Professor Landes and Judge Posner, and the *Illinois Brick* majority, that deterrence is far more important than compensation,51 we must also agree with Professors Harris and Sullivan that *Illinois Brick* runs counter to the goal of compensation. It seems clear that in most cases indirect purchasers suffer significant injuries from upstream price fixing due to passing-on, yet under *Illinois Brick* they cannot recover for their injuries. Landes and Posner's assertion that indirect purchasers will be compensated as fully under *Illinois Brick* as under a "splitting-the-recovery" rule52 seems quite implausible.

Any anticipated recovery on the part of the direct purchasers can not be significant until a price fix is detected by one or more of them. Thus, indirect purchasers cannot be compensated as fully under *Illinois Brick* as under a splitting-the-recovery rule unless conspiracies are detected in their inception. When a conspiracy is detected at any point after its inception, the indirect purchasers will already have suffered some injuries due to the passing on of overcharges occurring before detection. In fact, indirect purchasers often may not be compensated at
all because conspiracies to fix prices frequently are detected only when
they collapse and prices fall. If a conspiracy is still ongoing at the time
that it is detected, the participants in the conspiracy, in order to limit
their civil and criminal liability, probably will cease their illegal activi-
ties as soon as they learn that the conspiracy has been detected—which
would probably occur shortly after the conspiracy was detected—and
the compensation to indirect purchasers probably still would be slight.
Finally, even if there was a significant period during which prices could
be lowered by direct purchasers in anticipation of future recovery, it
seems rather doubtful, practically speaking, that there would be a sig-
nificant price reduction.

Thus, denying indirect purchasers the right to recover damages
under *Illinois Brick* is contrary to the compensation goal. Nevertheless,
given our premise that the deterrence goal is far more important than
the compensation goal, *Illinois Brick* may still be a sound policy choice
if it significantly furthers the goal of deterrence. Whether it does so is
the focus of the next section.

**A Model of Private Detection of Price Fixing**

A preliminary question presents itself: Is there any way of verify-
ing empirically that *Illinois Brick* furthers the deterrence goal, at least
on the average? Our response is that probably there is not. The inci-
dence of price fixing is not readily observable and the available indica-
tors are inadequate. A dearth of price fixing cases could mean either
that there was little price fixing or that there was too little detection of
the price fixing. Moreover, detecting collusion is partly a matter of
chance. Thus, the fact that collusion was detected by a particular plain-
tiff attests partly to that plaintiff's diligence and skill and partly to its

---

53. Direct purchasers probably would not be able to keep their detection of the con-
sspiracy a secret for long, and would certainly give it away when they filed suit.

54. In the first place, there is considerable risk associated with the anticipated recovery
and, even in a competitive industry, risk-adverse firms would not lower their prices to the
point where the full expected recovery was passed on to the indirect purchasers. Moreover,
managers in the real world would be particularly reluctant to lower their prices to the point
that, in the short run, they were not earning their cost of capital. See R. McGuckin & R.
Pittman, Deterrence and Compensation Under the *Illinois Brick* Rule 12-13 (Econ. Policy
Off. Discussion Paper 83-8, 1983); see also Harris & Sullivan, *supra* note 43, at 1283-84;
Mantell, *supra* note 42, at 173-75. Even if managers were risk-neutral and behaved as
Landes and Posner suggest, the Landes-Posner result, *see supra* note 50, would not necessar-
ily follow in cases where direct purchasers had detected collusion and had anticipated future
recovery but indirect purchasers had not detected collusion and had not anticipated recov-
ery. In such cases, compensation of indirect purchasers under *Illinois Brick* could be either
more or less than under a splitting-the-recovery rule.
good fortune. Finally, prior to *Illinois Brick* there was not a consistent rule governing the apportionment of recovery between direct and indirect purchasers, so it would be very difficult to draw any conclusions from a comparison of the pre- and post-*Illinois Brick* worlds.

Our goal is to fill at least part of the void caused by the impossibility of empirical determination of *Illinois Brick*’s effect on deterrence by analyzing its logical implications through the use of an economic model. While our model is considerably simpler than the real world, it is realistic enough to permit plausible analysis.

We begin with the basic premise that the extent to which private treble-damages actions deter a potential price fixer depends on 1) the magnitude of the potential damages award to which the price fixer is exposed if successfully sued, and 2) the likelihood that such damages awards will be made. This second factor depends primarily on the likelihood that potential plaintiffs will detect the collusion and subse-

---

55. Several significant simplifications in the model should be noted:
1) a plaintiff either collects damages of a specified amount as a result of successful litigation, which entails specified costs, or it gets nothing and incurs specified costs;
2) settlements, which actually cause a wide range of outcomes, are ignored;
3) collusion is either detected or it is not;
4) as a result of the last simplification, the problem faced by plaintiffs of deciding to switch from the detection phase to the litigation phase is suppressed;
5) there are no plaintiffs, or plaintiffs’ attorneys, who undertake “fishing expeditions” to detect collusion by means of discovery;
6) potential plaintiffs do not cooperate in trying to detect collusion;
7) there are no “bounty-hunting” lawyers who undertake detection efforts on behalf of possible future clients; and
8) price fixing is assumed to cease, if it has not already, as soon as a treble-damages action is brought.

The first simplification has no effect at all on the results derived; it merely avoids the use of more complicated mathematics. The second simplification has very little effect so long as treble-damages actions are not baseless attempts to extort payment through quick settlement. The incentive to invest in detection clearly would be lessened by the ability to extort payment without investing anything in detection. If such is not possible, inclusion of settlements in the model would do little more than increase the complexity of the mathematics. The intuition for why the possibility of settlement makes little difference is quite simple. A plaintiff that really has detected collusion will settle his case only if the defendant offers at least as much as the expected net return from pursuing the litigation to conclusion. Thus, the incentive to invest in detection is basically unaffected by the possibility of settlement. The third, fourth, and fifth simplifications are discussed *infra* note 62; the sixth and seventh are discussed *infra* note 85.

56. At this point, we refer to “damages awards” as meaning the amount that a losing defendant pays out. Below, we distinguish between the damages “recovery” component of the total award, which is the damages (usually the overcharge) trebled, and the recovered “litigation costs” component, which plaintiffs’ are awarded under § 4. *See infra* notes 65, 67.

57. It depends as well, of course, on the possible profits to be made from fixing prices and the probabilities associated with those profits. The potential for collateral negative effects, such as adverse publicity if caught, also may have an impact.
quenty be able to meet their burdens of proof in court. This likelihood can be reduced to two separate probabilities: 1) the probability that potential plaintiffs will detect the collusion, and 2) the conditional probability that, if the collusion is detected, plaintiffs will be able to prove their case in court. The effect that *Illinois Brick* may have on deterrence stems from a change in the probability of detection caused by a change in the incentives to invest in the detection of price fixing.

The possibility that a potential plaintiff might detect collusion but decline to file a treble damages suit is ignored in our model. This entails no significant loss in generality. It is implausible that a potential plaintiff who would find it unprofitable to sue for damages upon detecting collusion would invest in the detection of collusion. Furthermore, it is highly unlikely that such a potential plaintiff nevertheless would detect collusion. If there were a substantial probability that potential plaintiffs would detect collusion without really trying, then the existing civil and criminal penalties for price fixing under section 1 of the Sherman Act should be sufficient to make collusion extremely rare and diminish the importance of both section 4 of the Clayton Act and the *Illinois Brick* debate.

The universe of potential plaintiffs relevant to the detection of any particular conspiracy can include numerous direct purchasers and, generally, even more numerous indirect purchasers. The latter can include...

---

58. The courts have required [proof] (1) that the plaintiff be injured in fact, (2) that the injury be to his “business or property,” (3) that the injury be of the type the antitrust laws were intended to prevent, (4) that there be a significant causal connection between the defendant’s violation and the plaintiff’s injury, and (5) that the injury flow from that which makes the defendant’s act unlawful. 2 P. AREEDA & D. TURNER, ANTITRUST LAW § 334, at 163 (1978). Thus, recovery is by no means certain even if the violation exists, and “knowing” of a violation is a far cry from proving it.

59. The definition of “detection” presents a few minor problems. It is defined here, more or less objectively, as the plaintiff uncovering sufficient evidence to justify the belief that collusion does exist. As an equivalent alternative, we may define detection as the plaintiff uncovering sufficient evidence that an attorney may sign a complaint seeking damages without violating the Federal Rules of Civil Procedure, which require the attorney to certify that the pleading “is well grounded in fact” and which provide for mandatory sanctions for violations. FED. R. CIV. P. 11. See also Miller & Culp, Litigation Costs, Delay Prompted the New Rules of Civil Procedure, NAT’L L.J., Nov. 28, 1983, at 24, 34. Either definition rules out the possibility of detection via the discovery process following the filing of a suit based on mere suspicion, as noted in our simplifications set forth supra note 55.

60. Under § 1, price fixing is a felony punishable by a prison sentence of up to three years or a fine of up to $100,000 for an individual, and $1,000,000 for a corporation, or both. 15 U.S.C. § 1 (1982). In addition, nearly all of the states prohibit price fixing, with a wide range of civil and criminal penalties. See, e.g., R. Fellmeth & T. Papageorge, A Treatise on State Antitrust Law and Enforcement 19-24, 51-60 (1978), reprinted as Supplement No. 1 to [July-Dec.] ANTITRUST & TRADE REG. REP. (BNA) No. 892 (Dec. 7, 1978).
firms at several points in the vertical supply chain, including ultimate consumers. To help sort out the various issues relating to the effect of *Illinois Brick* on deterrence, it is helpful at first to abstract somewhat from the real world by reducing the number of participants in the model. Thus, we assume initially that there will be only one direct purchaser and one indirect purchaser and consider how the amount invested in detection may be affected by awarding the exclusive right to recover to the direct versus the indirect purchaser. Then, we consider how the existence of large numbers of potential plaintiffs affects the aggregate level of investment in detecting collusion and the resulting probability of detection.

One may well ask whether use of this model can verify that *Illinois Brick* furthers the deterrence goal. Our answer is, again, probably not. Even if it were possible to take a census of direct and indirect purchasers and to measure litigation costs and transaction costs, it still would not be possible to verify whether *Illinois Brick* furthers deterrence because it would still be impossible to determine the precise nature of the detection technology, which is critical.

If There Were Only One Direct Purchaser and Only One Indirect Purchaser, to Which Should the Exclusive Right to Recover Be Assigned?

Consider a single potential plaintiff that must decide how much to invest in trying to detect collusion upstream in the vertical supply chain, knowing that the probability of its success is largely a function of how much it invests in the effort. An investment of D dollars yields a probability of detecting collusion of P(D). Investing more increases the probability of detection, but it does so at a decreasing rate—*i.e.*, the investment of each additional dollar will cause a positive incremental effect on the probability of detection, but the amount of each incremental effect will decrease as the amount invested increases. If, and only if, collusion is detected, will the plaintiff sue for damages and recover treble the amount of the overcharge with a probability designated as 0. It is assumed that if the price-fixing conspiracy has not already broken down, the suit would cause the price fix to end even if the plaintiff were unsuccessful and no damages were awarded.

---


62. *See supra* note 55. Further, even though the processes of detection and litigation are dynamic ones occurring over a long period of time, it is assumed that these processes
Choosing $D$ to Maximize Expected Profits

Thus, the problem confronted by the potential plaintiff is to choose the detection investment, $D$, that will maximize the plaintiff's expected profits\(^6\) which can be represented by the following expression:

\[
(1) \quad [1 - P(D)][\pi^0 - D] + P(D)(1 - \theta) [\pi^1 - D - L - T] + P(D)\theta[\pi^1 - D - T + R].
\]

The three terms in expression (1) represent the payoffs in the three possible outcomes of the plaintiff's investment in detection, multiplied by their respective probabilities.

The first term represents the outcome when collusion is not detected, which occurs with the probability $1 - P(D)$. In this outcome, the firm expects a certain amount of profits from its business operations,\(^6\) $\pi^0$, while losing the amount spent on its unsuccessful effort to detect collusion, $D$. In this outcome, since there is no litigation, no "litigation" or "transaction" costs are incurred and there is no recovery.

The second term represents the outcome when collusion is detected but the suit is unsuccessful. This occurs with probability $P(D)(1 - \theta)$, where $\theta$ is the probability that a suit is successful in recovering damages. In this case, the firm expects certain profits from its business operations, $\pi^1$, while losing the amount spent on detecting the collusion, $D$, "litigation costs,"\(^6\) $L$, and "transaction costs,"\(^6\) $T$, represented by $\pi^1 - D - L - T$. The firm's expectation of profits of $\pi^1$ rather than $\pi^0$ reflects, for example, the increase in expected profits caused by the occurrence instantaneously. This assumption does not affect the major qualitative results derived. Adding time to this model would simply require the addition of discounting factors to the various terms in, for example, expression (1), reflecting the fact that the rewards from detecting collusion are reaped some years after the investment is made and future dollars are worth less than present dollars.

For simplicity, it is assumed that the firms in the model are risk-neutral—\textit{i.e.}, the firms are indifferent between an uncertain lottery with an expected payoff of $X$ and a certain payoff of the same amount. Risk-adverse firms will invest less than risk-neutral firms, other things being equal, but the qualitative results derived below, involving direct versus indirect purchasers and the number of potential plaintiffs, are unaffected by attitudes towards risk unless they differ significantly between direct and indirect purchasers.

For simplicity, we consider only potential plaintiffs that are business firms. However, the model applies equally well to ultimate consumers if profits are reinterpreted as real purchasing power.

"Litigation costs" include all costs recoverable under § 4, including attorneys' fees, witness fees, copying costs, and so forth.

"Transaction costs" include all costs associated with litigation not recoverable under § 4, including fees of nontestimonial consultants and the salaries and wages paid to plaintiffs' employees for helping to prepare the litigation or testify in it.
ending of the price-fixing conspiracy. The distinction between the litigation and transaction costs is meant to correspond with the fact that certain costs, "litigation costs," are recoverable after a successful suit while others, "transaction costs," are not. Thus, unsuccessful litigation causes the loss of both L and T, while successful litigation entails the loss of T only.

The final term represents the outcome when the firm both detects collusion and successfully sues for damages. This occurs with a probability \( P(D) \theta \). The firm expects certain profits while losing the amount spent on detection and transaction costs and gaining the recovery,\(^{67}\) all of which is represented by \( \pi^1 - D - T + R \).

To maximize expected profits, a firm will invest in any particular activity up to the point at which an additional dollar of investment yields an expected return of one dollar. In this model, this means that the potential plaintiff firm will invest in detecting collusion up to the point at which an additional dollar of investment in detecting collusion yields an expected return of one dollar. This point occurs at the value of \( D \) that satisfies the following expression:

\[
P'(D) = \frac{1}{[\pi^1 - \pi^0 - T - (1 - \theta)L + \theta R]}.
\]

The quantity in the brackets is the expected net benefit gained by bringing a treble-damages action given that collusion has been detected.\(^{68}\) The net benefit is assumed to be positive, and \( P'(D) \) is the derivative of \( P(D) \).\(^{69}\)

Examining expression (2), we observe how changes in the values of the various variables affect the amount invested in detection and the

\(^{67}\) The term "recovery" as used here is the damages award itself, generally the overcharge trebled, not including costs and attorney's fees awarded under § 4.

\(^{68}\) If collusion is detected, the probability of detection, \( P(D) \), equals one. Thus, the firm expects to get profits equal to expression (1) evaluated at \( P(D) = 1 \). Noting that the first term in expression (1) equals zero if \( P(D) = 1 \) and that portions of the latter two terms cancel each other out, we see that expression (1) evaluated at \( P(D) = 1 \) is \( \pi^1 - D - T - (1 - \theta)L + \theta R \). If no suit is brought, the firm will get profits of \( \pi^0 - D \), and subtracting this from the previous expression yields the term in brackets in expression (2).

\(^{69}\) I.e., for any \( D \), \( P'(D) \) is the slope of \( P(D) \). The derivative of \( P(D) \), \( P'(D) \), is important here because economic decisions are made at the margin. The potential plaintiff evaluates the marginal benefit and marginal cost of each dollar invested and invests up to the point where marginal benefit just equals the marginal cost. In the model, the marginal benefit decreases as additional dollars are invested in the detection of collusion. This is because the probability of detection was assumed to increase at a decreasing rate as additional dollars are invested, that is, at higher levels of investment the probability-of-detection function is flatter than it is at lower levels of investment. Thus, its derivative, or slope, decreases as additional dollars are invested. See supra note 61.
resulting probability of detection. An increase in \( \pi^1 - \pi^0, R, \) or \( \theta \) increases the expected net benefit of the treble-damages action that would be brought if collusion is detected, and therefore results in an increase in both the amount that will be invested in detection and the resulting probability of detection. An increase in \( T \) or \( L \) decreases the expected net benefit of the treble-damages action, and therefore results in a decrease in both the amount that will be invested in detection and the resulting probability of detection.\(^70\)

**Choosing the Plaintiff—Direct or Indirect Purchaser?**

Assume that there is one direct purchaser and one indirect purchaser and that the issue is which of these purchasers is the appropriate potential plaintiff. There is no reason to believe that \( T, L, \) or \( \theta \) is affected by whether the potential plaintiff is a direct or indirect purchaser. Although *Illinois Brick* could affect all three of these variables, the effect would relate to the *number* of potential plaintiffs—not whether they were direct or indirect purchasers. For example, if a large number of indirect purchasers are potential plaintiffs, \( T \) and \( L \) may be

\(^70\) Note that an increase in \( L \) reduces the expected net benefit even though litigation costs are recoverable, because of the possibility that the action will be unsuccessful.

All the foregoing can be explained as follows. An increase (decrease) in the expected net benefit from a treble-damages action will cause a decrease (increase) in the right-hand side of the equation in expression (2). An equivalent decrease (increase) in the left-hand side will be necessary to maintain equality. Since, by our assumption, \( P'(D) \) falls as \( D \) rises, decreasing (increasing) the left-hand side of the equation requires increasing (decreasing) \( D \).

This can be demonstrated formally by totally differentiating expression (2):

\[
- \frac{(P'(D)(D))}{(P'(D)))^2} dD = (\pi^1 - \pi^0) - dT - (1 - \theta)dL + \theta dR + (R + L)d\theta.
\]

Defining \( A \) as \(-[P'(D)]^2/P''(D)\), and recognizing that \( P''(D) < 0 \) so \( A > 0 \), we get

\[
\frac{dD}{d(\pi^1 - \pi^0)} = A > 0
\]

\[
\frac{dD}{dT} = -A < 0
\]

\[
\frac{dD}{dL} = -(1 - \theta)A < 0
\]

\[
\frac{dD}{dR} = \theta A > 0
\]

\[
\frac{dD}{d\theta} = (R + L)A > 0.
\]

Now, since \( P'(D) > 0 \), it follows that increasing (decreasing) \( D \) also increases (decreases) \( P(D) \).
higher than if only a small number of direct purchasers are potential plaintiffs. But this stems from the difference in *numbers*, not from the fact that the potential plaintiffs are indirect, as opposed to direct, purchasers. In addition, since it is assumed that R includes the full overcharge caused by the price fix, whether the plaintiff is a direct or indirect purchaser does not affect R. Thus, the choice between a direct and an indirect purchaser must turn on differences in $\pi^1 - \pi^0$ or on differences in the probability-of-detection function, $P(D)$.

If the probability-of-detection function is the same for both direct and indirect purchasers, the one that would invest the most in detection is the one that has the highest $\pi^1 - \pi^0$, *i.e.*, the one that profits the most from stopping an ongoing conspiracy. In this simple model there is one direct and one indirect purchaser, and the one that benefits the most from stopping an ongoing conspiracy could easily be the indirect purchaser because it is reasonably likely that most of the overcharge suffered by the one direct purchaser will be passed on to the one indirect purchaser. In addition, if conspirators can credibly threaten to terminate direct purchasers should they sue, as Professors Harris and Sullivan suggest, it becomes even more likely that indirect purchasers will have more to gain from stopping the conspiracy. On the other hand, it can be argued that either the direct purchaser or the indirect purchaser likely would invest in detection because of the lure of bounty R. This is true even if the conspiracy is known to have ceased already and $\pi^1 - \pi^0$ equals zero. Indeed, even if $\pi^1 - \pi^0$ is negative for the direct purchaser because it passes on more than a hundred percent of the overcharge, the direct purchaser probably still would find it profitable to invest in detecting collusion because, due partly to the trebling under section 4, R is likely to be quite large. To simplify matters, it is assumed that either the direct or the indirect purchaser would invest in detection.

Now assume that $\pi^1 - \pi^0$ is the same for the direct and indirect

71. Although the effect may not be significant, increasing the number of plaintiffs is likely to increase the total number of attorneys involved and the total number of hours billed, as well as the length if not the number of pleadings. It also could increase the number of separate lawsuits filed. All of these things increase litigation costs. *See supra* note 65. In addition, increasing the number of plaintiffs is likely to increase the total costs of plaintiffs' employees' work on the case and thereby increase transaction costs. *See supra* note 66.

72. *See* Harris & Sullivan, *supra* note 42, at 351-53. For our response to this suggestion, and to Professor Landes and Judge Posner's counter-argument, see *supra* notes 45, 49.

73. It is possible that $\pi^1 - \pi^0$ is both positive and sufficiently large that a potential plaintiff, whether a direct or indirect purchaser, would invest in detecting collusion even if denied any possible recovery. However, it is assumed that this is not the case.
purchasers, and that they differ only in that they have different probability-of-detection functions, \( P(D) \). Professor Landes and Judge Posner persuasively argue that direct purchasers are closer to the price fixers and therefore have better access than indirect purchasers to the information most relevant to detecting collusion.\(^7\) Thus, direct purchasers are likely to be more efficient detectors in the sense that, for any positive, finite level of investment, the direct purchasers would achieve a greater probability of detection. Landes and Posner assert that this implies that direct purchasers should have the exclusive right to recovery. Their rationale is that this would cause more to be invested in detection and the probability of detection to be greater.\(^7\) However, in our model, with one direct purchaser and one indirect purchaser, the superior efficiency of the direct purchaser, as defined here, has no such implication. It is the incremental effect on the probability of detection of an additional dollar spent, given by \( P'(D) \), rather than the probability of detection itself, that is important in determining how much will be invested. Superior efficiency as defined here has no particular implications for \( P'(D) \).

The example depicted in the figure on the following page illustrates why the fact that direct purchasers are more efficient detectors of upstream collusion than indirect purchasers has no implications for \( P(D) \). In the upper panel of the figure, the probability-of-detection function for the indirect purchaser, \( P_0(D) \), is plotted. Also plotted are three alternative probability-of-detection functions for the direct purchaser, \( P_1(D) \), \( P_2(D) \), and \( P_3(D) \). Each of these three functions lies above \( P_0(D) \) for all positive, finite levels of investment.\(^7\)

Thus, with any one of the three alternative functions the direct purchaser would be a more efficient detector than the indirect purchaser—in keeping, for argument's sake, with Landes and Posner's assertion. However, with these probability-of-detection functions, both the amount invested, \( D \), and probability of detection, \( P \), can be either more or less for the direct purchaser than for the indirect purchaser.

---

\(^7\) Landes & Posner, supra note 33, at 608-09.

\(^75\) Id.

\(^76\) There is no basis for drawing any of the probability-of-detection functions as shown in the figure other than to merely illustrate various theoretical possibilities. This example illustrates the fact that because one probability-of-detection function lies above another implies nothing about either the relative amounts that would be invested or the resulting relative probabilities of detection. This could also be shown with an example that featured a single probability-of-detection function for the direct purchaser in our model and three alternative functions for the indirect purchaser.
Figure 1
In the lower panel of the figure, we have plotted the derivative function of each function in the upper panel, i.e., the slope at each point on the graph of the function in the upper panel. We also have plotted the graph of the constant, C, which is equal to the right-hand side of the equation in expression (2). For each probability-of-detection function, the expected-profit-maximizing level of investment is then determined in the lower panel by locating the intersection of the function's derivative function and the constant, C. Assuming, as we are, that the direct and indirect purchasers have the same values for all the parameters that determine C, the optimal expenditures would be as shown on the horizontal axis of the graph in the lower panel. For each value of optimal expenditures, the corresponding probability of detection is found by following a dashed line up to the relevant probability-of-detection function in the upper panel, then reading the resulting probability off the vertical axis. With $P_0(D)$, the indirect purchaser would invest $D_5$ and have a probability of detection of $P_0(D_5)$. With $P_1(D)$, the direct purchaser would invest $D_1$ and have a probability of detection of $P_1(D_1)$, which is greater than $P_0(D_5)$. This, most likely, is the result Landes and Posner envisioned. With $P_0(D)$, the direct purchaser would invest $D_2$, which is less than $D_5$, and still have a higher probability of detection. This also would be consistent with the conclusion of Landes and Posner. However, with $P_3(D)$, the direct purchaser would choose $D_3$, both investing less than the indirect purchaser and having a lower probability of detection. This is inconsistent with Landes and Posner's conclusion.

There is no reason to suppose that the probability-of-detection function of the direct purchaser is more likely to resemble $P_1(D)$ or $P_2(D)$ than $P_3(D)$. Each exhibits a kink reflecting the fact that there is much useful evidence that can be acquired relatively cheaply by direct purchasers, and that when all such evidence has been examined, it becomes much more costly to increase the likelihood that collusion will be detected. Therefore, in our model, with its one direct purchaser and one indirect purchaser, the fact that the direct purchaser is a more efficient detector, as Landes and Posner assert, does not imply that assigning the exclusive right to recover damages to the direct purchaser will enhance the probability that collusion will be detected.

### Conclusion

The foregoing demonstrates that, if there were just one direct and

---

77. A “kink” is a corner, though not necessarily a sharp one. Technically, a “kink” is a point at which there is a jump in the function's derivative or slope.
one indirect purchaser, there would be little basis for assigning the exclusive recovery right to the direct purchaser. It seems as likely as not that the assignment of the exclusive recovery right to the indirect purchaser instead of the direct purchaser would lead to a greater probability that collusion will be detected. This is mainly because of the likelihood that the direct purchaser will pass on a large portion of the overcharge caused by the price fix and thereby give the indirect purchaser a greater incentive to invest in detection because it is harmed more. The only clear-cut advantage in assigning the recovery right to the direct purchaser is that the costs of achieving any given level of deterrence would be minimized. Assuming that direct purchasers are likely to be more efficient at detecting collusion than indirect purchasers, assigning the recovery rights to the indirect purchaser could cause a waste of resources in the detection of collusion. That the direct purchaser will have lower detection costs does not imply, however, that assigning the recovery right to direct purchasers would be desirable, because it does not follow that lower detection costs will necessarily lead to either a greater investment in detection or an increased likelihood that collusion will be detected.

How Should Recovery Rights Be Allocated When There Are Many Potential Plaintiffs?

A price-fixing conspiracy in a market with many direct and indirect purchasers, rather than only one direct and one indirect purchaser, requires a more complicated model for analyzing the assignment of the right to recover damages. Consider a situation involving the same conspiracy as before, with the same effects on prices and the same quantities of the price-fixed product sold, and how matters are changed if there are many direct and many indirect purchasers instead of only one of each.78

This more complex situation changes three components of expression (2), which determines the optimal level of investment for an individual potential plaintiff. Two of these changes affect the right-hand side of expression (2). A multiplicity of direct and indirect purchasers who are potential plaintiffs reduces the expected net benefit of a treble-damages action for each potential plaintiff, as the pie must be divided

78. Since the quantity sold of the price-fixed product is the same in this case as it was in the simpler case, the implication of having more direct purchasers is that each of them purchases much less than the single direct purchaser in the simpler case. Having more indirect purchasers may have a similar implication or it may mean that there are more downstream links in the vertical supply chain.
into more pieces. Consequently, each potential plaintiff has a diminished incentive to detect collusion than it would if it were the sole potential plaintiff. The presence of many potential plaintiffs also may increase total litigation and transaction costs and thereby further reduce the incentive for each potential plaintiff to detect collusion.\(^7^9\)

The presence of many potential plaintiffs trying to detect collusion also affects the left-hand side of expression (2). Since all potential plaintiffs stand to benefit if any one potential plaintiff detects collusion, there is an important interdependence in the detection process that may cause the aggregate investment in detecting collusion to decrease. To simplify matters, we consider these effects on expression (2) separately.

**Reduction of Expected Net Benefits**

Having more potential plaintiffs but the same quantity sold of the price-fixed product causes the expected net benefit of a treble-damages action, represented by the term in brackets on the right-hand side of expression (2), to be smaller for each individual potential plaintiff. Each plaintiff would recover only the portion of the overcharge it had borne and presumably each would be required to pay a proportional share of the litigation and transaction costs. In addition, each plaintiff would receive only a fraction of the total increase in business profits from stopping the conspiracy. These factors would cause each potential plaintiff to have a correspondingly diminished incentive to invest in detecting collusion. The impact of a reduction of incentive to detect on the aggregate investment in detection is considered below in conjunction with the interdependence effect. At this point, however, it is useful to consider how a multiplicity of potential plaintiffs affects the relative incentives of individual direct purchasers and indirect purchasers.

The relative incentives to invest in detecting collusion for individual direct and indirect purchasers depend on the relative expected net benefits from a treble-damages action. The relative expected net benefit of each potential plaintiff would depend on the portion of the overcharge that is passed on to that plaintiff, the “passing-on rate,” and on the market share of that plaintiff. Unlike the situation with a single direct and a single indirect purchaser, a high passing-on rate need not result in higher expected net benefit for the individual indirect purchaser. Suppose there were ten identical direct purchasers and a thousand indirect purchasers all of which were just one link below the direct purchasers on the vertical supply chain. Even with a passing-on rate of

---

\(^7^9\). See *supra* note 71.
ninety percent, each direct purchaser would benefit much more from a treble-damages action than each indirect purchaser. Indeed, that would be the case even if there were no litigation and transaction costs and no expected recovery. Although indirect purchasers as a group may suffer more from an upstream price fix than direct purchasers as a group, the smaller numbers of direct purchasers may cause individual direct purchasers to have a greater incentive to detect collusion than individual indirect purchasers.

However, whether this generally will be the case is unclear. Often there are significantly more indirect than direct purchasers, particularly when there is collusion far upstream from the ultimate consumers in a vertical supply chain with several indirect purchaser links. Such is not always the case, but, even if it were, an extremely high passing-on rate could cause indirect purchasers to have a greater incentive to invest in detecting collusion because they would be hit with a larger portion of the overcharge. Of course, the incentive of either the direct or the indirect purchasers to detect collusion would be significantly greater if either group, not both groups, were assigned the exclusive right to recover damages.

*Increase in Litigation and Transaction Costs*

As in other kinds of litigation, increasing the number of potential plaintiffs in a treble-damages action may cause an increase in the aggregate litigation and transaction costs. This effect may not be particularly significant; however, other things being equal, any increase in litigation and transaction costs would decrease the aggregate incentive to detect collusion. Indeed, it could be argued that there should be only one potential plaintiff for this reason alone. Theoretically, limiting recovery to a single potential plaintiff would maximize the incentive to detect collusion, but this limitation is not among the realistic policy options available. The more realistic choices are to allow the potential plaintiffs to include: 1) all direct purchasers; 2) all indirect purchasers; 3) all of the indirect purchasers at some particular link in the vertical supply chain, such as the ultimate consumers; and 4) all direct and indirect purchasers. Although the number of potential plaintiffs alone may not significantly affect litigation and transaction costs, any

---

80. If each direct purchaser had as customers 10 indirect purchasers and each of them sold to 100 ultimate consumers, the number of indirect purchasers would be more than 1000 times the number of direct purchasers.

81. See supra note 71.
of the first three options may be preferred over the fourth because the numbers involved are sure to be smaller.

A much more important reason for preferring either the first or third option over the second or fourth option is that the former allow avoidance of the costs associated with apportioning the recovery between direct and indirect purchasers. This is a point stressed by the Illinois Brick majority as well as by Professor Landes and Judge Posner, and it is important because apportioning the recovery among extremely large numbers of plaintiffs at many different links in the vertical supply chain could increase litigation and transaction costs significantly. Assigning recovery rights to all indirect purchasers but not to any direct purchasers generally would not eliminate apportionment costs because in most cases there will be several groups of indirect purchasers located at various links in the vertical supply chain. As between the first and third options, the former is likely to be preferable (although possibly only slightly so) in most instances because direct purchasers generally are fewer in number than the indirect purchasers at any particular link in the chain. Thus, this second effect of an increase in the number of potential plaintiffs may favor assigning direct purchasers the exclusive right to recover damages, and definitely counsels against dividing the recovery between direct and indirect purchasers.

Interdependence Effect

The existence of multiple potential plaintiffs produces an interdependence effect that changes the left-hand side of expression (2). With many potential plaintiffs, the probability-of-detection function is a function of the amount invested by each potential plaintiff and indicates the probability that at least one of them will detect collusion. If any potential plaintiff detects collusion, all will participate in the suit for treble damages and all will share in any recovery. With a large

82. See supra text accompanying note 36 and infra note 83.
83. Illinois Brick, 431 U.S. at 731-32, 737, 741-45. The extent of these apportionment costs is an empirical issue on which there is little data. However, it would be the courts that control the nature of apportionment proceedings and, therefore, also the costs of apportionment. Thus, the Supreme Court's view on this matter must be given great weight. It should also be pointed out, as the Court has, that the fact that the recovery would be split into uncertain portions creates additional risk that may significantly discourage investment in detection. See id. at 745. This conclusion does not emerge from the model because risk neutrality was assumed. On the other hand, it must be conceded that there may be cases in which the costs of apportioning the recovery will be relatively low. See R. McGuckin & R. Pittman, supra note 54, at 19-24.
84. Landes & Posner, supra note 33, at 609, 615-21.
number of potential plaintiffs, each potential plaintiff has a very limited
effect on the probability that collusion will be detected. The investment
of an additional dollar in detection by a particular potential plaintiff
will increase the probability of detection much less if there are many
other potential plaintiffs trying to detect collusion than if that particu-
lar potential plaintiff were the only potential plaintiff. This is true be-
cause there is a significant likelihood that one of those other potential
plaintiffs will succeed in its detection effort, in which case that addi-
tional dollar invested by that particular potential plaintiff will contrib-
ute nothing. Thus, there is an important interdependence among
potential plaintiffs.

A critical feature of the probability-of-detection function deter-
mines the nature and extent of this interdependence. If, in their sepa-
rate efforts to detect collusion, potential plaintiffs would examine much
of the same kinds of information in the same order, then additional
plaintiffs do not contribute to the overall detection effort. Viewed in
conjunction with the fact that they share the recovery (the first effect of
multiple potential plaintiffs), this would cause each potential plaintiff to
invest less in detection and would make the probability of detection
lower than in the case of a single potential plaintiff. On the other hand,
if potential plaintiffs examine substantially different kinds of informa-
tion, then additional potential plaintiffs may have a positive effect on
the aggregate detection effort, causing an increase in the aggregate in-
vestment in detection of collusion. Indeed, if the efforts of potential
plaintiffs are synergistic, then the interdependence will have a positive
effect, encouraging each potential plaintiff to invest more than other-
wise would be the case. These results are more easily seen in a series
of examples.

First, consider the extreme case in which all potential plaintiffs ex-

85. Cooperation in detection, which would eliminate the interdependence effect, is un-
likely for many reasons. In the first place, cooperative activities of competitors would be
suspect under the antitrust laws. Antitrust concerns aside, there will be a powerful tendency
for each potential plaintiff to try to “free-ride” on the detection efforts of others since all can
sue for damages if any one detects. This free-rider tendency would prevent potential plain-
tiffs from participating in a workable cooperative detection scheme if it were possible to
design one. Moreover, it seems unlikely that a workable cooperative detection scheme could
be devised. A scheme in which potential plaintiffs mutually pledged to try to detect on their
own and share their results would fail because it would not be possible for the group to
monitor the detection activities of its members and the free-rider tendency would keep each
from fulfilling its pledge. Even without these problems, firms would be very reluctant to
provide the relevant information to rivals because it likely would be competitively sensitive.
A scheme in which all potential plaintiffs hired a third party, such as a lawyer, to detect on
its own would be extremely inefficient because it is the potential plaintiffs that have the best
access to much of the most useful information.
amine exactly the same kinds of information in exactly the same order. The probability that at least one potential plaintiff will detect collusion in this case is simply the greatest probability of detecting collusion by any individual plaintiff. This is symbolically represented, for n potential plaintiffs, by expression (3) where max [ ] denotes the greatest element in the series inside the brackets:

\[
P = \max[P_1(D_1), P_2(D_2), \ldots, P_n(D_n)].
\] (3)

Although all potential plaintiffs would examine exactly the same information in exactly the same order in their respective efforts to detect collusion, it is still possible that one or more of the potential plaintiffs can acquire and examine this information at a lower cost than the others. Thus, their individual probability-of-detection functions may be different.

In equilibrium\textsuperscript{86} only one potential plaintiff will invest anything in detecting collusion. Consider the problem of an individual potential plaintiff, denoted number 1, choosing a level of investment to maximize expected profits given that all other potential plaintiffs will spend nothing. This problem is identical to that analyzed in the simple case above except that number 1 now receives only a fraction of the total benefits from detecting collusion and pays only a fraction of the litigation costs. Because of this, number 1 would choose a level of investment that would be less than if there were no other potential plaintiffs sharing the benefits of recovery and the costs of litigation.\textsuperscript{87} Now consider what

\textsuperscript{86} The equilibrium concept used here is "Nash, noncooperative equilibrium," which is defined as an outcome in which each player's independent action is optimal, taking as given the actions of the others. See R. LUCE & H. RAFFA, GAMES AND DECISIONS 170-71 (1957). The Nash, noncooperative equilibrium concept would be inappropriate if it were possible for all potential plaintiffs to cooperate and if the costs of doing so were relatively small. In such a case, they would contract among themselves to eliminate any adverse interdependence effects. We assume, as the courts and other commentators have, cf. Illinois Brick, 431 U.S. at 725-26; Landes & Posner, supra note 33, at 609-11, that such a cooperative solution is not feasible with respect to detection. Class actions may permit a cooperation of sorts in litigation, but in no way affect detection. See supra note 85.

\textsuperscript{87} The level of investment that will be chosen must satisfy the following expression:

\[
P'_1(D_1) = 1/ (\pi_1 - \pi_0 + \lambda_1 [- T - (1 - \theta) L + \theta R])
\]

\(\lambda_1\) is number 1's share of the total recovery and litigation and transaction costs, while \(T, L,\) and \(R\) represent the total quantities for all direct and indirect purchasers as a group and \(\pi_1 - \pi_0\) is the net effect of stopping the conspiracy on number 1's business profits. If, as assumed above, the quantity in brackets is positive, the right-hand side of the equation is greater than it would be if \(\lambda_1\) equalled one, as would be the case if number 1 were the only potential plaintiff. And because it was assumed that \(P_1(D_1)\) decreases as \(D_1\) increases, it must be the case that the value of \(D_1\) chosen will be less than that if \(\lambda_1\) equaled one.
other potential plaintiffs would do if they knew that number 1 was investing as just described. Another potential plaintiff would find itself no better off if it began investing in detection unless it spent the amount required to cause its probability of detection to exceed number 1's probability of detection. Unless this other potential plaintiff is much more efficient than the number 1, it will find spending this much undesirable and will spend nothing. If another potential plaintiff does spend that much, then number 1 will be contributing nothing to detection and will reduce its expenditures to zero.

Thus, in equilibrium only one potential plaintiff will spend anything on detection, and since any potential plaintiff could be "number 1," there will be more than one equilibrium unless one of the potential plaintiffs is a much more efficient detector than the others. Indeed, if the various potential plaintiffs all have very similar individual probability-of-detection functions, any one of them may be the one spending in equilibrium. Moreover, because the one plaintiff that does spend on detection will have to share the benefits of recovery and the costs of litigation, the amount spent on detecting collusion and the probability that collusion will be detected will be lower than if that one potential plaintiff were given the exclusive right of recovery.

A very similar result is obtained if all potential plaintiffs had the same information available to them but did not duplicate their detection activities. Suppose that each potential plaintiff could obtain the same information as all others at the same cost and that each potential plaintiff could avoid examining any evidence that was already examined by another. The probability of detection in this case will be a function of the sum of the expenditures of the individual potential plaintiffs, symbolically represented by expression 4:

\[ P = P(D_1 + D_2 + \ldots + D_n). \]  

(4)

This is the one case examined by Professor Landes and Judge Posner, and the equilibrium is as they described.88 If, given that collusion has been detected, there is a potential plaintiff that expects a significantly larger net benefit from a treble-damages action than any other potential plaintiff, then there is a unique equilibrium in which only that potential plaintiff invests in detection. This plaintiff will choose a level of investment to satisfy expression (2), with the right-hand side modified

88. See Landes & Posner, supra note 33, at 622-24 & n.42. Their expressions (8)-(11) are written slightly differently than the expressions set forth here, but are essentially equivalent.
because it receives only a fraction of the benefits and pays only a fraction of the litigation costs. The amount that this plaintiff will invest and the resulting probability that collusion will be detected will be lower than if this potential plaintiff had the exclusive right of recovery and, therefore, received the full benefits of recovery while paying all the litigation costs.89

Now consider a case in which there is some duplication of effort but each potential plaintiff also has something unique to contribute to the overall detection effort in that each potential plaintiff either has access to information that the others do not or, at least, each can obtain some information at a lower cost than all others.90 There are many probability-of-detection functions that exhibit these properties. To make the analysis as simple as possible, we consider the case in which the potential plaintiffs are identical in all respects and the aggregate probability-of-detection function is quadratic.91 Symbolically, the aggregate probability, P, is represented by expression (5):

89. If two or more potential plaintiffs share the largest expected net benefit of a treble damages action, there will be an infinite number of possible equilibria, each of which entails the same total investment in detecting collusion as would occur if a single potential plaintiff had the largest expected net benefit from a treble-damages action. There are an infinite number of possible equilibria because this level of investment can be divided among two or more potential plaintiffs in infinitely many ways.

90. It is at least possible that both direct and indirect purchasers have available to them information that is useful in detecting collusion and that the information each has is much more useful in conjunction with the information of others than it is in isolation. If this were the case, then for any given level of total investment the greatest probability of detection would be achieved by splitting the recovery among potential plaintiffs. The total amount invested in detecting collusion and the probability that collusion will be detected would fall if the number of potential plaintiffs was reduced from two to one. We do not, however, believe this to be the usual case.

91. The quadratic specification is adopted because of the simplicity of analysis it permits, i.e., simplifying the derivations. There is no particular economic basis for this specification. Indeed, it is not consistent with all of the assumptions about the probability-of-detection function made above. A quadratic function increases over part of its range and decreases over part of its range, whereas it was assumed above that the probability-of-detection function was increasing throughout its range for increasing amounts of investment. Still, the increasing portion of a quadratic function is a reasonable specification, at least for illustrative purposes, because it effectively captures the various phenomena one would expect to find in the real world and is flexible enough to allow these phenomena to vary in relative importance.
\[
P = \alpha(D_1 + D_2 + \ldots + D_n) \\
-(\beta/2)(D_1^2 + D_2^2 + \ldots + D_n^2) \\
-\delta(D_1D_2 + D_1D_3 + D_1D_4 + \ldots + D_1D_n) \\
-\delta(D_2D_3 + D_2D_4 + \ldots + D_2D_n) \\
\ldots \\
-\delta D_{n-1}D_n.
\]

The parameters \(\alpha\), \(\beta\), and \(\delta\) are all positive numbers.92

The effect of the interdependence among potential plaintiffs in the quadratic case depends on the values of the parameters in the probability-of-detection function, especially on \(\delta/\beta\). An examination of the probability-of-detection function indicates why this is the case. Expression (5) contains two types of terms that enter the function negatively. One type contains the square of each potential plaintiff's investment in detecting collusion multiplied by \(\beta/2\). The other contains the product of one potential plaintiff's investment and the investment of another potential plaintiff multiplied by \(\delta\). Thus, the parameter \(\delta\) reflects the extent to which the efforts of different potential plaintiffs involve wasteful duplication, while \(\beta\) reflects the rate at which each potential plaintiff's incremental productivity falls as it invests more in detection. If \(\delta\) is large relative to \(\beta\), the duplication-of-effort effect is stronger than the diminishing-returns-to-individual-effort effect, and it will be seen that for any given level of aggregate investment, the greatest probability of detection is achieved if all is invested by a single potential plaintiff. If this condition is met, there may be said to be a "natural monopoly" in detecting collusion. This natural-monopoly condition is sufficient, but not necessary, to guarantee that the total amount invested in detecting collusion and the probability that it will be detected will be greater with one potential plaintiff than with two or more potential plaintiffs.93 On the other hand, if \(\beta\) is large relative to \(\delta\),

92. These three parameters are simply numbers, the values of which have not been specified in advance. Parameters are used to allow flexibility. As will be seen presently, depending on the values, particularly the relative values, assumed by parameters, different effects predominate and different results are obtained.

93. If reducing the number of potential plaintiffs from two to one would increase the amount invested in detecting collusion, then it can be shown that reducing the number of potential plaintiffs from \(n\) to \(m\), \(m < n\), also would increase the amount invested—unless \(m\) is so large that nothing would be invested. The reverse, however, is not true. If reducing the number of plaintiffs from two to one would decrease the amount invested in detecting collusion, reducing the number of potential plaintiffs from \(n\) to \(m\) might increase or decrease the amount invested.
it will be seen that the greatest probability of detection is achieved if the investment is spread among many potential plaintiffs.

These implications can be seen by analyzing the equilibrium produced by the quadratic probability-of-detection function and considering some numerical examples. If \( n \), the number of potential plaintiffs, is less than or equal to \( \alpha/C \), where \( C \) is the entire right-hand side of the equation in expression (2), with \( \pi^1 \), \( \pi^0 \), \( T \), \( L \), and \( R \) defined as industry aggregate values, the equilibrium level of investment in detecting collusion for each potential plaintiff is represented by expression (6):

\[
(\alpha - nC)/[\beta + (n - 1)\delta].
\]

94. If \( n \) is greater than or equal to \( \alpha/C \), nothing will be invested in detecting collusion. For \( n = \alpha/C \), the equilibrium level of investment given by expressions (6) and (7) is exactly zero. For \( n > \alpha/C \), expressions (6) and (7) indicate that the equilibrium level of investment is negative, but it is not possible to invest a negative amount, so zero will be invested. If \( n > \alpha/C \), the derivative of the probability-of-detection function is below the \( C \) line for all nonnegative values of investment.

95. It is assumed that \( \pi^1 \), \( \pi^0 \), \( T \), \( L \), and \( R \) all are independent of the number of potential plaintiffs. Adding potential plaintiffs, therefore, only means that each of them pays a smaller proportion of transaction and litigation costs and receives a smaller proportion of the recovery.

96. The condition that defines the equilibrium is the same as expression (2), with three exceptions. First, there is a separate equation for each of the \( n \) potential plaintiffs, and all \( n \) equations must be satisfied in equilibrium. Second, the left-hand sides of these \( n \) equations are the (partial) derivatives of the probability-of-detection function with respect to each \( D_i \), the amount invested by each potential plaintiff. Third, since all potential plaintiffs were assumed to be identical, the right-hand sides of the \( n \) equations are the same, but they differ from that in expression (2) in that each potential plaintiff has only a \( 1/n \) share of the costs and benefits of detecting collusion. The right-hand sides of the equations, thus, are:

\[
\frac{1}{n}[\pi^1/n - \pi^0/n - T/n - (1 - 0)L/n + 0R/n]
\]

or

\[
\frac{n}{[\pi^1 - \pi^0 - T - (1 - 0)L + 0R]}
\]

This can be written simply as \( nC \).

Consider now the left-hand side of the \( n \) equations. In each case, it is the (partial) derivative of the probability-of-detection function, expression (5), with respect to one of the \( D_i \)s. Taking these derivatives is quite simple because of the nature of the function assumed. It consists of the sum and difference of many simple terms, each of which can be differentiated separately. We also can note that the derivative of \( aX \), where \( a \) is any number, is \( a \), the derivative of \( aX^2 \) is \( 2aX \), and the (partial) derivative of \( aYX \) with respect to \( X \) is \( aY \). See, e.g., A. CHIANG, supra note 61, at 161-66, 181-82; W. BAUMOL, supra note 61, at 45-47, 58-59. Thus, the (partial) derivative of expression (5) with respect to \( D_1 \) is

\[
\alpha - \beta D_1 - 8(D_2 + D_3 + \ldots + D_n).
\]

Similarly, the (partial) derivative with respect to any \( D_i \) is

\[
\alpha - \beta D_i - 8(D_1 + D_2 + \ldots + D_{i-1} + D_{i+1} + \ldots + D_n).
\]

Now since all \( n \) of these derivatives must equal the same thing (\( nC \)), they all must be equal to each other, and all of the \( D_i \)s must be equal. Thus, the \( n \) equations that define the equilibrium all can be written as
Multiplying by \( n \) produces the aggregate investment for all \( n \) potential plaintiffs given by expression (7):

\[
\frac{(n\alpha - n^2C)}{[\beta + (n - 1)\delta]}.
\]

(7)

To see how the number of potential plaintiffs affects the total amount that will be invested in detection and the resulting probability of detection, we consider the effect of going from two potential plaintiffs to one. Substituting \( n = 2 \), and then \( n = 1 \), into expression (7) demonstrates that reducing the number of potential plaintiffs from two to one causes total expenditures on detecting collusion to increase, decrease, or stay the same depending on whether \( \delta/\beta \) is greater than, less than, or equal to \( (\alpha - 3C)/(\alpha - C) \).\(^9\) For example, if we let \( \alpha = .05 \), \( \beta = .008 \), \( \delta = .004 \), and \( C = .01 \), then \( \delta/\beta \) and \( (\alpha - 3C)/(\alpha - C) \) both will equal 1/2. Substituting these values into expression (7), we see that, with either one potential plaintiff or two potential plaintiffs, the total amount invested in detection will be 5. With a smaller value for \( \delta \), like \( \delta = .002 \), and the same values for all other parameters, \( \delta/\beta \) will be less than \( (\alpha - 3C)/(\alpha - C) \). In this situation, two potential plaintiffs would invest 6, while one potential plaintiff would still invest 5. On the other hand, with a larger value for \( \delta \), like \( \delta = .007 \), and the same values for all other parameters, \( \delta/\beta \) will be greater than \( (\alpha - 3C)/(\alpha - C) \). In this situation, two potential plaintiffs would invest 4, while one potential plaintiff still would invest 5.

Similarly, by substituting the equilibrium level of investment for

\[
\alpha - \beta D_i - (n - l)\delta D_i = nC,
\]

or

\[
\alpha - [\beta + (n - l)\delta]D_i = nC.
\]

This is easily solved for \( D_i \) to get expression (6).

\(^9\) For \( n = 2 \), aggregate investment is

\[
\frac{(2\alpha - 4C)}{(\beta + \delta)}.
\]

For \( n = 1 \), aggregate investment is

\[
\frac{(\alpha - C)}{\beta}.
\]

Now

\[
\frac{(\alpha - C)}{\beta} \equiv \frac{(2\alpha - 4C)}{(\beta + \delta)}
\]

implies that

\[
\alpha\beta - C\beta + \alpha\delta - \alpha\delta \equiv 2\alpha\beta - 4C\beta
\]

or

\[
(\alpha - C)\delta \equiv (\alpha - 3C)\beta
\]

or

\[
\delta/\beta \equiv (\alpha - 3C)/(\alpha - C).
\]
each potential plaintiff, represented by expression (6), back into the probability-of-detection function, represented by expression (5), it can be shown that reducing the number of potential plaintiffs from two to one will cause the probability of detection to increase, decrease, or stay the same depending on whether $\delta/\beta$ is greater than, less than, or equal to $(\alpha^2 - 7C^2)/(\alpha^2 - C^2)$.\(^{98}\) If we let $\alpha = .05$, $\beta = .008$, $\delta = .006$, and $C = .01$, then the probability of detection with either one potential plaintiff or two potential plaintiffs is .15. With $\delta = .004$, however, the probability of detection with two potential plaintiffs is .175, while it is still .15 with one potential plaintiff. And with $\delta = .007$, the probability of detection with two potential plaintiffs is .14, while it remains .15 for one potential plaintiff.

Thus, for the probability-of-detection function represented by expression (5), both the total amount invested in detecting collusion and the probability that it will be detected may be greater, less, or the same with two potential plaintiffs than with one potential plaintiff. Moreover, it is possible that going from two potential plaintiffs to one would cause the total amount invested in detection to rise while the probability of detection falls or vice versa. This demonstrates that any effect of changing the number of potential plaintiffs is possible in the-

---

98. First, let $n = 1$ in expression (6), so that $D_1$ equals $(\alpha - C)/\beta$. Substitute this back into expression (5), producing:

$$P = \alpha \frac{(\alpha - C)}{\beta} - \frac{(\beta/2) (\alpha - C)^2/\beta^2}{2\beta} = (\alpha - C)\alpha/\beta - (\alpha - C)^2/2\beta = (2\alpha^2 - 2\alpha C - \alpha^2 + 2\alpha C - C^2)/2\beta = (\alpha^2 - C^2)/2\beta.$$ 

Second, let $n = 2$ in expression (6), so that $D_1$ and $D_2$ both equal $(\alpha - 2C)/(\beta + \delta)$. Substitute this into expression (5), producing:

$$P = \alpha \sqrt{2(\alpha - 2C)/(\beta + \delta)} - (\beta/2) 2(\alpha - 2C)^2/(\beta + \delta)^2 - \delta (\alpha - 2C)^2/(\beta + \delta)^2 = 2\alpha(\alpha - 2C)/(\beta + \delta) - (\alpha - 2C)^2/(\beta + \delta) = (2\alpha^2 - 4\alpha C - \alpha^2 + 4\alpha C - 4C^2)/(\beta + \delta) = (\alpha^2 - 4C^2)/(\beta + \delta).$$ 

Now

$$\frac{\alpha^2 - C^2}{2\beta} \equiv \frac{\alpha^2 - 4C^2}{(\beta + \delta)}$$

implies

$$\frac{\alpha^2}{\beta} - C^2\beta + \alpha^2\delta - C^2\delta \equiv 2\alpha^2\beta - 8\alpha^2\beta$$
or

$$\frac{(\alpha^2 - C^2)\delta}{\beta} \equiv \frac{(\alpha^2 - 7C^2)\beta}{\alpha^2 - C^2}.$$
ory. However, it should also be noted that, if all other parameters are held constant, increasing the number of potential plaintiffs must cause the total amount invested in detecting collusion to fall if the number of firms is sufficiently large. This must be the case because, for all values of \( n \) greater than \( \alpha/C \), nothing will be invested in detecting collusion. Thus, having very large numbers of potential plaintiffs is likely to be detrimental to detection of collusion in general.

Under certain circumstances, \textit{i.e.}, when the duplication-of-effort effect is stronger than the diminishing-returns-to-individual-effort effect, a rule like that of\textit{Illinois Brick} could be highly desirable. Indeed, it could be desirable to have just one potential plaintiff. If we again consider the realistic choices to be all direct purchasers, all indirect purchasers, some particular class of indirect purchasers, or all direct and all indirect purchasers, then the first probably would be the best choice and the last definitely would be the worst choice. Whether probability-of-detection functions in the real world are such that \textit{Illinois Brick} makes sense, however, is not possible to know. It is plausible that detecting collusion is a natural monopoly, at least in many industries, because it is likely that all potential plaintiffs would have access to basically the same information. Moreover, because generally there will be fewer direct purchasers than indirect purchasers, under \textit{Illinois Brick} there will be a less serious interdependence problem to lessen the incentive for direct purchasers to detect collusion. Furthermore, this interdependence effect may be reinforced by the effects of multiple potential plaintiffs on litigation and transaction costs. Thus, there is a case for \textit{Illinois Brick} in that it certainly is plausible that restricting the number of potential plaintiffs will cause more to be invested in detecting collusion and increase the likelihood that it will be detected.

\textit{Conclusion}

It was seen that if there were a single direct purchaser and a single indirect purchaser, one of which would be assigned the exclusive right

99. \textit{See supra} note 94.
100. Eliminating indirect purchasers as potential plaintiffs in some situations would, however, significantly weaken deterrence. It was assumed that \( \delta \) was positive because there was some duplication of effort among potential plaintiffs. One can imagine that \( \delta \), at least that between a direct and an indirect purchaser, is negative rather than positive because of synergistic effects in the detection of collusion by the two types of potential plaintiffs. This may occur because the detection efforts of potential plaintiffs somehow make others more efficient detectors. \textit{See supra} note 90. However, it is difficult to see why that would be the case. A more realistic possibility arises when different detectors have very different tools that work best in conjunction. The most likely situation in which that would occur is discussed \textit{infra} text accompanying note 106.
to recover damages, there would be little basis for assigning it to the
direct purchaser. The rationale of *Illinois Brick*, however, has consid-
erable appeal when the implications of multiple direct and indirect
purchasers are considered. There are important reasons why limiting
the number of potential plaintiffs may further the goal of deterrence
and, in particular, why denying recovery rights to indirect purchasers
may be desirable. When the numbers of potential direct and indirect
purchaser plaintiffs likely to exist in "real world" cases are taken into
account, direct purchasers are likely to have a greater incentive to in-
vest in detecting collusion than indirect purchasers. It is likely that
there will be far more indirect purchasers than direct purchasers, so
that, even with a high passing-on rate, individual direct purchasers are
likely to have greater expected returns from detecting collusion and,
thus, a greater incentive to detect collusion. In addition, large numbers
of plaintiffs may increase (if only slightly) total litigation and transac-
tion costs and thereby decrease the incentive to detect collusion. More
importantly, having both direct and indirect purchaser plaintiffs, in-
deed having indirect purchaser plaintiffs at all in most cases, requires
that the recovery be apportioned among various links in the vertical
supply chain—and the costs of the apportionment are likely to be
substantial.

The critical issue with respect to the numbers of potential plain-
tiffs, however, is not whether increasing the number of potential plain-
tiffs will lessen the incentive of each *individual* plaintiff to invest in
detection, but whether the *group* of all potential plaintiffs will invest
less in detection and whether the overall probability that collusion will
be detected will fall. With many potential plaintiffs, there is an impor-
tant interdependence effect; the efforts of each to detect collusion affect
the incentives of all others to do so. The precise nature of this interde-
pendence effect depends, in general, on the specific probability-of-de-
tection function that exists. In particular, it depends on whether and to
what extent each potential plaintiff's ability to increase the probability
that collusion will be detected is affected by the detection efforts of
others. If, as seems reasonably likely, various potential plaintiffs would
examine much the same information in much the same order, then it is
likely that this interdependence would cause increased numbers of pot-
tential plaintiffs to lower the aggregate level of investment in detecting
collusion and thereby reduce the probability that collusion will be
detected.

Because direct purchasers generally are fewer in number than in-
direct purchasers, the severity of this interdependence effect is likely to
be less when direct purchasers are assigned the exclusive right to recover damages than when indirect purchasers are assigned the exclusive right. Indeed, it is reasonably likely that the indirect purchasers at any one link of the vertical supply chain will be more numerous than the direct purchasers, and therefore that the interdependence effect would be more pronounced if just that class of indirect purchasers were assigned the exclusive right to recovery than if that right were assigned to direct purchasers. A fortiori, the interdependence effect will be minimized when any single group of purchasers, be it direct purchasers or a single class of indirect purchasers, is assigned the exclusive right to recover damages instead of dividing that recovery among all of them. In most cases the effect will be most effectively minimized by assigning the right to direct purchasers.

Possible Exceptions to *Illinois Brick* and the Optimal Legal System

The foregoing recognized the possibility of situations in which *Illinois Brick* may be inappropriate because assigning the exclusive right to recover damages to direct purchasers would not further the deterrence goal. Without commenting on the wisdom of existing exceptions\(^ {101} \) or trying to articulate new ones, it is useful to consider the proper policy toward exceptions to *Illinois Brick* in general. The discussion of our model provides two important guides. First, there are persuasive reasons for not splitting the recovery among plaintiffs at different links of the vertical supply chain, and it would take a most unlikely set of circumstances to overcome them. If there are to be exceptions, they generally should be cases in which indirect purchasers at a single link of the vertical supply chain are assigned the exclusive right to recover damages instead of direct purchasers. Second, any exceptions should be sufficiently clear cut so that there is little doubt about which class of indirect purchasers may recover damages instead of direct purchasers. Rules that assign exclusive recovery rights to various classes of potential plaintiffs depending on certain conditions could have effects at least as detrimental on deterrence as rules that apportion the recovery among plaintiffs at various links of the vertical supply chain, unless it is abundantly clear when those conditions exist. The problem would be particularly acute if litigation were necessary to resolve the question of recovery rights: prior to the resolution of the recovery-rights issue, several classes of potential plaintiffs would have a

positive probability of recovering, so the situation would be theoretically equivalent to one in which the recovery would be divided among them.\textsuperscript{102}

It is also useful to apply these policy guides to pending legislative proposals that seek to modify the \textit{Illinois Brick} rule. Legislation pending in Congress would allow state attorneys general to seek treble damages on the state's behalf for injuries the state had suffered from price fixing, as well as on behalf of local governments and ultimate consumers in their states even if they were not direct purchasers.\textsuperscript{103} The federal government also would be permitted to recover single damages for injuries that it suffered from price fixing as an indirect purchaser.\textsuperscript{104} In addition, the legislation would permit direct purchasers to retain the right to recover.\textsuperscript{105} Viewed together, these modifications would have the effect of causing 1) an increase in the litigation and transaction costs by requiring that damages be apportioned between direct and indirect purchasers, and 2) a reduction in the incentive of private direct purchasers to detect collusion. Thus, it seems highly likely that deterrence would be lessened by these modifications. Apportioning damage recovery between governmental and private plaintiffs is particularly deleterious to deterrence because, unlike private parties, potential governmental plaintiffs cannot be expected to invest more in detection when they are given a share of the recovery. The amount of governmental investments in detecting collusion may be set according to cost-benefit calculations for consumer welfare or on the basis of purely political considerations, but it almost certainly is not set so as to maximize the governments' revenues. If governments desire to raise revenue by "taxing" price fixers, they should increase the fines they impose. This would also further deterrence by increasing the penalties that price fixers would incur if caught.

Although the proposed modifications of the \textit{Illinois Brick} rule do

\textsuperscript{102} A risk-neutral potential plaintiff, as assumed in our model, would view these two situations as exactly the same. However, a risk-averse potential plaintiff would perceive an important difference. An all-or-nothing allocation rule makes the anticipated recovery much riskier than a splitting-the-recovery rule in which potential plaintiffs would get something. This increased risk is likely to cause a reduction in the amount invested in detecting collusion if potential plaintiffs are risk averse.


\textsuperscript{104} The limitation on damages recoverable by the federal government is not new. \textit{See} 15 U.S.C. § 15a (1982).

not appear desirable from the standpoint of deterrence, they do raise an important set of issues, not discussed in this Article, dealing with the optimal legal system. This Article has considered only detection by private potential plaintiffs and its resulting deterrence implications. However, price fixing is prohibited by both federal and state law, and both levels of government help to deter it both by trying to detect it and by causing price fixers that are caught to pay fines or suffer imprisonment. Thus, the question arises whether deterrence could be furthered by making antitrust enforcement either exclusively private or exclusively public.

The quadratic example of our model, expression (5), can be used to determine the likely effect on deterrence of having both private and public antitrust enforcement by means of the treble-damages action. The effect on private investment in detecting collusion caused by adding governmental detection efforts is much like that of adding an additional private potential plaintiff. However, it is highly likely that there are significant synergies between public and private detection efforts and, therefore, that deterrence is furthered by adding governmental detection efforts. The synergy flows from the fact that private parties have much better access than public parties to information that can suggest a significant likelihood of collusion, while public parties have superior tools to ferret out concrete evidence. Private parties deal with possible price fixers first hand, and at little cost may be able to identify situations in which there is a significant likelihood of collusion. Public parties can then use grand juries and civil investigative demands to determine whether there is, in fact, collusion and to compile the proof that can be used against the defendants.106

---

106. We believe that the analysis in this Article is sufficient, at least with regard to price fixing, to overcome arguments that have been made against treble-damages actions in general. These arguments are three-fold: 1) private plaintiffs can profit by not suing immediately, or otherwise mitigating damages, and therefore have an incentive to delay actions that would cause conspiracies to cease; 2) private plaintiffs may be able to profit by bringing unmeritorious lawsuits if defendants will pay to settle them rather than litigate; and 3) the process of damage assessment and payment wastes significant resources. See K. ELZINGA & W. BREIT, THE ANTITRUST PENALTIES 81-96 (1976). We will consider them in reverse order. The third argument is valid but of dubious importance. The rule of Illinois Brick and the overcharge method of measuring damages have minimized the costs of treble-damages actions. These costs are probably a small price to pay for the added deterrence effect achieved by having private treble-damages actions and thereby providing a powerful incentive for private investment in detecting price fixing. The second argument also is valid, but it is not an argument against treble-damages actions. Unmeritorious private lawsuits could be eliminated by amending the antitrust laws to permit treble-damages actions only after a successful government action for the same violation. The first argument is the most persuasive, but it too may not be an objection inherent to private treble-damages actions. It might
Conclusion

The *Illinois Brick* Court's rationale for giving direct purchasers the exclusive right to recover damages was that doing so would significantly further the goal of deterring antitrust violations.\(^{107}\) Using an economic model, we assessed the validity of the Court's rationale by analyzing how the allocation of the right to recover damages affects both the incentives of potential plaintiffs to detect collusion and the probability that collusion will be detected. This analysis led to our conclusion that there clearly is a rational basis for the *Illinois Brick* rule, but it is not compelling. Although none of our conclusions are particularly clear cut, assigning exclusive recovery rights to direct purchasers probably enhances deterrence under likely market conditions. It appears quite likely that, in important respects, the existing legal system closely resembles the optimal legal system. Major features of the existing system are designed to achieve the greatest possible deterrent effect on price fixing at the least possible cost.\(^{108}\) Having both public and private antitrust enforcement appears wise, and something akin to treble damages for certain violations may be necessary to provide an adequate incentive for private detection of collusion. Given that private treble-damages actions will be used as a major deterrence weapon, the *Illinois Brick* rule of assigning the exclusive recovery right to direct purchasers probably is appropriate. The rule lowers litigation and transaction costs, particularly by avoiding the costs of apportionment of recovery among plaintiffs at different links in the vertical supply chain, and, therefore, probably enhances deterrence. The Supreme Court emphasized this effect on apportionment costs in justifying its decision in *Illinois Brick*. *Illinois Brick* also reduces the disincentive to invest in detecting collusion likely to arise from the interdependence among potential plaintiffs. Particularly because of the desirability of avoiding apportionment costs, exceptions to the rule probably should be, as they currently are, quite limited. Like many legal rules, *Illinois Brick* can be possible to limit, or even deny, recovery in cases where plaintiffs delayed in acting to increase the damages. Moreover, it seems somewhat dubious that a conspiracy will go on for long after it has been detected.

\(^{107}\) See supra note 36 & accompanying text.

\(^{108}\) We have not considered and take no position on such issues as the optimality of the aggregate investment that is made in detecting collusion, the exact proportions of such investment that are public and private, whether statutory maximum fines and terms of imprisonment are appropriate, or whether damages should be trebled rather than doubled or quadrupled. Each of these issues is fertile ground for further investigation, as are the modifications to § 4 suggested supra note 106.
Brick is not perfect but, in context, it probably is the best our legal system can do.